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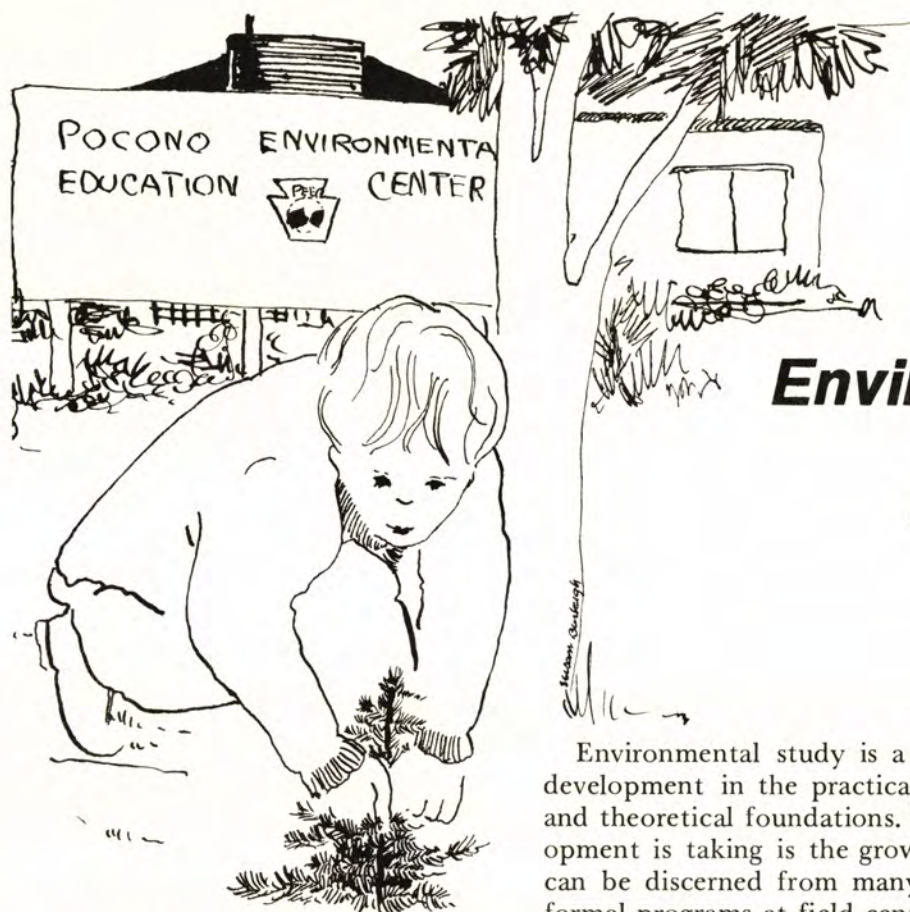
Number 4



ENVIRONMENTAL

FIELD STUDY CENTERS

A JOURNAL OF ENVIRONMENTAL EDUCATION AND INTERPRETATION



Environmental Education: A Process

Environmental study is a dynamic enterprise currently undergoing development in the practical application of ideas based on historical and theoretical foundations. One important direction which this development is taking is the growth of environmental study as process. As can be discerned from many of the descriptions of formal and non-formal programs at field centers and other facilities in this special issue

of *Nature Study*, there is an increasing effort to teach the process of environmental problem-solving and decision-making. In these programs, participants may learn the ecological relationships and principles that underlie environmental problems and are presented with options regarding approaches and solutions to those problems.

Mastery of environmental study as a process enables the learner to perceive and understand principles and problems and evaluate possible alternative solutions through appraisal of benefits and risks. In terms of content and purposes, environmental study in the 1980's is becoming a process of inquiry into both the specific and general implications of human activities as they relate to social needs and values with respect to general public policy.

— John J. Padalino, President, American Nature Study Society

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Nature Study

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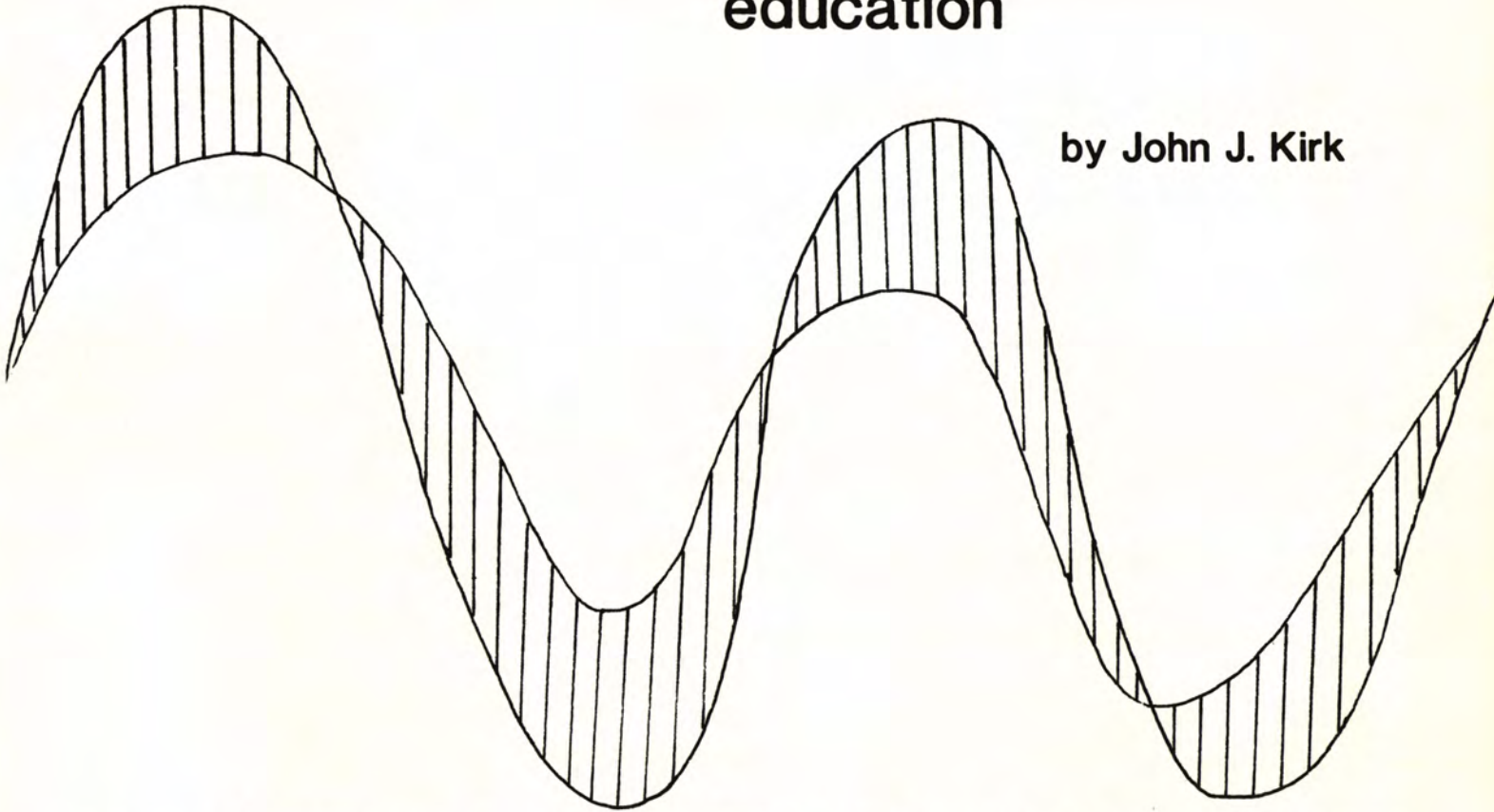
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DECEMBER, 1980



the quantum theory of environmental education

by John J. Kirk



Environmental Education is a new focus and a new dimension in the academic arena which has generated a great deal of enthusiasm and interest in teachers, students, political leaders, and the general public throughout this country and around the world. Never in the history of education has any new movement advanced so rapidly and been accepted by so many in so short a period of time. In the 1960's the term was known and understood by very few. In the short span of a decade, the term "environmental education" is in common usage in many countries throughout the world. Where did it come from? What are its roots? Did it emerge solely as an outcome of the turmoil of the 1960's?

JOHN J. KIRK is Director and Professor of Environmental Studies, New Jersey School of Conservation, Montclair State College, Branchville, New Jersey.

In an effort to find answers to these perplexing questions, I began to explore the growth and development of the Conservation/Nature Study Movement and of the School Camping/Outdoor Education Movement in this country. These are two separate and distinct components in our educational system which have contributed much to American youth. However, as I delved deeper and deeper into these two movements, I found similarities and I developed a feeling that these were, in fact, the roots of environmental education. Yet, how could I support this feeling? What brought these two philosophical components into a central and single focus? What about the new dimensions of environmental education which did not appear in either of these earlier movements? As I groped and searched for an answer, I happened to come upon the work of the late Jesuit scholar and paleontologist, Pierre Teilhard de Chardin. In his monumental work, *The Phenomenon*

of Man, Father Teilhard explains the evolution and development of new life forms by applying the theory of quantum physics and utilizing the principle of a "quantum jump" to illustrate how unique changes in living organisms occurred. Quantum physics, explained in very simple terms, states that various elements and components come together in a random series of steps, and there is, in essence, a collision of these various elements which results in an explosion or a "quantum jump"; and the new product resulting from this explosion is significantly different than the sum total of those elements which contributed to its creation. Here was the answer to my perplexing dilemma! The idea of applying the principle of quantum physics seemed to lend itself to my analysis and review of the Conservation/Nature Study Movement and the School Camping/Outdoor Education Movement in the United States and provided the theory which could ex-

plain how these two movements were, in fact, the historical roots of environmental education.

Let us now move on and examine the series of steps that brought us to that dramatic period in educational history in the late 1960's when environmental education became a reality. Since the Conservation/Nature Study Movement pre-dates the School Camping/Outdoor Education Movement by almost a hundred years, we will begin there.

CONSERVATION/NATURE STUDY MOVEMENT

Awareness Phase

I have chosen 1860 as the starting point, and the period from 1860 to 1890 I believe to be the "Awareness Phase" of

the Conservation/Nature Study Movement. In 1864 a New England Yankee, George Perkins Marsh, produced the great work, *Man and Nature*, which awakened in many the realization that Man is not a single and solitary figure standing above all other living and non-living things but rather an integral part of the system. The works of Emerson and Henry David Thoreau also received considerable attention during this period, although written earlier. For example, many of Thoreau's works were not published until after his death in 1862. In 1870 another of the more prolific and eloquent conservation writers began to make his mark: the great John Muir, who is most famous for his efforts to bring Yosemite into the National Park system. The work and writings of these men contributed much to develop this sense of awareness and set the stage for what was to follow.

Preservation Phase

The next identifiable phase of the conservation movement began in the 1890's, which, I feel, can be appropriately termed the "Preservation Phase." Two individuals stand far above all the others during this period. Gifford Pinchot, born in Connecticut in 1865, did much to popularize and define the need for conservation in this country. His influence was reflected in the actions and statements of the other individual who contributed so much during this period: Theodore Roosevelt, the Rough Rider who served as our twenty-sixth President, assuming office in 1901 and serving through 1908. From the point of view of conservation and preservation of natural resources, President Theodore Roosevelt's term stands alone in American history. Public ownership of forest lands, woodlands, and prairies increased from forty million acres to 194 million acres during his term of office. He also established the National Conservation Commission to oversee and supervise natural areas. In 1908 he called the first White House Conference on Conservation.

Instrumental in much of this activity was Gifford Pinchot, the first Chief Forester of the United States and the only Bureau Chief in the federal government to serve as a personal adviser and confidant to the President of the United States. Pinchot introduced the concept of multiple use of forest lands. As a result of his work, our forests were to be viewed, not merely as a crop to be harvested, but also as a valuable resource for recreation, relaxation, research, and study. His efforts led to the next phase which began to emerge around 1910. I like to refer to this period of time as the "Nature Study Phase" of the movement.

