

# Nature Study



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## Fall Dresses for Winter

The American Nature Study Society

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# Up! Up! My Friend



U.S. Dept. of Interior/NPS

Up! Up! my Friend, and quit your books:  
Or surely you'll grow double;  
Up! Up! my Friend, and clear your looks:  
Why all this toil and trouble?

The sun, above the mountain's head,  
A freshening lustre mellow  
Through all the long green fields has spread,  
His first sweet evening yellow.

Books! 'tis a dull and endless strife:  
Come, hear the woodland linnet,  
How sweet his music! on my life,  
There's more of wisdom in it.

And hark! how blithe the throstle sings,  
He, too, is no mean preacher;  
Come forth into the light of things,  
Let Nature be your teacher.

One impulse from a vernal wood  
May teach you more of man,  
Of moral evil and of good,  
Than all the sages can.

Sweet is the lore which Nature brings:  
Our meddling intellect  
Misshapes the beautiful form of things;—  
We murder to dissect.

Enough of Science and of Art;  
Close up these barren leaves:  
Come forth, and bring with you a heart  
That watches and receives.

— William Wordsworth  
*(The Tables Turned)*

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# Points of Departure

DOUGLAS E. WADE

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## The People —

### At The Point of Departure

We can assume that behavioral objectives evolve and find new emphases as societal values change. In certain segments of the U. S. A. and a number of countries, we have seen manifested in recent years an increasing desire for an "Island Earth" *that is fit for living and fit for all life*. A society in which all individuals are ecologically literate and aesthetically sensitive to environment.

Some of the purposing behind aesthetic response is to teach, to elevate, to moralize, to enrich, to transform, to transform critically, and to search out and solve unknowns. Aesthetic responses may be a more relevant and far-reaching measure of mankind's reactions to his plights, dreams, politics, and religions than are economic or technological responses. Admittedly much deep-digging and courageous research and innovative education will be needed before most of us begin to understand the relationships of aesthetics to environment.

Few of us need to be reminded of or to review the gloomy spectrum of environmental degradation and sharply rising projections of further deterioration which are allied to multiplying populations. We have become concerned hopefully in seeking out those paths that can lead to an optimum population and environment, not just for our locale but worldwide. In the past several years, our awareness and sensitivities have been sharpened — witness what is happening on many fronts politically, economically, in courts, educationally, in research, in corporate and citizen actions, etc. But are our sensitivities sharp enough?

In order to identify potential environmental crises in enough time to avoid them and possibly to prevent irreversible global damage, questions have been raised by concerned groups. Some of the questions being asked are:

- What can we now authoritatively say on the subject?
- What are the gaps in knowledge which limit our confidence in the assessments we can now make?
- What must be done to improve the data and our understanding of their significance so that better assessments may be made in the future?
- What programs of focused research,

monitoring, education and information, and action are needed?

- What are the characteristics of local, state, regional, national, and global action needed to cope with environmental problems?

Inherent within these questions and answers are the ingredients of humane man-to-man encounters and cooperations. If we are to understand these complexities of man-to-man and man-to-environment and their inter-connections, we shall probably have to work to establish a strong sense of humility. Probably because we lack the ability to be all seeing at all times, we are still solving for a vast number of "Xs."

### Some Educational Departures

How can proposals for environmental education be construed and implemented? We may wish to consider in a general way some specifics that might be included. (Specifics A through D are adapted from *Man's Impact on the Global Environment: Assessments and Recommendations for Action*, Report of the Study of Critical Environmental Problems (SCEP). M. I. T. Press, Cambridge, 1970.)

A. *Developing new professionals.* This may call for changes in scientific, technical, and professional education and training. A sensitivity to the relations between the processes of production, distribution, and consumption, on the one hand, and the processes of pollution on the other, and a disposition to explore all the potentialities of technology and organization in the search for an optimal balance should be incorporated into their training. This applies to economists, lawyers, and social scientists, as well as to scientists, engineers, and mass media specialists.

B. *An extensive program of public education* with presentations developed in simple and understandable forms through educational institutions, organizations, and mass media.

C. *Target group (action) education:* Farmers, lawyers, feedlot operators, power producers, recycling experts, manufacturers, real estate developers, mine operators, consumers, transportation experts, churches, and urban planners, etc.

D. *General Education:* We must educate our children (and ourselves) to the dangers of misusing the environ-

ment. This can be done both in the schools as a part of the regular curriculum and in special programs designed to familiarize students with the functions of natural and man-altered ecosystems. There is a need to set aside "ecological classrooms" to be used by the general public. Similar areas are needed by scientists so that base lines can be established against which to measure change. (Herein we should commend the work of the Nature Conservancy and the Wilderness Society; and seek through official channels the concerted aid of all land and water vested state and federal agencies, as well as all railroad companies and land developers, in seeking out and taking action to preserve natural areas suitable for "ecological classrooms" and "baseline scientific areas.")

The present surge of activity in classrooms, in mass media, and in various parks, museums, and nature centers, attests to the general recognition of these needs. In many cases, however, and especially in the schools, a critical lack of teaching material, experience, and expertise has forced many individuals to improvise programs whose quality and soundness are less than satisfactory. A much greater effort is needed to bring professional competency into the development of these programs. It therefore behooves the teacher-training institutions to reassess their programs and develop stronger environmental research and education programs, with improved inter-departmental understandings and approaches.

No change in life-style will occur unless the need for change is broadly recognized and accepted. It remains the responsibility of those who study environmental problems and understand their dimensions to convey this need to the public. It is also their responsibility to determine that information, organized in a form which can be understood by the public, accurately reflects the evidence and scientific arguments taken from their professions. Several existing organizations, appropriately expanded, can aid greatly in this process of bringing information to the public and to decision makers. (There are many examples of environmentally-oriented organizations and productions.) Imagination, adequate funding and energy are required for the development of addition-

al means for increasing enlightened public discussions of critical environmental problems and action programs.

E. *State level aids to educational endeavors*: At earliest time there is needed comprehensive directories running the gamut of educational institutions (including departments), organizations (including corporate and labor), agencies, centers and parks, key individuals, etc.

Also needed are regular (weekly?) informative and useful newsletters adequately staffed with statewide systems of reporters, editors and reviewers.

A system of state, regional, county, and local workshop (training) sessions should be considered in constructing state plans. Some states, regions, and counties already have conservation or environmental education councils.

Special publications should be obtained in sufficient numbers for wide-spread or target group distribution.

Information retrieval systems should be tapped. Applied systems analysis and computer-gearred evaluation systems should be interlocked with state and other level proposals.

Central state-level offices manned with competent personnel can act to motivate and correlate the intents of all the "aids" mentioned above.

State and regional commissions should be formed which can act as watchdogs and press for action on all fronts of environmental education. These can be "interlocked" with other commissions devoted to technology of pollution control and resource inventory planning and management and monitoring.

### Biophysical —

#### Some Points of Departure

The biophysical environment of any state or region can be more thoroughly mapped and delineated within political (geographical) boundaries. Ecosystems and sub-divisions thereof can be delineated. Areas that reveal greater or lesser degrees of degradation can be described.

Difficulties of delineation occur when environmental factors and influences cross state, regional, or international lines. Problems become more complex, for example, when considering international shipping routes into Chicago via the St. Lawrence and Great Lakes waterways, as well as regional and some international routes that touch the mid-west via inland waterways of the Mississippi, the Illinois and the Ohio rivers, or the air-transport complex of O'Hare near Chicago. The depredations of the Chicago-Gary manufacturing complex; the Chicago drafting of water from Lake Michigan and output of wastes into the Illinois River via the Sanitary Canal; the air effluents from power and manufac-

turing concerns in St. Louis, Chicago, etc. that affect large areas regionally or interstate. These are examples of universal and very difficult problems to approach and resolve. (It is of note that Illinois has started suit against Milwaukee for pollution of Lake Michigan because of flow southward into Illinois' jurisdiction.)

### Lack of Action —

#### Some Points of Departure

A. The set of some segments of the country against "planning" and "zoning" will undoubtedly prove to be a stumbling block toward correcting forms of pollution or ill-advised land and water development, especially in smaller political sub-divisions. Some Northeastern states such as Vermont and New Hampshire will have to develop strong laws to protect against ill-advised developments.

B. The marriage of the U. S. Corps of Army Engineers with the Soil Conservation Service in undertaking stream-straightening and "flood control" work, should come under critical examination, lest states lose worthwhile "natural" assets.

C. Examination of the need for more power and critical analyses of atomic energy power plants (side effects), and waste disposal should be pressed more vigorously than hitherto.

D. Examination of mass-transportation needs in metropolitan areas.

E. Critical re-examination of all agencies and institutions involved in resources management to eliminate programs at cross odds.

If environmental actions are to take place on all political levels, there will be a need for local, state and national powerful environmental quality lobbies. There will have to be stronger, better-funded concerted organization of all interested groups and citizens. There will have to be clean-cut delineation of needs, constraints (ecological, ethical, aesthetic, legal, and economic), and strategies. Legal suits will probably have to be pressed. It may become necessary for states to devise a system of special courts devoted to environmental law matters, or to step up training of judges and lawyers.

Citizens should become versed in present environmental statutes and knowledgeable about environmental agencies and enforcement activities of standards and regulations. Weaknesses or gaps in the statutes and enforcement should be detected and corrected.

Guidelines for citizens and groups to undertake all sorts of action in favor of environmental improvement should be developed and published in sufficient quantities to reach all citizens within

each state. There must be constant refinement of the guidelines as fresh ideas are added.

The tempo and resolve for arriving at significant optimum population/environment quality should be fierce. *Laissez-faire* or weak compromise routes will lead to decay of the Nation and perhaps to anarchy and destructive revolution.