Nature Study Phase

A great catalyst during this time period was the establishment of the American Nature Study Society in 1908 with Liberty Hyde Bailey, a horticulturist and great lover of nature, as its first president. The purpose of this organization was to develop an understanding and appreciation of the beauty, majesty, and mystery of

nature. In 1914 one of the great champions of the nature study movement, Anna Botsford Comstock, published the *Handbook of Nature Study*, which served as a tool and a guide for teachers and many aspiring young naturalists and is still considered one of the most useful references available. Comstock's work, combined with that of other leaders in the American Nature Study Society, led to the next phase which began to emerge in the 1930's, and which I refer to as the "Education Phase" of the Conservation/Nature Study Movement.

Education Phase

In 1933, because of the Great Depression, the Civilian Conservation Corps was established by an act of the Congress and provided three million young Americans with an opportunity to learn the value of forest lands and woodlands to human life. As a result of the C.C.C., many Americans became more aware of the need to learn about the inter-relationships and interactions of living and non-living things. Also, in 1933, William Gould Vinal, of whom you will hear more later, published an article entitled "Nature Clubs for Teacher Training," which suggested that natural areas be used as an extension of the classroom. This article appeared in *Recreation Bulletin*, a publication of The National Recreation Association. Another catalyst occurred in June of 1937 when J. W. Studebaker, United States Commissioner of Education, called a conference on conservation education in Washington, D.C., to examine this new trend in greater detail. In addition, several government agencies, such as the United States Forest Service, the Fish and Wildlife Service, and the Soil Conservation Service, began to publish conservation education materials and hired specialists to implement that segment of their programs.

Curriculum Phase

All this activity led to what I identify as the "Curriculum Phase" of the Conservation Movement which began to emerge in the 1950's. The establishment of the Conservation Education Association in

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AUDUBON CENTER — CONNECTICUT

IT IS PERHAPS fortuitous for environmental education that school systems are returning to the basic curriculum and abandoning the "frilly" subjects. While on the face of it, ecology is not one of the core curriculum topics, there is a growing awareness among the nation's teachers that it is certainly one necessary to the social awareness of the youthful citizen. Meanwhile, environmental specialists are learning that the most successful techniques for teaching ecology are exactly those which enhance the basic subjects a child learns in the classroom. Thus, interdisciplinary programs, utilizing the basic skills through a science subject, are becoming the norm at nature centers.

Audubon Center in Greenwich, Connecticut, has developed a very strong, and highly successful, educational program which focuses on the specific needs of students and teachers in the area's schools. As Carol Etzold, one of the center's environmental education specialists, explains it, "The key to environmental education is to provide programs which reinforce the students' basic skills. We make it very clear that we are sympathetic to each teacher's requirements, and while we provide basic programs of an interdisciplinary nature, we are willing and happy to design a special program when we are requested to do so."

LOCATED ON 485 acres about 30 miles from New York City, Audubon Center is situated in a suburban area. It consists of several pieces of land, on primarily second-growth deciduous woodland. On the largest pieces of 280 acres there are approximately 9 miles of trails, passing through woodland and open meadow, by river and lake. It is this area which receives the most intensive use.

The land was donated by Eleanor Steele Reese in 1941 and officially became the second nature center of the United States the following year.

While there are a number of buildings upon the property, it is the center itself which is used for the educational programs. The center houses the staff offices, a gift shop, two classrooms, the Teacher Resource Center, and the Animal Exhibit Area.

The Teacher Resource Center is an extremely important part of the Audubon Center. It is a library in which over 1000 volumes on natural history and environmental education technique, and theory are made available to teachers and the public. It is a periodical library, containing all the important and pertinent journals, publications, newsletters. It is a gathering place for teachers who wish to exchange ideas.

A part of the Teacher Resource Center is a quarterly newsletter for educators. Reaching over 1500 teachers around the United States, it is an activity-oriented publication containing background information, recommended interdisciplinary classroom activities, and reference lists on selected environmental subjects.

The Animal Exhibit Area houses an ever-changing collection of animals, amphibians and reptiles for viewing. The core of the exhibit are the snakes and turtles. A European Ferret and several domestic rabbits, and an occasional baby skunk or raccoon may also find a home there.

E E CENTERS AROUND THE



EDUCATIONAL PROGRAMS

AUDUBON Center offers a variety of programs for on-site study, in-class courses, and teacher workshops. Reaching 19,000 students per year, the success of this program is based upon intensively-trained volunteers. There are about 100 of these volunteer teacher-naturalists, interspersed among diverse programs.

It takes a year to train these volunteers, thus it is necessary for each individual to give at least a two-year commitment to the program. In late September, the new volunteers begin a course of study which will continue through April. In weekly two-hour workshops, they are grounded in basic natural history and in teaching techniques. In April, they begin a month of observation of actual classes. Finally, they are ready to teach in May.

Beginning volunteers teach the smaller children, the pre-schoolers through second graders, on Tuesday mornings. After their year of teaching, if they wish to continue, they are given the option of teaching older students or staying with the younger classes.

THE OLDER classes, which provide the bulk of the programs, are taught Wednesday through Friday. There are a dozen basic programs provided to the schools, covering a broad spectrum of environmental subjects, from soil through insects to ecosystems and pond ecology. These are discovery-oriented programs using hand-lenses and activities utilizing the center's grounds.

Prior to the visit, the classroom teacher is provided with a package of materials to prepare the youngsters for the visit. Upon reaching the center, the group begins its hour-and-a-half visit with an orientation session during which the teachers explore the exact amount of knowledge the class has, and prepares it for its trip outdoors.

Outdoors, the children are separated into groups of fives, each under the guidance of a teacher/naturalist. With this teacher, they will explore the grounds of the nature center, discovering natural phenomena and reinforcing ecological concepts through the use of word games, measurement activities, predator-prey tag games and other techniques.

When they return to the center, they participate in a final activity and a summary, and visit the Animal Exhibit Area. The teacher is given a post-visit package to continue the learning experience.

In addition to on-site programs, Audubon provides two school systems in classroom courses. A total of 292 fourth graders of Greenwich and 305 second and third graders of Byram Hills are given 10-week courses in basic ecology. A team of two volunteer teacher-naturalists visits the class each week. According to Carol Etzold, "this is really a godsend to the teachers. Very often, the classroom teacher is uncomfortable, or unfamiliar, with environmental topics. By providing the expertise, the Audubon teachers have become indispensable to the schools' science departments."

TEACHER WORKSHOPS

SCHOOL SYSTEMS often request that Audubon Center conduct a workshop for their teachers. Each workshop is designed specifically for the particular school, however, they are technique-oriented, and very often entitled something similar to "Teaching Ecology in the Classroom." These workshops may run for simply an hour or for up to eight two-hour sessions after school. They may be

conducted at the center, but more and more, they are being run at the school.

The Audubon staff also offers graduate courses in environmental education techniques at Fairfield University.

— KAREN NOLAN, *Secretary of ANSS*

JUNIOR MUSEUM AND NATURE CENTER — FLORIDA

DIVERSITY is the key to stability in Nature and life! This is just one of the guiding "natural" principles practiced at the Junior Museum and Nature Center in Fort Myers, Florida.



A boardwalk built by Project ABLE students, Ft. Myers, Florida.

The Nature Center is operated jointly by a non-profit Board of Trustees who has created the million dollar plus facility; the Lee County School Board, which operates its Environmental Education programs from the Center, including seventeen staff members, and provides one-half the operating costs of the Center; and the City of Fort Myers, which leases the 105-acres of land to the Nature Center trustees and provides trash pick-up and landscape maintenance services. In addition, numerous organizations and businesses provide financial support and volunteers for continuing operation and expansion.

It is this model of diversity that has led the Lee County Schools to place two unique programs at the Nature Center.

First, a program for gifted and academically talented middle school students, grades 6, 7 and 8; 380 of these students participate in a full school day every other week at the Center. Students from nine different middle schools are bussed to the Nature Center on a "round-robin" basis with sixth graders one week and 7th and 8th, the next. The program is staffed by three Exceptional Education teachers with a bus driver-teacher aide and school bus assigned to them, and the Environmental Education staff and community resource people providing additional assistance.

The program for students, while based at the Nature Center, is not limited to the site.

Students participate in learning activities in local supermarkets, banks, businesses, along with 3-day to week long camping experiences in the Everglades and Florida Keys.

THE NATURE CENTER itself is more of a setting for the "gifted" program where students participate in drama, photography, gardening, creative arts, metric study of ants, water analysis, label advertising, computer programming, and architecture. With the help of five architectural firms, students designed their own passive energy classroom building.

Working with the Nature Center's Ringling Museum Arts program, students utilize valuable art exhibits as stimulus for creating their own art interpretations by simulating the utilization of the professional artists' techniques. After studying graphic Eskimo etchings and soapstone carvings, and the philosophic perspective of the Eskimo artist's interpretation of nature, students created "Eskimo Art" from etchings on styrofoam meat trays and ink printed on rice paper. The student art was so popular that it was placed in the Gift Shop and sold out!

A second program, called Project ABLE, for Alternative Education (9th and 10th grade students with discipline and truancy problems) is also based at the Nature Center. These students participate in outdoor programs focusing on the Nature Center and the Florida River for academic learning and self-renewal.

Thus, the Nature Center is a catalyst location where students can extend and stretch their quest for new knowledge in an environment greatly enriched by the natural metaphors which nature provides for understanding life processes.

— **BILL HAMMOND**, *Coordinator of Environmental Education, Lee County Schools and Director of Junior Museum and Nature Center of Lee County.*

WHITETAIL ENVIRONMENTAL CENTER — PENNSYLVANIA

THROUGH THE PAST decade Ecology has competed with and surpassed DNA in the vocabulary of the West Shore District in New Cumberland, Pennsylvania. Ten years ago as an outgrowth of Earth Day and numerous environmental crises, the school district started an environmental education program and a field center which continue to grow and develop.

This represents several thousand student contact hours, five staff members, and departmental status within the school curriculum. All was done without federal funding. This program is funded entirely through the local school district budget.

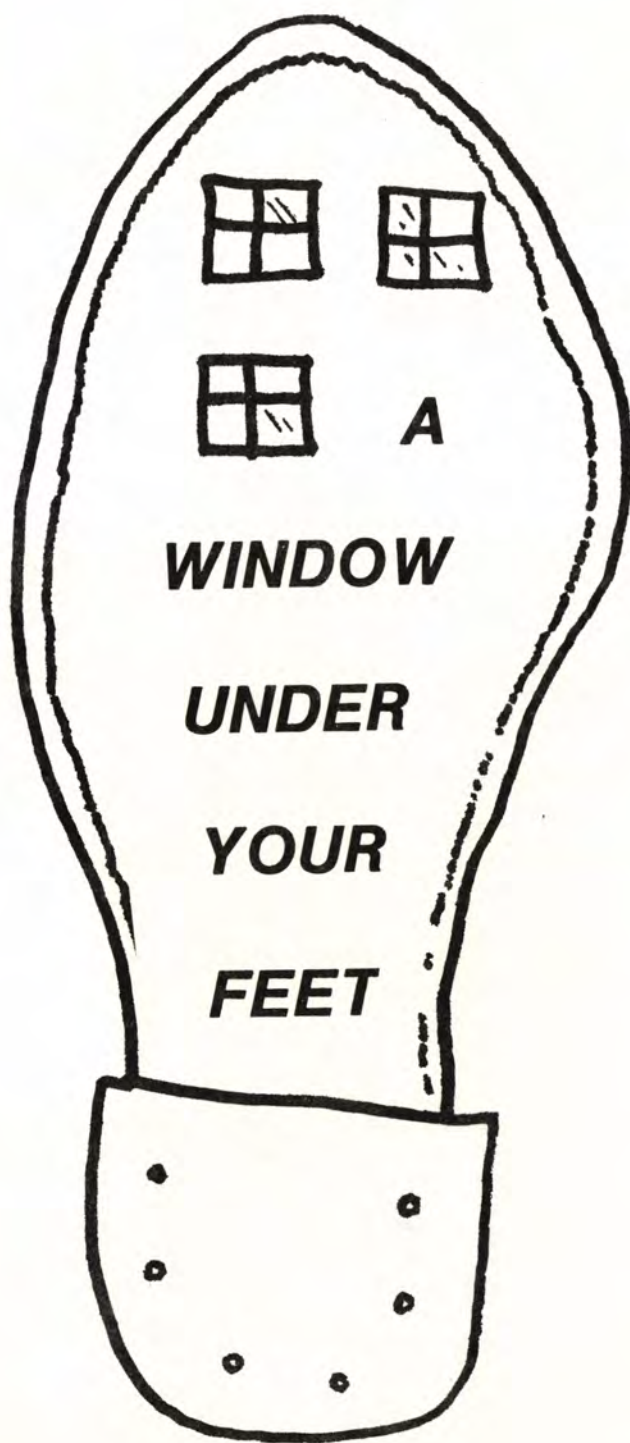
WHEN THE IDEA of a program took form several pilot studies were carried out to assess the resources of the individual schools, to list the environmental concepts already included in the school programs, as well as ones that needed to be included. Administrators, professional and non-professional staff, neighboring businesses and local organizations were all involved. Maps of local school campuses were produced from architects' drawings; then made into a teacher reference by plotting plants, geological features and other teacher resources. In-service programs at each school introduced the teachers to the maps and to a manual which included interdisciplinary activities and walking field trips. Emphasis was placed on the time and effort saved by including concepts from several subject areas while using topics that were of interest to the children.

After careful evaluation, a centrally-located school on a thirty-three acre rural campus was selected to become the Whitetail Environmental Center. Students and teachers are transported to this site for scheduled activities. The Whitetail Environmental Center has thus become an integral part of the education plan of West Shore School District. In addition to day trips there are some overnight school camping programs with the staff of the environmental education department assisting.

At the secondary school level some students participate in the Marine Science Program at Wallops Island, Virginia. Secondary students are also offered an elective course in Field Biology. In the fall term of 1981 Energy Education will be added to the curriculum with in-service training for teachers and a modified mobile laboratory.

Over 8 thousand youngsters in the district are exposed to the center.

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by Warren Balgooyen

WINTER is a neglected season. It is a time when group programming and attendance is all too often at a low ebb at our schools and nature education centers. Why should it be? So much can be done on the winter landscape. There is a whole new frontier out there waiting to be tapped by the environmental educator. A myriad of program possibilities exist. The purpose of this article is to convince you, the educator, that our skeptical "stove-hugging" students are missing some real fun and adventure. Those who do not enjoy being outdoors in winter (poor misguided souls), either complain of the cold or say there is nothing to do. Avoidance of the cold is no longer an excuse. Advances in cold weather apparel in recent years enable people to dress as warmly as they like—and to say that the winter landscape is boring—well, such people need your help and mine.

At the Teatown Lake Reservation of the Brooklyn Botanic Garden we have developed a number of winter programs which we would like to share with you. Many take place on the Reservation's 33 acre lake, a resource that not all of us have to enjoy. However, if you live in the Northeast, chances are that there is a pond or lake nearby. Although there are a host of winter programs that can take place in any woodland or meadow, I will focus on the lake programs. They are the most unique and certainly the most popular at our facility.

Henry David Thoreau summed up the fascination of a pond in winter in *Walden* where he wrote:

"Standing on the snow covered plain, as if in a pasture amid the hills, I cut my way first through a foot of snow, and then a foot of ice and open a window under my feet, where I look down into the quiet parlor of the fishes. There a perennial waveless serenity reigns, as in the amber twilight sky, corresponding to the cool and even temperament of the inhabitants."

CUTTING through the ice is an educational experience in itself. It can be accomplished in several ways depending upon the objective and tools available. At Teatown we use a "spud" or "ice chisel." This is an iron bar flared out and sharpened at one end—the heavier, the better. Axes may be used if the ice is not over six inches. Beyond a foot, augers are appropriate. They are safer to use if you want the kids to do the work but must be kept sharp to work well. Kids love to see the holes chopped. (Watch out though, it gets slippery underfoot with all those ice chips around—and the sharp tools should be only used by an experienced leader. As a precaution, have the kids form a circle around but well away from the chopper. It is safer on the fingers and toes.) Equally exciting and educational is the gush of water at breakthrough—a good chance to explain how the ice floats in water with 9/10ths below the surface, and that there is clearly no air space between ice and water. (The water will gush into the hole to within 1/10th of the surface.) Holes may be chopped for ice fishing, temperature or light readings beneath the ice, dip nets (in the shallows) or sounding and mapping of the pond bottom. Factors of depth, temperature, water transparency, and degree of light penetration through the ice can be explored and discussed. How each affects the life beneath the ice in winter's "sealed" environment leads to an awareness of a lake's physical and biological interactions—and ecological understanding.

—WALTER BALGOOYEN is a naturalist at Teatown Lake Reservation.



Exploring "black ice" at Teatown Lake

ICE FISHING, another exciting activity can stand alone as a separate program or be incorporated with the above-mentioned pond studies. I like to set up a few tip ups around the study area for added excitement. Tip ups are fishing devices which are set next to a chopped hole. Each has a little flag which pops up when a fish bites. The advantages of this kind of fishing are obvious. On a cold day you can keep your hands in your pockets, skate, or even sit by a comfortable fire on shore while waiting for the fish. A winter pond field trip is not complete without the added adventure of ice fishing. Students can keep an eye on these tip ups while engaging in sounding, temperature readings or other activities. When someone yells "flag" all come a runnin'.

The phenomena of ice itself provides much study material. Why does it float? What if it did not? How does ice form? Why does ice melt first along a pond's margin? Why does a leaf blown onto the surface of a pond slowly melt its way down into the ice? Where do the tiny gas bubbles come from that are found beneath and throughout the ice? You can expand on this last question by focusing on sources of methane oxygen, and carbon dioxide in a pond. These released gasses accumulate under the ice in tiny bubbles and become incorporated in the ice as it thickens. Ice accumulates in thickness from the bottom surface (with the exception of snow ice which forms on

top.) As a lake freezes thicker, the bubbles become trapped within the ice. During a period of thaw when the ice is not gaining thickness, those bubbles are concentrated as a band in the ice. Frequently one can examine a block of ice in cross section and see these bubble bands—each representing a period of thaw—and thereby gain a record of the winter's weather fluctuations to that date.

Through ice fishing, the use of dip nets, or other sampling devices, students soon learn that a lake is far from asleep in the winter, even though ice covered. What creatures hibernate and which remain active? How do frogs and turtles survive beneath the ice? Why are tadpoles still active while frogs must hibernate?

There is much to be seen on the surface of the pond as well. Muskrat and beaver lodges or dens can be investigated. (Be careful of thin ice nearby!) Evidence of their food supply can usually be seen near the entrance to their quarters. At Teatown, we sometimes lead a nature walk on skates to study the edge community of a pond and botanize along its margins.

Other pond related programs we schedule are an old fashioned ice cutting demonstration (ice must be at least one foot thick), how lakes freeze and thaw, physical properties of ice, and a winter carnival on ice. For the ice cutting you will need to acquire an antique saw. (They still are made new in Canada but antique saws are

cheaper and not hard to find.) Saws must be well filed to a sharp edge. You will also need pike poles and ice tongs. This program too, is not without its hazards. The public should be kept away from the edge behind a rope or line of hay bales as it gets slippery near the cutting area. It is a good idea for the workers to wear crampons while pulling ice blocks from the water—unless they too want to be pulled from the water!

ICE SAFETY in general must be considered before venturing out on a lake and I have saved this matter for last. Leaders must be thoroughly familiar with ice before accepting the responsibility of taking a group out on the lake. There are many forms of ice and varying conditions on a lake that demand good discipline of your group and a thorough understanding of ice. Thickness is not all that counts—quality counts too. Spring ice, for example, becomes "honeycombed or rotten"—

**Winter
is not
a dead
season.**

the subject of another study but a study that is not advisable "in situ." Even a foot of this honeycombed ice can give way. Even the best quality "black" ice of early winter cannot support a crowd until it is at least 4 inches thick. You can risk your own life on less if you want, but don't risk the lives of others. Ice safety too, provides a worthwhile program. Tips on how to avoid or check falling through and what to do if it happens are invaluable.

A little common sense can eliminate the above mentioned hazards on ice and open the window to a new field of adventure for you and your students—a window under your feet. □

A FLOATING NATURE CENTER

by Karen Nolan

A postcard printed in New York around 1907 shows an idealized scene along the banks of the Hudson River. Today, the sloop Clearwater is helping many people who live along the Hudson discover its real importance.



In the Hudson Highlands, it is sometimes possible to make believe that the year is 1780. History is a pervasive force in the great mountains that slip into the river. The area is not so wild that it precludes the presence of people; in fact people seem to belong here, hidden in hollows, in farms and small villages, and fishing from the banks, while tree-covered hills tower over one's head. In Colonial America, this scene of the Hudson Highlands was a fact; today it is not so different.

Unlike other sections of the Hudson River, this fifteen-mile stretch of the majestic waterway is not only an occasional

source of aesthetic pleasure, it is actually a living and constant image that is greatly appreciated. The Hudson, for the most part, however, is like the majority of rivers in the United States; it is not only not appreciated, it is actually ignored. Or if the truth be told, it is like a trash can; simply there as a receptacle and taken for granted. People turn their backs on rivers and ignore the sensuous qualities of waterways only finding them convenient for commerce and garbage.

Still, in the Highlands, it is possible to believe that the Hudson River has not met with this fate. A heady romanticism is pervasive in the balmy air, the rhythmic grandeur of the hills, the richness of a forest, and the majesty of the river. More than anywhere else along the river, the

old-fashioned means of river traffic appears in place. Before the steamboat arrived to conquer the waterways, the main means of transportation along the Hudson was the sloop. In the great cities and giant suburbs, the long sweeping lines of a white gleaming boat hugging the water, with the impressive spire of its central mast, and the oddly invigorating sound of a sail flapping in the wind are out of place beside the tall skyscrapers, freighters, and jammed roadways. For this very reason, the sloop is the perfect image for evoking more halcyonic days, with more sane uses of the river.

The sloop and the river are suited for one another. Because it is a sailing ship, the sloop provides an air of relaxation that offers a leisurely view of a river that

— KAREN NOLAN, Secretary of ANSS.

is not too large to be awesome, but just large enough to keep one aware of its power.

Unfortunately, the river is inaccessible for the great majority of the people who live on its banks. The pollution of course, discourages use, and highways and industry create very real barriers. Consequently it is possible to live within view of the river, but to forget its existence. Even in Manhattan's Riverside Park, whose name lies, the river is a distant phenomena somewhere across the Westside Highway.

Out of sight, out of mind. No wonder the river is not a source of wonder anymore. There are some people, however, who truly love the river, and a core of these people found a way to bring the people to the river. They formed the Hudson River Sloop Clearwater Inc., a non-profit organization, using a sloop as the symbol of the river's past, and hopefully, its future. After years of fundraising, the 76-foot sloop Clearwater is a floating nature center.

Nature centers are primarily an embodiment of a dream, and are the main image for the public's focus. This particular sloop says "I am an image of history. I stand for an unspoiled and an appreciated Hudson River." There is no better image possible for this river, because it spells romance, and purity, and tradition and less energy.

The main purpose of the Clearwater is to make the river touchable. Through whatever program it offers, it draws people to the water, where they can become familiar with all the sensuous attributes a river has. Once a person is aware of the Hudson's virtues, he will become concerned with the river's plights.

Although its address is Poughkeepsie, the Clearwater's home is wherever it happens to be. Whether it rocks in its berth in a city marina, or it leisurely sails from one town to another, it draws attention to the river. It is perhaps a luckier nature center than most. Since it floats it is able to reach greater populations. Its success, of course, lies in its ability to draw people to it.

The Clearwater, like other nature centers, is an educational facility and a civic center. Adults attend their programs, local groups request a lecture. School classes and children's groups scramble over the decks and leave with the principles of

water ecology and navigation pressed upon them. A simple sail a few miles up the river can be equally important in establishing that special image of pleasure in an individual's mind.

Perhaps the Clearwater's greatest drawing card, however, is its concert program. There are many music lovers, but they are not necessarily environmentalists. They are, however, lovers of an aesthetic of some sort. A Clearwater concert is an open-air concert, held on a dock with this magnificent boat very visible, and the slap of the waves syncopate the rhythms of

**"The Hudson
is inaccessible
for many
who live
along its
shores."**

Beethoven and Dylan. The feeling of nostalgia, of leisure and beauty leaves a very special glowing satisfaction to the concertgoers for days after.

The Clearwater is commonly associated with Pete Seeger, whose music has inspired many a folk music lover, and who is not afraid to say what he thinks. He thinks a great deal of this river, and makes a special point in telling people that if everybody would only get involved then the river could be clean and whole and a part of their enjoyment of life. Seeger was instrumental in the formation of the Clearwater Corporation, and in its continuing success.

Like a Seeger concert, a Clearwater concert has an air of sincerity that ban-

ishes any pretense that even folk music concerts can be marred with. Part of this sincerity lies in the conscious effort to talk about the river. It could be called a political speech, it could be called a sermon, whatever, somewhere during the concert the message is made clear: "Here is the Hudson River. It is special to me and it should be to you. There's a lot wrong with it, folks, and that's bad. So get involved, and help make it better, because not only will it be better for the river, but it will be better for you." This act of persuasion may not convince everyone, but it will spark some subconscious fires, which will later become a conscious effort to help make the river the main focus of its communities.

An adjunct its "Make the Hudson River beautiful" message is its anti-nuclear position. The Clearwater sloop and its supporters are activists as well as educators, and the organization is concerned with every issue which directly affects the Hudson River Valley. There are two nuclear plants in that valley: the infamous Indian Point plant, and a second one, under construction, at Shoreham, Long Island.

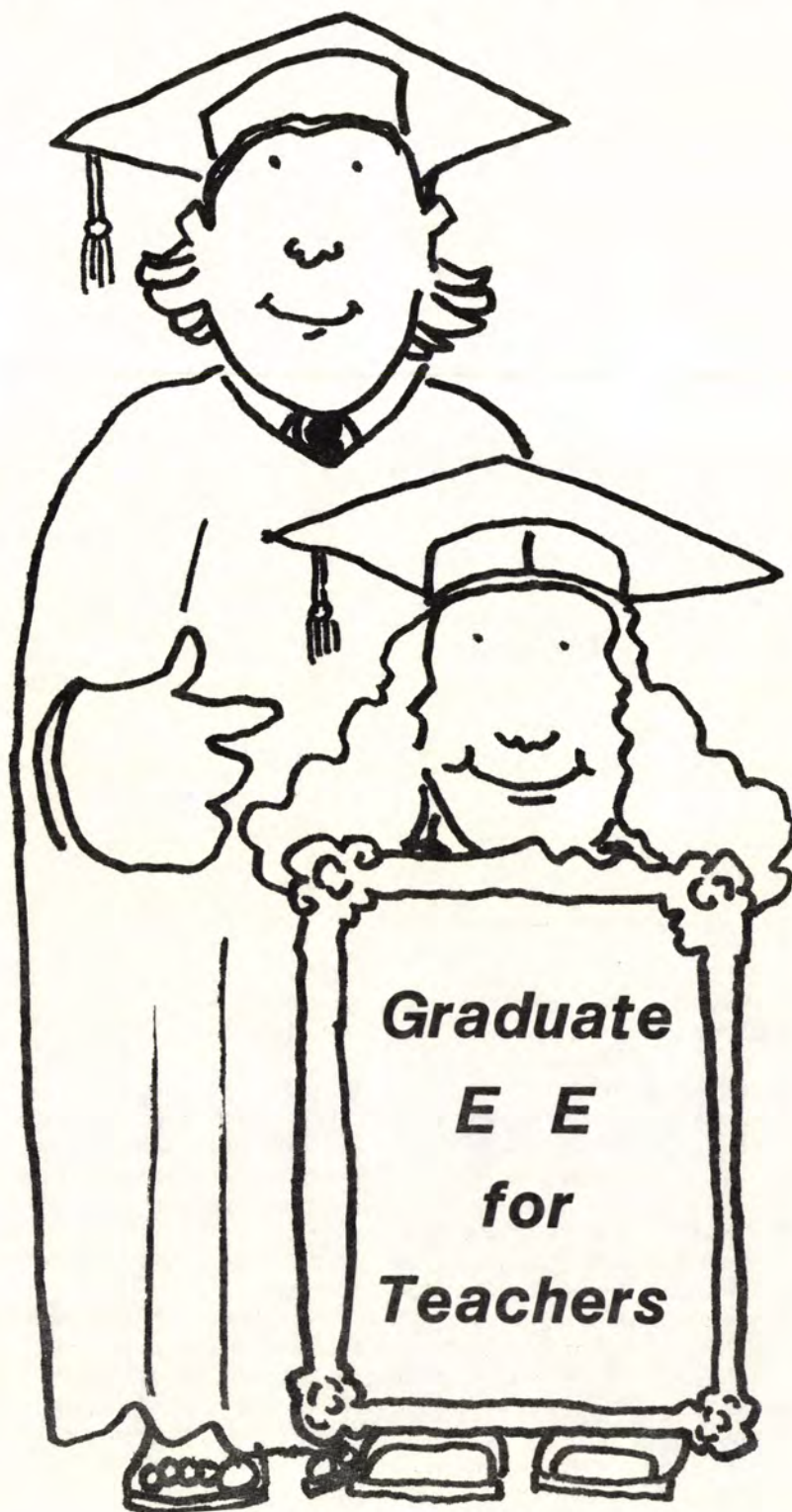
The problems of the Hudson Valley cannot be put into neat little boxes that have no relation to one another. They are social illnesses, or trends that have gone haywire, and must be placed in a context. Thus there is no issue that the Clearwater organization may not touch upon, because in the end it all affects one thing, that of the individual. The community, the environment, and the river play specific roles in the well-being of a person, and the Clearwater feels they all need a little help.

A nature center, by its structure and its purpose, provide a sense of "what can be." Through its programs and its ability to keep itself in the eyes of the public the Clearwater focuses attention on the Hudson River as it was in the past, what it is at present, and what it could be in the future. It should be the pride of the region.

The Hudson River Sloop Clearwater Inc. is a non-profit organization dedicated to defending and celebrating the Hudson River. For more information about membership and its programs, write to Hudson River Sloop Clearwater Inc., 112 Market Street, Poughkeepsie, New York 12601.

□

"The benefits are financial and programmatic"



by Richard L. James

SINCE 1969, the Schuylkill Valley Nature Center has provided graduate level programs for teachers in environmental education and environmental sciences.

At the present time, the Center offers, through its college and university affiliations, over 75 credit hours in topics ranging from New Games to Meteorology.

There are benefits that accrue to the Center and the cooperating institution.

For the college or university, there is the immediate benefit of not having to hire another staff member to teach a fairly specialized subject. The college is relieved of benefit packages and having to include overhead costs in the course fees. They are also assured that the staff person from the Center will be staying current with the subject being taught. Being able to offer programs at a facility as different as the Schuylkill Valley Nature Center also serves a positive role in attracting new students.

For the Nature Center, the benefits are both financial and programmatic. The fees charged for each course are added to the program income of the Center. The agreements with each institution define the size of a section and the teaching fee. Once a section has been filled, a second section can be opened. That means the Center will receive a payment for teaching two classes of the same subject.

THE PROGRAMMATIC benefits for the Center are many. In-service programs can be offered for one graduate credit from the list of approved courses. Special Center programs involving teacher training can be "fitted" into the graduate program. For example, SVNC's environmental education curriculum program for inner city schools included six to nine graduate credits for the 137 cooperating teachers. The same program tie in has been used in developing programs for teachers of the handicapped and for teachers working in SVNC's Sunship Earth program.

SPECIAL EVENTS such as Challenge Course workshops and a program by the New Games Foundation or Project Learning Tree can be "credited" by the participants if they so desire. It also means that the cooperating college collects tuition fees. The Center receives the agreed teaching fee for the program.

The Center also benefits from graduate programs that have a specific goal. For example, SVNC and Beaver College are cooperating in presenting a Master's pro-

(continued, page 18)

—**RICHARD L. JAMES** is Executive Director of the Schuylkill Valley Nature Center and Past President of ANSS.

THE UNITED STATES is an urban and central-urban nation. Most of our people live in or near cities. Indeed, in California 80 percent do so. This is not a United States phenomenon, since population surveys worldwide indicate the continuing migration trend toward the large cities and industrially developed area of almost all countries. Cities such as Shanghai, Tokyo, Mexico City, and others are at or approaching more than 10-million inhabitants. Certainly the implications of "losing touch with the land" on the part of most of our citizens for the future will have significant consequences—not the least of which will be the thrust, concept, and style of interpretation that will flow from nature centers.

In light of growing urbanization, nature centers need to determine a new direction for interpretation as it relates to our urban environments and then build and create an appropriate need for our services. Entire new realms that would benefit through interpretive input and output exist, and if utilized, go a long way toward achieving the goal of getting our urban citizens of the future to accept the parameters that will exist in the urban environments to which most people will be confined for all, if not the majority of their lives.

Might we consider the following: five billion gallons of sewage flow into the Pacific Ocean each day from Los Angeles, and in consideration of the drought conditions and the water supply availability predicted for the future, we will probably find people at least swimming, boating and fishing in reclaimed sewage effluent. Indeed, in various desperate communities, since the technology already exists, our citizens may find themselves bathing, cooking, and possibly drinking highly-treated effluent water. I suggest that every community will need interpreters to educate the public to the realization of its need to know, understand, and accept such possibilities for the future. It may be more important to run every school child through a sewerage treatment plant than through a nature center.

Since everyone's personal health is always an emotional issue, I suggest that pollution control districts will need interpreters to inform the public of strict pollution control requirements (which will require more taxes) and (depending on the needs of the time) to accept a more

polluted environment (i.e., the switch from oil to coal to generate electricity).

URBAN PLANNING staffs will no longer be able to merrily go on their way creating an "unplanned" manner, since every day that passes, we recognize their impact on our every day quality of life. But if future citizens are to be confined to mass urban environments, it will take interpreters to explain why giant living complexes, utility corridors, and other "sterile" surroundings may be necessary to the future adaptation to and survival of communities of 10-million or more.

Indeed, there will probably even be a need for garbage dump "interpreters." We have not even scratched the surface in

race learn from its animal counterparts what went wrong and what we can learn from managing animal populations. Of course, wildlife biologists of the future may spend more time being interpreters in order to explain the need for pigeon, starling, sparrow, or rat control in the cities, than they spend on trying to manage game preserves. The opportunity to go hunting may not exist or be a significant concern of the urban citizen in the future.

It would be easy—as I have done here—to develop these "gloom and doom" predictions and to be negative rather than positive. However, sometimes there is value in looking at the hard side of an issue. Certainly the brown pelican, among others, benefits from the ominous predictions of Rachel Carson in her book "Silent Spring." If interpreters are not able to stem the flow of citizens to the cities or to effect a control on our population growth in general, certainly through their particular expertise they can make future citizens better able to understand and cope with the human conditions with which they must exist.

This, in the long run, might make urban citizens demand at least a quality of life that will allow cities to survive. No one would want or hope for less than this.

It would be hard to decide where to begin to meet the possible interpretive needs of the future. Ideally we could begin with an environmental interpreter hired by each school district to begin to "spread the word." Immediately this approach would be faced with the financial realities of school systems today and even demands to return to the three R's and get rid of "frills," which I am certain "environmental interpretation" would be considered by many. Perhaps our best opportunity lies with our young people trying to enter the interpretive profession. When our Regional Park District has a naturalist position opening, we average between 200 and 400 applications. We choose one, but what do the rest do?

I suggest that if some of the urban changes I have mentioned do actually happen, talented young people could literally create jobs for themselves by making their interpretive and professional skills known to various agencies, and to convince them that their services are needed. Existing and future nature center staffs may have to move into the realms of urban interpretation mentioned. Such an effort may even save the positions and the nature center as well. A new thrust that would meet today's problems might be just what the urban oriented nature center needs. □

NATURE CENTERS 1984

by Christian Nelson

letting our citizens know the implications of our rapidly disappearing garbage disposal sites in or near cities. Interpreters could be hired to explain the necessity for recycling the wasted resources that are buried each year, and its implications for the survival of society as a whole. The 22 million tires thrown away each year in California could generate enough electricity to light the city of San Francisco for that year.

Our metropolitan transportation systems will need interpreters to explain to the public why, for the good of all, everyone must cooperate to use public transportation or learn to ride a bicycle or walk if the cities are to survive, should the fuel resources run out and the automobile for the average family become a memory of the past. Someone will have to explain why it will become socially unacceptable to drive an expensive gas guzzler, even though one is wealthy enough to afford the soaring cost of gasoline.

OUR CITY ZOOS, which indeed may become the final home and resting place for species that may be extinct in their native habitats, will need to develop interpretive efforts to help the human

—CHRISTIAN NELSON is Chief of Parks and Interpretation, East Bay Regional Park District, Oakland, California.

E E CENTERS (continued)

Presently Whitetail Environmental Center serves as a field trip site for regularly scheduled classes for the elementary and middle schools. Each grade level experiences outdoor and indoor units focused on seasonal and environmental themes. Secondary classes, teachers and curricular personnel as well as local and state organizations rely on Whitetail as a resource center.

— *FREDERICK D. HOWARD, a biology teacher at West Shore School District.*

WAVE HILL—NEW YORK

ENVIRONMENTAL education for urban children and adults is the central focus of the Wave Hill Center for Environmental Studies located in the northwest section of the Bronx in New York City. Though Wave Hill has developed into a diversified NYC cultural institution, environmental educational services for communities and public schools have remained a primary commitment. Established in 1960 on a 28-acre former Hudson River estate, Wave Hill faces the challenge of preserving and interpreting its gardens, woodlands and two historic manor houses and reaching out into the dense urban neighborhoods of New York City.

Wave Hill was designated by the Department of the Interior as a National Environmental Education Landmark in 1971 and as a National Environmental Education Study Area in 1979. For 20 years Wave Hill has conducted educational programs for public and parochial schools. The programs and services provided have included field trips, in-service teacher training, and curriculum development assistance for grades kindergarten to 12. Field trips for schools are on weekday mornings with 80% of the classes presently visiting Wave Hill only once during the year. The remaining 20% participate in three-session mini-courses on natural science themes. Wave Hill also has a tradition of providing programs for non-school groups. From 1972 to 1976 Wave Hill concentrated on field trips and in-service training for teachers from pre-school day care centers from the Bronx and Manhattan funded by Title XX of the Social Security Act. The emphasis was on developing activities and curriculum strategies for the implementation of environmental education in their neighborhood pre-schools.

During these years, however, a significant segment of the day care centers' youth population was not being given the same opportunities as the pre-schools.

This group of children, ages 6 to 12, participate in *school-aged after-school programs*. These programs operate during after-school hours, generally from 3 to 6 p.m., sometimes before school, and all day during school holidays and summer vacation. Although the children spend a substantial amount of their leisure time in these centers, the school-aged program is generally thought of as the step-child of day care. This attitude many times results in inadequate financial allocations and insufficient administrative staff support. Nationally it is estimated that 450,000 children are receiving care under Title XX funding. Of this 120,000 are participating in some sort of after-school program. In New York City, there are 43,650 children in Title XX day care centers of which 11,250 children are in school-aged after-school programs.

DISCUSSIONS with the education consultants from the NYC Agency for Child Development, the administering agency of Title XX day care dollars, Wave Hill learned that there was a need for cultural and environmental education programs for after-school centers. Wave Hill saw a great opportunity for a strong community outreach program aimed specifically for after school programs. Pilot funding was obtainable through the Delinquency Prevention program of New York State's Division for Youth via the Mayor's Office of the New York City Youth Board. Wave Hill was able to take advantage of the matching grants program available to cultural and educational institutions and community centers who propose programs and services that will enhance city youth's self-esteem, leisure recreation and cultural enrichment. The following describes the program that Wave Hill and the NYC Youth Board are cooperatively implementing to promote community-based environmental education in the Bronx and Manhattan communities.

Wave Hill began the *After-School Youth Program* January 1, 1979. A field trip program was offered to many kinds of after-school programs: boys clubs, neighborhood houses, scouts and brownies, and day care centers. The aim was for the children to gain new skills, understandings and appreciation of natural and built communities through informal studies and outdoor recreation. On weekday afternoons, from 3:30 to 5:30, the field trips to Wave Hill consisted of a combination of creative arts and natural history activities with an emphasis on sensory awareness. Evaluation of the first six months revealed that indeed, the groups with the most need and enthusiasm for field trips were the school-aged day care centers, especially from the Bronx.

As the program has developed and

grown in popularity during the first year, the goals and scope of the program have expanded to include three additional components. The After-School Youth Program now includes:

1. Field Trips
2. Teacher Workshops
3. Community Action
4. Development of a collaborative of cultural institutions and community service organizations support system.

FIELD TRIPS

To push beyond the traditional daily format of tutorial and recreational activities of many of the centers, the After-School Youth Program of Wave Hill encourages centers to take field trips and to use their immediate neighborhood as a resource. Neighborhood explorations, for example, can be visits to their corner produce markets, firehouse and nearby park. Additionally they can take trips to cultural institutions such as Wave Hill, Bronx Museum of the Arts, the Bronx Zoo and the New York Botanical Gardens. Or they can go to neighborhoods in the midst of revitalization such as the South Bronx where the Bronx Frontier Development Corporation is composting, gardening and building a windmill. They can also take trips to city parks for programs on cultural and natural history by the NYC Urban Park Rangers.

TEACHER WORKSHOPS

Wave Hill began the 1979 fall season of the After-School Youth Program with a teacher workshop. Forty-six teachers from 27 centers met each other, shared ideas, and were oriented and familiarized with the Wave Hill staff and grounds and the outdoor activities their children would do on their scheduled field trip. To launch the winter season there was another teacher workshop. This time the focus was on doing new activities and then preparing the materials so they could continue them or lead them back in their centers. Teachers returned to their centers ready to follow-through with in-center projects such as indoor gardening, raising mealworms and doing sensory awareness games. During lunch we had a group conversation to discern the extent of interest in a series of workshops. "Once a month!" was the spontaneous unanimous reply. The long list of brainstormed ideas for future workshops attested to the group's interest and need.

THE POSITIVE response to the concept of in-service training has resulted in Wave Hill planning for 1980-81 a series of eight workshops conducted once a month from October to June. These free morning workshops will be held in different places depending on the theme: Wave

E E CENTERS (continued)

Hill, city parks, and school-aged day care centers. Coordinated by Wave Hill with support from other NYC cultural institutions and community service organizations, these workshops will be highly participatory and cover a wide range of activities and themes. While promoting community action projects, in-center activities and using the many resources of NYC, the workshops will weave in ways of building language skills, developing sensory aware-

ness, and using nature studies and creative arts to establish integrated after-school day care programs.

An important aspect of workshops with teachers from many centers is that there can develop peer-support and co-operation between centers. Cooperative purchasing of materials, circulating teacher-made activity boxes, and rotating communal films and projectors are real possibilities. In the first three workshops there has already been valuable cross-fertilization of ideas and sharing of supplies.



EAST BAY REGIONAL PARK DISTRICT

The Interpretive Staff of the East Bay Regional Park District is pleased to announce our second "Interpretive Methods Training Course." The tremendously favorable response we received from the participants of the first course has encouraged us to sponsor this exciting class once again. Although the first course was an outstanding success, we have made various modifications to make the second course even more successful. We believe that the content of this course will be creatively refreshing for the beginning interpreter as well as the experienced person.

For many years our Interpretive Staff has travelled around the country and to such far-off places as Australia to conduct training sessions, lectures, and workshops. Now, we are offering this practical training at a very low cost. After all, our goal is to provide a meaningful service to the profession, while covering basic expenses and not produce profit. We are confident that future sessions will be scheduled in case you miss this one. But do try to join us for an intensely productive, exciting week.

Christian Nelson
Chief of Parks and Interpretation

WHEN: April 26-May 1, 1981, Sunday evening through Friday afternoon
WHERE: East Bay Regional Park District, in California's San Francisco Bay Area
FEES: \$325.00 includes lodging, all meals, transportation from lodging to the sessions, and all instruction and materials.

TO RECEIVE COURSE OUTLINE, description and application; contact:
Ron Russo, Interpretive Specialist, East Bay Regional Park District
11500 Skyline Blvd., Oakland, CA 94619 - Phone (415) 525-2233

COMMUNITY ACTION

An important thrust of the After-School Youth Program is to stimulate school-aged day care centers to involve themselves in community action projects. By working in concert with their teachers, community leaders, and neighborhood development organizations, children will see that they can constructively contribute to the well-being of their community. These could be street and park clean-ups, urban gardens, street tree care, and recycling centers. In New York City there is a wealth of service organizations that are eager to provide consulting and assistance for such projects.

DEVELOPMENT OF A COLLABORATIVE OF CULTURAL INSTITUTIONS AND COMMUNITY SERVICE ORGANIZATIONS SUPPORT SYSTEM

REALIZING that the demand for programs and assistance is greater than what Wave Hill can provide directly, one of the strategies of the After-School Youth Program is to have Wave Hill become a resource rather than a focus for school-aged day care centers. One way of achieving this is the development of a support system of cultural institutions and community service organizations. This program component seeks to initiate co-operative ventures between after-school centers and organizations such as Bronx Frontier, Green Guerillas, New York Horticultural Society, Environmental Action Coalition, the Council on the Environment, the Bronx Museum of the Arts, American Natural History Society, and the New York Botanical Garden. Taking programs into centers, assisting in teacher workshops, providing technical assistance, and opening themselves up to late afternoon field trips are some of the ways these organizations can become involved.

We believe that existing school-aged day care programs can be enriched by field trips, teacher workshops, in-center and community action projects. With support and assistance from institutions and organizations such as Wave Hill, they will become community-based environmental education programs. Such a new approach to after-school child care will have positive impact on the children, teachers, parents, and their communities. Although this program is a departure from traditional environmental education, Wave Hill finds it an effective and appropriate way to become actively involved in the communities we serve.

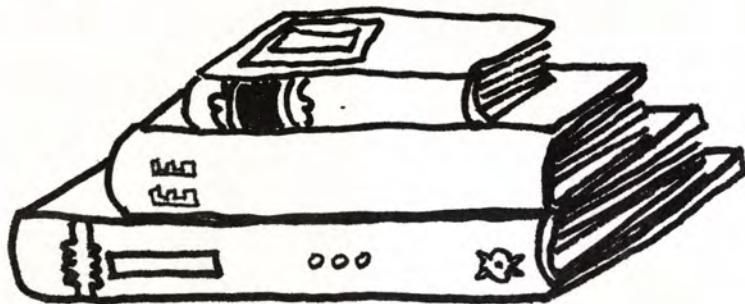
—*SUSAN D. ANTENEN is the coordinator of the Wave Hill After-School Youth Program. TALBERT SPENCE is the Director of Educational Services for Wave Hill and President-elect of ANSS.* □

GOOD READING

for Environmental Education

Central Park Workbook—Activities for an Urban Park, by Robert J. Finkelstein and the Staff of the Central Park Task Force Park as School Program, New York City, 1980. 54pp. May be ordered from Central Park Administration Office, 830 Fifth Ave., New York City, NY 10021. \$3.95 plus tax.

Due mainly to the spiraling cost of gasoline, school field trips are becoming a scarce commodity. This means that teachers who want to give their students educational experiences out of the classroom are having to turn to the environment within walking distance of their school. They will undoubtedly discover that this is a blessing in disguise, for there are a multitude of riches out there for them to explore with their classes, and there are many curriculum materials available to help them do it.



Most of the books and leaflets which have come out through the years, even the more recent ones dealing with the urban environment, have heavily stressed a nature study and science approach. There is also a great deal of material to be found on teaching about pollution and the negative aspects of the man-nature interface. Very few publications, however, have dealt with such positive aspects of the urban environment as urban architecture, history or city planning in a way that can be used for elementary and middle school students.

The *Central Park Workbook* is an excellent and unique publication which helps to fill this gap. It takes a strongly interdisciplinary approach to urban environmental education. Although it was written for use in New York City's Central Park, the ideas it contains can easily be adapted for use in other parks or even for other areas in an urban environment. The specific information that is included about Central Park will give teachers and

classes ideas for the types of information that they will want to seek out about their own park.

The *Workbook* opens with a chapter of introductory activities to help students gain a general concept of what a park is and how it contrasts with the rest of a city. The next three chapters provide background and activities for exploring a park from three points of view: as a work of landscape art, as nature in the city, and as a setting for human activity. In the last chapter, "Bringing it all together," there are exercises to help students think about the future of parks. They are asked to think about the environmental impact of different park uses and to try to solve the problem of conflicting interests among users. The book ends on an upbeat note with suggestions for how students can work to improve their park.

On the first page of Chapter 1, the authors state:

"In this workbook you will find more than ideas and information. We hope you will discover an excitement of exploration as well as methods of carrying out your own park investigation."

They provide this excitement throughout the book by including sensory awareness activities such as one where the students are to compare city sounds and park sounds and then describe them in a word picture or a sound poem. The interdisciplinary nature of most of the activities also heightens their appeal. The exercise on rocks and soil, for instance, allows students to think about outcroppings as structural forms, to feel their texture and to observe and enjoy their color as well as to learn about glaciation. Ideas for combining language arts, particularly poetry, with other kinds of park explorations are particularly good. Some of the activities, such as the one on outdoor

games, will lead students into cross-cultural research.

Activities provided in the *Workbook* give students many opportunities to involve themselves personally with a park in a way that calls upon their own creativity, perceptions and skills. They are asked to do such things as redesign parts of it to their own liking, to plan for its future, to look for the place in a park that they like best and to explain why. One particularly intriguing activity asks the students to:

"Think of a doorway, any doorway.

What message would it give if it could speak? Make several small pictures of different doorways and their messages. If you compare your sketches with those of other people, you're bound to learn a lot about different kinds of exits and entrances. Think of a cathedral, a mansion, a jail or department store. What do doorways tell you about what's inside, or who is welcome? Try your hand at designing an entrance that makes a statement."

Although the word *workbook* is used in the title, and it is written as though the authors are speaking to the students, this book will probably find its greatest use as a resource for teachers. Elementary students would be likely to find the print uncomfortably small, the lines too close together, the vocabulary difficult and many ideas stated in a rather abstract way. Middle or secondary students, on the other hand, might feel talked-down-to by the style — "fantasy is fun," "circles feel right," and other similar statements. Some of the activities would also be too elementary for them as printed. However, for teachers, it will be a very useful and exciting source of ideas and activities for broadening the scope and range of environmental education for classes of all ages.

—Mary D. Houts

Exploring Environments by Ruth Yarrow. High Rock Park Conservation Center of the Staten Island Institute of Arts and Sciences.

This collection of forty-five ready-to-use activities aids teacher/naturalists in encouraging children "to learn joyfully on their own." Each activity can be adapted to a range of ages from preschool through adult. Designed to be used in conjunction

with outdoor exploration, an estimated time to complete each exercise is given to guide the leader with a schedule to keep.

An excellent introductory exercise offers fresh insight into the "to name or not to name" controversy. A number of techniques are suggested to encourage active discovery by the participants.

The activities aimed at awakening sensory awareness include a less competitive variation on the familiar scavenger hunt (with a fun ending). Poem spinning, bleach leaf prints and an invitation to an imaginary "crawl into an animal's skin," indicate the variety of sensual experiences presented.

Basic ecological processes are dramatized in both indoor and outdoor exercises. The "soil recipe" activity challenges young investigators to make their own. "Grocery Bag" and "Yarn Sunbeams" are interesting classroom projects that illustrate energy and food chains.

The approach to studying pond life in the "Discovering Adaptations" section is particularly good. The children are urged to compare human-made water adaptations to the structures that enable insects to make their living under water. Lack of a size scale on drawings detracts from an otherwise well-designed activity.

The unusual "Environmental Consequences" chapter includes "dilemma tales" from West Africa and directions for cutting pizza to illustrate the world distribution of animal protein in the human diet. References in this chapter range from Meadows' *Limits to Growth* to *Diet for a Small Planet* by Lappé.

The value of having a collection of such well-tested suggestions lies more in the variety of activities represented and less in their novelty. Well-phrased thought questions and practical tips included in each activity add to this readily usable handbook.

—Fran Ludwig

Forest Log by James R. Newton, Illustrated by Irene Brady. Thomas Y. Crowell, New York, 1980. 26 pp. \$6.95.

Although other children's books have been written on this same subject, this one will have particular appeal for young naturalists living in or visiting the West Coast. The trees (such as the Douglas fir), shrubs (such as salal), mammals (such as the black-tailed deer) and other animals (such as the banana slug) are indigenous to the Northwest instead of the usual Northeast.

The text is clearly written, each page a stage in the change over centuries of a fallen Douglas fir. It follows the succession of creatures living on the log, from

the squirrels feeding on the cones soon after the tree fell, through the various decay organisms and their predators to the plants for which the old fir was a nurse log. It concludes when the rotted wood becomes part of the forest soil, with the position of the old log still dramatically marked by an arching colonnade of hemlock roots.

Irene Brady's exquisite illustrations will appeal to everyone from the younger listener to the older story reader. She depicts almost all the details mentioned by the text, even a carpenter ant pushing shavings out of its tunnels. She draws these details in a way that is both clear and most attractive—a combination I have found only in the best illustrators' work.

This handsome book succeeds in presenting a basic process of Northwest forest ecology with appeal for readers across the country.

—Ruth Yarrow

When Birds Change Their Feathers by Roma Gans. Illustrated by Felicia Bond. Thomas Y. Crowell, New York, 1980. 34 pp. \$7.95.

This book is obviously written by an experienced author/educator. Roma Gans starts from what is familiar to all children: She includes dogs and people as well as snakes and crabs as she explains that birds are not unusual in shedding their outer covering. She writes in short clear sentences, using simple words to explain new concepts. For example, she describes feather follicles as "pits or small holes in the skin, that you can see . . . in a chicken's skin before it is fried or roasted."

The book briefly introduces several aspects of molting. Using birds familiar to children through their nature, farm or zoo experience, such as blue jays, ducks and penguins, the author gives just enough information to show that while all birds molt, they do it at different times, rates and sequences. In this section, I would like to have seen some information on the possible adaptive advantages of the different patterns, for example how it helps penguins to stay warm to grow a new set of feathers underneath and then to shed the old ones all at once. The author also describes the growth of feathers, the major types of feathers and their functions, and the amazing number of feathers on a bird.

The drawings are effective with a minimum of color. Using only two tones, Felicia Bond gives a dramatic sense of the Antarctic's vastness in the landscape behind a drawing of penguins. The artist's lines have a pleasing playful quality.

My one criticism is of the concluding few pages where Roma Gans suggests re-

lated activities for children—looking for feathers and making headbands. Children reading this book will expect to go outdoors and find a lot of feathers. I have the impression that either the author has spent innumerable hours on her eleven acres to find many feathers, or she is assuming, without looking outdoors, that because millions of feathers are molted each year, that children will find it easy to collect many of them. At any rate, she is not considering the experience of the average suburban/urban American child, who may be disappointed when after weeks of looking, he or she will not have found enough feathers for one headband, let alone a whole shopping bag full. The illustrations show a headband with ample feathers and an overflowing shopping bag full. The author's assurance that "you'll have feathers from many different kinds of birds" would be more accurately stated "You may find some feathers from some different kinds of birds."

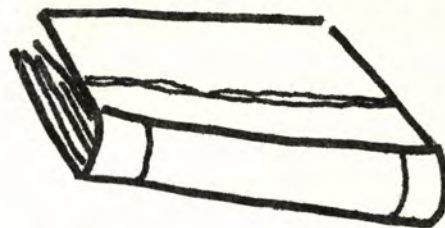
Aside from this, the book presents a fascinating topic to children in an enjoyable way.

—Ruth Yarrow

Directory of Nature Centers and Related Environmental Education Facilities, 1979. National Audubon Society, New York, NY, 1979.

The 1979 Directory of Nature Centers is a compilation of over 900 environmental education facilities in operation throughout the United States, Canada, Trinidad and the Bahama Islands. It is the result of a National Audubon Society survey which indicates the rapid growth of the environmental education movement since the early 1960's. The format of the Directory is alphabetical by state and city, including a generalized state map and a list of natural features or attractions. Each listing gives the name of the facility, the address and phone number, acreage, the different types of people or groups for which programs are offered, the facilities available, special events, hours and admission fee. Edited by Oki Kitazono and published by the National Audubon Society (950 Third Ave., New York, NY 10022), this directory provides complete and oftentimes difficult to obtain information for anyone involved in environmental education.

—Ann Cloutier



the quantum theory (CONTINUED FROM P. 3)

1953 did much to bring materials related to natural resource management into the school curriculum. The CEA also assisted colleges and universities in developing and implementing new courses of study. During this time period, conservation concepts were discussed and examined in classrooms and school laboratories across the country.

This approach continued to expand and gain additional acceptance into the 1960's when a broader orientation was introduced. Urban problems, life in the city and in the suburbs began to be explored and examined as a legitimate concern within the Conservation Movement. This brings us into the late 1960's. At this point I would like to leave the Conservation/Nature Study Movement and begin to explore the evolution and development of School Camping/Outdoor Education.

SCHOOL CAMPING/ OUTDOOR EDUCATION MOVEMENT

Recreation Phase

Like conservation and nature study, school camping and outdoor education also has a long list of leaders who contributed much to the development and enrichment of this unique facet of education. However, in searching for the origins of this movement, one individual stands alone and was, in my judgment, responsible for planting the seeds which, over the years, grew into outdoor education. He also played a role in the conservation movement and has been mentioned earlier in our discussion: William Gould Vinal, the Father of Nature Recreation, affectionately referred to by his friends and admirers as "Cap'n Bill"; twice president of the American Nature Study Society in 1922 and 1923; and president of the National Camp Directors Association in 1925 (now the American Camping Association). Cap'n Bill Vinal was born in Norwell, Massachusetts, on November 29, 1881, and died at his beloved Cape Cod on July 9, 1976. During his long and productive life, he combined the principles of nature study, recreation, and organized summer camping. For many years Cap'n Bill directed a summer camp, Camp Chequesset, at Wellfleet on Cape Cod where he demonstrated his approach. The philosophy and emphasis of his camp led him to form the Nature Lore School at Camp Andree, Briarcliff Manor, New York, in 1927. In addition, during the late 1920's and early 1930's, Cap'n Bill's influence was reflected in summer programs conducted by the Boy Scouts of America, the National Recreation Association, and served as the impetus for public schools

to begin school camping experiences during the summer months. One of the first such programs was conducted in the summer of 1934 for children from New York City; four thousand children per day, two days a week, participated in this pioneer program. Also, in 1934, a resident program was conducted for sixteen New York City boys at the Life Camps at Pottersville, New Jersey. The youngsters lived, worked, played, and learned together for one month under the direction of Dr. Lloyd B. Sharp, one of the giants in the outdoor education movement and one of Cap'n Bill's former students.

School camping, as a result of the early efforts of Cap'n Bill Vinal, began to win acceptance, and in the 1940's "school camping" had grown and matured into the field of outdoor education. The two best known centers at the time were located in the states of Michigan and New Jersey. The Battle Creek Board of Education established a year round resident program at Clear Lake near Dowling, Michigan. The man who played the major leadership role in establishing the program was Dr. Julian W. Smith, another legend in the field, whose writings, lectures, and travels have influenced the development and implementation of outdoor education programs throughout this country and in many other parts of the world.

The Clear Lake Camp was established to serve the school children of Calhoun County, and the philosophy of Julian Smith was the basis upon which its program was built. Dr. Smith stressed education "in" the out-of-doors and education "for" the out-of-doors. Under the aegis of education "for" the out-of-doors, emphasis was placed on the teaching of outdoor recreation skills, such as archery, riflery, fly casting, fly tying, fishing, boating, and canoeing, to mention a few. The teaching of these skills was carefully integrated with the other subjects of the school curriculum, and a strong emphasis was also placed on social interaction and group living. It was believed that through this combination of outdoor recreation activities with other school subjects, opportunities would be provided for children to enjoy and utilize the out-of-doors more fully; and, freed from the artificial confinement of the classroom, children would assimilate more material in the other subjects.

While Julian Smith and his associates were developing and implementing this approach in Michigan, L. B. Sharp and his colleagues were conducting unique outdoor education programs at the famous National Camp located at Lake Mashipicong in the northwestern corner of New

Jersey. In Dr. Sharp's approach, more emphasis was placed on pioneer living skills, such as fire building, outdoor cooking, and the construction of temporary shelters, with a decentralization of these living units in order to enhance the small group approach to learning. The purpose of teaching the pioneer skills was to help the children feel more comfortable and at home in a forest setting and to develop in them an appreciation for our American Heritage. The emphasis was placed on confronting students with real life problems and experiences. It was believed that, as a result of these experiences, school subjects would take on additional meaning. Dr. Sharp believed that which can best be learned inside the classroom should be learned there. That which can best be learned in the out-of-doors, through direct experience in dealing with native materials and life situations, should there be learned.

As I reviewed the major components of these two schools of thought, the campcraft and outdoor living skills stressed by L. B. Sharp and the recreation skills stressed by Julian Smith, I chose to identify the period of the 1940's as the "Recreation Phase" of the Outdoor Education Movement.

Curriculum Phase

With the dawn of the 1950's, both these schools of thought began to place more emphasis on the method or process of teaching the traditional school subjects in an outdoor setting. The purpose of outdoor education in the 1950's became better defined as a means of enriching the curriculum and accelerating the rate of learning. Many colleges and universities across the country added courses intended to train future teachers in the techniques of field teaching. It was during this period of time that two of the larger resident field centers were established for training pre-service teachers. The New Jersey State School of Conservation was established in the spring of 1949 in Stokes State Forest to serve as the field campus for the six state colleges of New Jersey. E. DeAlton Partridge served as the first director of the School of Conservation. In 1950 Northern Illinois University established the Lorado Taft Field Campus in Oregon, Illinois, with Professor Paul Harrison as director. With these two centers setting the pace, other programs at other institutions of higher learning were also developed and implemented. The emphasis was on curriculum enrichment. The justification for removing youngsters from the classroom and taking them to an outdoor school was to help them to assimilate more cognitive material and, through direct experience, extend the retention factor.

In the late 1950's, another element appeared in the outdoor education movement, and this was the utilization of the school grounds as outdoor laboratories. This enabled many more children to participate in outdoor education experiences and did much to popularize the concept of utilizing outdoor areas at all grade levels. This emphasis on method and process in outdoor education has led me to refer to the 1950's as the "Curriculum Phase" of the Outdoor Education Movement.

Conservation Phase

During the early 1960's, another trend began to appear in outdoor education programs. Moving from the emphasis on curriculum enrichment, outdoor educators began to pay more attention to the development of attitudes relating to the proper utilization of natural areas. One of the main factors in causing this change was the administration of the late John F. Kennedy, a period of time I like to consider as the "Thousand Days of Elegance" in American History. During President Kennedy's term of office, more emphasis was placed on the identification of Man's abuse of natural resources than, perhaps, at any other time in our country's history. This can be reflected in the excellent text, *The Quiet Crisis*, written by Stuart Udall, Secretary of the Interior during the Kennedy Administration. Another catalyst was the appearance of the excellent work, *Silent Spring*, by Rachel Carson in 1962. This renewed interest in natural areas and natural resource management during the early 1960's, paralleling the "Preservation Phase" of the 1890's in the Conservation/Nature Study Movement, caused many educators to reexamine and re-explore the school curriculum in an effort to make modifications intended to provide children and young adults with a better understanding of their place and responsibility within the total spectrum of living and non-living things.

Of the entire education community, the group which appeared to be best equipped to provide these meaningful educational experiences intended to develop an appreciation for land management were those individuals engaged in outdoor education. Living in forest lands and woodlands was already a part of their lives, and their knowledge of school curriculum at various age levels was also an asset. Therefore, many outdoor educators made the philosophical shift from the cognitive emphasis of the 1950's to the conservation emphasis of the 1960's. The thrust in most outdoor education centers thus became attitude formation in conservation; a move from the cognitive to the affective. Granted, not all individuals engaged in outdoor education chose to make

such a shift and some remained with the more traditional approach and continued to focus on curriculum enrichment. However, it is safe to say the vast majority of outdoor education programs in the 1960's moved toward an emphasis on attitude formation in conservation. This leads me to refer to the 1960's as the "Conservation Phase" of the Outdoor Education Movement.

ENVIRONMENTAL EDUCATION MOVEMENT

However, in the late 1960's outdoor educators who had made the shift to attitude formation in conservation were beginning to feel a new set of societal pressures. These same pressures were being applied with equal force on those individuals active in conservation education. The pressures of the late 1960's, which were felt by the leaders in both outdoor education and conservation, were caused by an increased public awareness of the problems of air pollution, water pollution, noise pollution, landscape pollution, overpopulation, and excess energy demands. It soon became apparent that it was not possible for educators to focus solely on natural resource management and that it was necessary, when speaking about forest lands, woodlands, and open space, to make reference to life in the suburbs and the cities. As the environmental problems increased in significance and number, an educational phenomenon began to take place. These external pressures in our society forced the philosophical components of outdoor education and conservation education on a collision course, and in the late 1960's there was a mixing and a blending which resulted in a great explosion or "quantum jump" which produced a new product, a new philosophy, a new approach: Environmental education.

It is my belief that the field of environmental education, which has brought about dramatic changes in school programs and new courses of study at the college and university level, would not have come into being at such a sophisticated level and moved at such a rapid rate of development were it not for the existence of the Outdoor Education Movement and the Conservation Education Movement.

There will be some who may disagree with my historical analysis and seek a rationale and a series of events which would imply that environmental education was created separately and apart from the events described thus far in this discourse. This is to be expected since no analysis of historical events ever received universal acceptance. Yet, I submit that a close and concise analysis of all the fac-

tors involved leads ultimately to the conclusion which I have shared with you.

Let us now look at this new dimension of school programs which we call environmental education. What is it? Where does it take place? At what grade levels should it be introduced? Why is it necessary? First, it is definitely not a new subject area to be added to an already overcrowded curriculum, but rather a refocusing and a new emphasis within the framework of existing school programs. Environmental education can and should take place in four learning environments: the classroom, on the school grounds, in the community, and in natural areas. The educational experiences utilized to develop an environmental sensitivity should be found within the four broad curriculum areas of humanities, social studies, natural and physical sciences, and outdoor pursuits. The teaching techniques employed should stress the formation of concepts which leads to the development of attitudes and values: affective learning. This is one of the components that makes the focus of environmental education new and different from the more traditional cognitive approach, which has sometimes been defined as a series of facts passing from the notes of the teacher to the notes of the students without passing through the minds of either.

In environmental education, an attempt is made to focus on real life situations and relate cognitive material to the life style and needs of individual students at every grade level for the purpose of motivating them to work toward the solution of the environmental problems which threaten life on this planet. Students participating in environmental education programs should, as a result, realize the need to use our natural resources more efficiently than they have been used to date. The Dymaxion Theory of Buckminster Fuller which, simply stated, is doing more with less, should become a pattern of their lives. Of course, this is not always accomplished as easily as it is to state it here. Nevertheless, this should be the hallmark of environmental education.

In the 1970's, environmental education programs are not limited to one or two school districts or to one or two states or even to one or two countries. Rather, it has become a recognized and necessary approach to education by academicians throughout the world. A catalyst which contributed much to developing this global awareness was the conference held in the fall of 1975 in Belgrade, Yugoslavia, under the aegis of U.N.E.S.C.O. That conference was very capably chaired by William B. Stapp of the University of Michigan and produced the now famous Belgrade Charter, a world master plan for environmental education, approved by

(continued, page 18)

GRADUATE E E (continued)

gram in environmental education. The thirty-five credit program begins at the Center with a six-credit introductory course. An additional nine credits are taught by the Center's staff. Thus, approximately half of the credits of the program are conducted at the Center by Center staff. The teachers in the program develop a close working relationship with the Center and its facilities.

The Center's facilities benefit because of its graduate program. Laboratory and field equipment must be constantly upgraded to maintain pace with the changing requirements of environmental measuring and monitoring. It is an expensive benefit but one whose cost is more than justified by the impact on Center programming by the graduate study opportunities.

The Center's staff certainly benefits from the need to remain current with happenings in the field of environmental education and environmental science. It does mean that all the teaching staff of the Center participating in the graduate study program must hold a minimum of a Master's degree and have been approved by the cooperating college for whom they will be teaching courses.

THE STAFF is also able to create courses for approval by the colleges. We are not confined to a predetermined program. There is great, encouraged flexibility in developing and offering new programs that can stand the test of review by the cooperating college.

Who are the cooperating colleges and universities? The following list briefly describes the offerings available for teachers at the Schuylkill Valley Nature Center. Please note the Center does offer one undergraduate course as part of its regular offerings.

UNDERGRADUATE

Widener University
Ecology & Field Biology 3 credits

GRADUATE

Temple University
Ecology & Field Biology 3 credits
Aquatic Biology 3 credits
Conservation of
Natural Resources 3 credits
Independent Study 1-3 credits

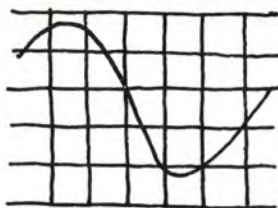
The Pennsylvania State University
Interpretive Service 3 credits
Outdoor Education 3 credits
Natural History for Teachers 3 credits
Environmental Education
in the Classroom 3 credits
Summer Ecology Workshops 3 credits
The City as a Classroom 1 credit
Terrestrial Ecology 2 credits
Aquatic Ecology 1-3 credits

Meteorology 3 credits
Anthropods in the Classroom 1 credit
New Games Workshop 1 credit
Introductory Archaeology 3 credits
Advanced Archaeology 3 credits
Energy for Teachers 1-3 credits
Green Places 3 credits
Student Practicum 9 credits

Beaver College

Nursing and Physical Education
Human Ecology 3 credits
Master's in Environmental Education
Introduction to Environmental Sciences 6 credits
Field Techniques 3 credits
Human Ecology 3 credits
Strategies in Environmental Education 3 credits
Internship: Practicum in Environmental Education 3 credits

In a world in which environmental values are rapidly changing, the need to update and upgrade information in the classroom becomes a problem of staggering proportions. The need is great, the rewards are even greater. A teacher education program provides one avenue for meeting a challenge that will never end. □



THE QUANTUM THEORY (cont.)

delegates from sixty-five countries. Efforts are now being made to implement the results of that outstanding conference in Yugoslavia.

It is interesting to note that environmental education may prove to be the catalyst that not only saves the human race from extinction, but also may serve to unite all the people of the world in a common effort to find solutions to the perplexing and difficult problems that threaten life on the planet. The seriousness of the environmental problems have forced us all to overlook differences in political ideology in order to protect the life support systems of Spaceship Earth.

Let us hope these fine efforts that were started many years ago by the leaders in the Outdoor Education Movement and the Conservation Education Movement and more recently, brought into sharp focus through the deliberations in Belgrade will result in changes in behavior and attitudes among people everywhere.

All mankind must be made to realize the fragile and finite nature of this little speck of cosmic dust we choose to call planet earth. If the message of the Environmental Education Movement is ignored by the people of the world, then the words of the character, Jawues, from *As You Like It* by the immortal Shakespeare may prove to be a fitting epitaph for the human race: "sans teeth, sans eyes, sans taste, sans everything."

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MEET A MEMBER

of the American Nature Study Society

JESSIE KITCHING
72-01 111th STREET FOREST HILLS, NEW YORK 11375
June 11, 1980



Dear Helen,

How thoughtful of you to give me a chance to say something about my nature study-related activities. You can see I'm answering practically by return mail!

I first became interested in natural history in the 1950's, when I spent several very happy summer vacations following the John Muir trail along the crest of California's Sierra Nevada. I can't remember what started me on that, but it was certainly a good idea. To join the Sierra Club was a natural step from there. As I worked as a volunteer on membership and newsletter for the Sierra Club's Atlantic Chapter, I wanted increasingly to change my career and to learn more about the natural environment and how to protect it.

I joined ANSS in 1968-69, when I was studying for an M.S. degree in natural history education at Cornell. When Dr. Richard B. Fischer mentioned ANSS to his classes, we could all see that it fitted directly into our work and careers.

Attending Cornell meant getting a leave of absence from my job as nonfiction book reviewer for Publishers' Weekly's Forecast, where I had been for more than 20 years. When I had my degree, I did not return to FW but worked as an editor for a while, then started Books about Birds to fill a niche for a newsletter for collectors of bird books. Books about Birds reviews bird books and reports news of book-collecting. It has carried bio-bibliographies of 20th century authors and illustrators: Gene Stratton-Porter, George Miksch Sutton, Peter Farnell and Allan Cruickshank.

Its appeal is, for one, to ornithological bookstores--at least 30 bookstores in the U.S. and Canada have ornithological specialties, and their numbers increase every year. Also, the newsletter reaches libraries with bird-book collections, and, of course, individual collectors. Some collectors outside of North America subscribe.

(more)

Helen Russell -- page 2
The rise in interest in popular ornithology is paralleled by the rise in prices of rare or scarce books about birds. This trend started before inflation began to blow up all prices.

Books about Birds is now in its sixth year. The subscription rate is \$9.00, for 10 issues per year. Address: P.O. Box 106, Kew Gardens, Jamaica, N.Y. 11415.

Besides editing the newsletter, I do appraisals of ornithological libraries. I also freelance as a copy editor, picture researcher, indexer and proofreader.

Enclosed is an appropriate picture, Helen. If you use it, please credit Richard Frame (my cousin, who is a professional photographer in Philadelphia and has exhibited his photographs, many of them ornithological).

Thank you so much for the chance to say these things.

With best regards,

Jessie
Jessie Kitching

enc.
P.S. I am the author of two natural-history-related books, "Birdwatcher's Guide to Wildlife Sanctuaries" (Arco, 1976) and (with Barbara Worcester) "Trout Fishing in North America: Where & When" (Oakleaf Press, 1979).

CALLING ALL MEMBERS!

Early in 1981 we will publish a Journal devoted to members' concerns and activities. What are YOU doing (or have you done) that would help other members of ANSS? What special projects have you observed? What concerns should members be aware of or could members assist with? What aspect of the environment do you know a lot about?

Tell your story in 600-1000-1200--no more than 1500 words. Include illustrations if possible. Tell us who you are, particularly in relationship to the article and the Society.

Type it, double spaced with 3 cm. margins on all sides. Start the first page of the article half way down the paper. Give the article a title. Put your name on the top of every page. Number the pages.

Also coming later in 1981: a Journal on Energy. If you have special knowledge on some aspect of the subject or want to suggest someone who does or if you have developed some special teaching technique that you would be willing to share, please send a post card summarizing your proposed topic, the possibility and type of illustrations and the approximate length to: Dr. Helen Ross Russell, 44 College Dr., Jersey City, NJ 07305.

"Miss Dickey, I can see the whole wide world from here." This was Willie speaking as our bus turned from Blue Hill Avenue onto Route 128. This made my day—long before we reached our destination, Drumlin Farm, an Audubon Sanctuary in Lincoln, MA.

Willie was black and a fourth grader from an all black school in Roxbury. The Garrison Elementary School had been attended by highly-motivated Jewish children a year before. In a little over six months the enrollment had changed as the Jewish families moved to the suburbs and black families moved into a community of large apartment blocks and large "mansion" type houses. The black people came almost equally from three sources: Boston's crowded South End (some of these children were second and third generation Bostonians), the southern states of the U.S., and from the islands, mainly Puerto Rico. Thus, their backgrounds, both in schooling and in home environments, differed widely. Many

—MIRIAM E. DICKEY has a life-time of experiences in field tripping with children. She has been associated with the Massachusetts Audubon Society for many years.

of the children not only had little experience outside of Roxbury but seldom left the immediate areas around the school or their homes.

This all-day field trip broadened their horizons while focusing on a typical New England farm. It took us about an hour to reach the farm with much to see all the way.

I had previously taken these children to the Children's Zoo in Franklin Park. The Zoo was almost across the street from the school, but very few of the children had ever been there. This trip of one and a half hours also stretched their experiences. But, then, so had a ten-minute trip into the school yard to see the many maple seedlings which were sprouting under the Norway Maple tree. We tried to keep track of which seedlings had continued to grow and to find out why they did so when so many died.

To be effective a field trip must be well-planned, both for your sake as the leader and for the sake of the children. Both teacher and children should remember the fun and the things learned by seeing and doing. A field trip should never be just a day out of school but an extension of the school activities.



BEFORE THE FIELD TRIP

1. HAVE A PURPOSE for your trip. It can serve as an introduction to a new subject, as part of an on-going study, or as a culmination. The last is often the most exciting for you will be seeing words and actions discussed in the classroom come alive. How often children have said, "You told us that!"

There are so many possibilities for field trips: a pond, a field, or a state forest; a wildlife refuge; an apple orchard or cider mill (or both for their relationship); a bee keeper; a reservoir, water supply, or water treatment plant; a kettle hole or a drumlin (an adult visitor once asked me who Mrs. Drumlin was); a cemetery; a Museum. These are but a few. It seems to me we should make a special effort to see those which are right in our backyards. One kindergarten child that I know of lived next door to a library, but neither he nor his mother knew it was there!

2. TELL THE CHILDREN where you are going, why you are going and a little about what they can expect to see or do.

I went with a day-camp group one day in Marblehead. It was to a Conservation Area which had once been a railroad right of way. The camp director showed the campers some slides which she had taken on a previous trip. I felt this was wrong, that they would find little that was new. But, I was wrong! The campers delighted in finding localities and in looking for such things as the little pink and yellow moth which was sleeping in the evening primrose blossom—"just like a car in a garage."

3. PLAN YOUR TRIP at the time of year when there will be the most to see. If you are going to a beach, consider the tide. Observing birds or exploring tide-pools can be best done at low tide. All seasons of the year can be good. By waiting until the period between April 15 and June 15 you may find the facility overcrowded or that guides are not available.

4. BE SURE TO CONTACT the person in charge of the area you hope to visit and make any necessary reservation if that is advisable. Tell this person about your group: its size, the age level, their preparation for such a trip; and what you hope for in the way of experience.

Plan to arrive at the stated time and to be in the place where you will meet your guide(s) at the proper time. If you have a time limit, be sure that the guides know this.

New Directions for Field Trips

by Miriam E. Dickey



TIPS

for Environmental Education

Find out about safe drinking water, lunch areas, toilet facilities, disposal of trash, any hazards there may be, and rules about collecting.

If guide service is provided, take advantage of it. The guides know their facility better than you do, and a new voice often commands better listening. The man who actually discovered and dug up some of the artifacts at the Saugus Iron Works was something of a hero to my campers. You, too, can learn much from the guides.

5. TRY TO VISIT the area before you take any children there if at all possible. Go over the trail yourself, find out how long it is and how strenuous, and what its main features are. Obtain a trail map or guide book if one is available. I do not recommend giving these to the children, for they are not often used. However, if a child shows real interest, especially in returning with his parents, it may serve a good purpose. Do take one back and put it up for the children to look at.

6. DISPLAY MAPS, along with pictures of the area you are going to and of plants and animals which are typical of the place, especially if they are not familiar ones. Topo maps were always popular with my day campers as were road maps showing where we were going with respect to where we met.

7. BECOME FAMILIAR with the route the bus will take. Some children become very uneasy and fear they are lost if there seems to be any hesitation about the road to take. Also, look for points of interest along the way. Willie was excited by the fact that we crossed over the Charles River five times on our way to Drumlin Farm. We talked about what meandering meant.

8. I PREFER traveling by bus to using parents' cars. It is safer and quicker and all arrive at the same time. Parents may be asked to go along as helpers. Some are fine, but others tend to draw their own child away with little thought to the others. One adult leader to 12 to 15 children is a good number.

Plan for some diversion while traveling—sit-down games, songs, tallying out-of-state number plates, counting cows, etc.

9. ASSEMBLE, with the help of the children, any equipment that you may want to take with you. It should include an up-to-date First Aid Kit. You may wish to add collecting equipment, hand lenses, thermometers, tape measures, compasses, simple guide books. If it is necessary, take containers of cold drinking water or a cool drink.

10. BE SURE to have permission slips from the parents. They should know where you are going, when you are leaving, and when you expect to arrive back. Any needs for special clothing should be stressed.

Be sure, also, that the School Principal or Camp Director has all of the necessary information.

11. TALK with the children about conduct for the day, both on the bus and at your destination. Courtesy toward the guides and respect for the property of others are important. Agree on a visual signal which means come together—avoid yelling. Plan to give them as much freedom as you can by outlining the boundaries. I found "stay where you can see me and I can see you" to be a comfortable rule. Talk about walking in the woods, perhaps single file, as opposed to sidewalk and street walking. Each has its dangers, but they differ. Assign responsibilities when it is appropriate.

12. BE PREPARED to have a quick and efficient roll call. A list of names of everyone is far better than relying on the number who went. It will save lots of time.

13. DON'T BE too ambitious especially if it is your or the children's first trip. Scale it to the age group and understanding of the children. Take care that the bus trip is not so long that there is too little time to enjoy the place when you get there.



AFTER
THE TRIP

1. ALLOW PLENTY of opportunity to talk about what was done on the trip—what was liked best, and why—what was liked least and why. What did they learn that was new? Would they like to go back there sometime?

2. FIND A PLACE to display pictures taken, drawings made, or material collected. A good rule to follow for the last is one good specimen for the entire group. Encourage the children to identify specimens using field guides and other books and to label them properly.

3. HAVE THE CHILDREN WRITE thank-you notes to guides or others who helped them to enjoy the visit. I have found that some children have no previous experience in doing this, and it is a real chore. We made a simple envelope-sized folder and had them draw an appropriate picture on the front and a message inside. This often was limited to a simple "thank you," but with the drawing it spoke volumes. Some go on at great lengths like the girl who thanked Mr. Snow for a wonderful time on George's Island and for scaring her to death!

4. TAKE EVERY opportunity to recall what was seen on the trip. Truly "seeing is believing" and nothing can take the place of the real thing. It further emphasizes the fact that a field trip is another class period and an exciting one.

Talk about what was new but also those plants or animals which are also found around the school or around their homes. What adaptations do these have that make it possible for them to survive in several habitats as opposed to those found only in the woods or a marsh or at the seashore? What are the needs of all plants and animals? Recall their observations on the associations of living things and how they interact with one another.

5. FINALLY, if the trip was well-planned, the follow-up comes naturally. It is well worth it. Go! Have a good time!



THE AMERICAN NATURE STUDY SOCIETY

THE AMERICAN NATURE
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... not many people were concerned about ecology, recycling, energy, endangered species, aquaculture, pollutants, red tides, acid rain, nitrogen cycles, habitat protection, environmental education, reforestation, pesticides, and the peregrine falcon.

But we were.

Through our publications program, field trips, workshops, and other activities, people began to see.