If the full intents of PL 91-516 (The Environmental Education Act) are to be carried out, it should be the charge of the people of all states to coordinate all forces and mount plans of environmental education, across all fronts, leading to action programs which will create a genuine and optimum population/environmental quality.

Make no mistake, however, that developing and carrying out statewide plans, leading to universally acceptable and meaningful action will be easy. Accomplishments will depend upon the best thinking and cooperation of all concerned parties. For once, those who will be responsibly concerned, assigned and accountable should be able to lay aside all petty competitiveness. *The stakes are too high not to call on the best attributes of human beings to become dedicated to striving for an environment fit for living and fit for all life.*

### Welcome New Members

Black Hills National Forest, Custer, S. D.  
William M. Brush, St. Louis, Missouri  
Colby College Library, Waterville, Maine  
Forrest Cole, Deerfield, Illinois  
Desoto Middle School Library, Arcadia, Fla.  
John F. Earl, Springfield, Mass.  
Environmental Education, Seattle, Wash.  
Phyllis Faber, Mill Valley, Calif.  
Harry H. Feldman, Indianapolis, Indiana  
Sydney Sue Fredericksen, Ithaca, N. Y.  
Bud Herrman, Alexandria, Virginia  
Joseph R. Hovance, Chatham, N. J.  
Walter Knausenberger, Blacksburg, Va.  
Alan J. Kulozewski, Urbana, Illinois  
Mrs. Gail Mayo, Fairbanks, Alaska  
Miss Rosemary Menninger, Alamosa, Colo.  
Frederick J. Muehl, Griswoldville, Mass.  
Gary Randorf, Freeville, New York  
Science for the Blind, Bala-Cynwyd, Pa.  
State Industrial Farm for Women,  
Goochland, Virginia  
Sussex County Votech School, Sparta, N. J.  
Frances G. Twitchell, South Bend, Indiana  
Stewart Welsh, Cincinnati, Ohio

We can no longer waste the resources that refresh man's spirit — anywhere — in the hope that they can be replaced elsewhere. In a nation of 200 million, one man's disregard for the health of our environment is likely to be multiplied a thousandfold. Few of us are aware of the overwhelming destructiveness of multiple carelessness. And fewer yet are those who are inclined to make the first alleviating move.

— Stewart L. Udall

# Cap'n Bill and the Birds

*Editor's note: This story as told by William G. Vinal is a rare opportunity to present "behind the scenes" episodes from Cap'n Bill's years of experiences which show the value of out-of-class nature study activities, still underrated and often ridiculed by some professional educators who do not see the relation of nature study to adult interests and livelihood.*

WHEN A FARM BOY I raised Canadian Geese, Mallard Ducks, Homer Pigeons, and White Frizzled Fowl whose feathers curled toward the head. When exhibited at South Weymouth Fair they always won the 1st and 2nd prizes since they were the only entry of the kind. Raising wild Canadian Geese was a nefarious business. A rich shoe manufacturer, who used them as decoys to attract migrating geese to a gunning stand, paid me with a pair of much needed shoes. When chickens were sick, or injured, they were brought into the house for warmth at the kitchen stove. I recall building miniature trapezes for them to balance on and since I couldn't cluck, a rap on the floor would bring them a-running for crumbs. My Mother fed the "snow birds" (Juncos). This pioneering called for corn, clean water, grit, and a certain amount of attention which, I believe, gave me an affinity for birds.

WHEN A STUDENT AT BRIDGE-WATER NORMAL (1899-1903) some of us men students would take a walk before breakfast. One of the funniest sights I ever saw (so I thought then) was a bevy of female members of the faculty looking through opera glasses at birds high in the elm trees. As a farm boy I could call up blue jays and crows and shoot them. It was either these rapacious birds that got the corn, or the family. I would imitate these birds and the fellows went into gales of laughter. I never heard what the birders' reactions were but doubt if they were even amused. At the time, it never occurred to me that my decorum might change or that I would ever be teaching students to know and enjoy birds.

LATER AT BROWN UNIVERSITY. Dr. Herbert Eugene Walter, Professor of Comparative Anatomy, gave credit for this course but not for the early-morn bird walks that he led. I gravitated to his "bird walks" with great profit. I remember his amusement when I heard the call of the chickadee and boldly exclaimed, "There's a phoebe." Dr. and Mrs. Walter published "Wild Birds In City Parks," (1912), a book for identifying 200 birds. Mrs. Alice Hall Walter then was the editor of the school section of BIRDLORE, published by D. Apple-

ton. I possess a post card dated 26 Oct. 1916 in which she "acknowledges with thanks your valuable article on the Black-Crowned Night Heron. This is the kind of article which helps as it is to be hoped that more teachers will take up the study so thoroughly and understandingly." She soon called to ask if the heron standing in the brook was alive or stuffed. I had to admit that it was a mounted bird (lacking a telephoto lens was no excuse) yet I did not seem to lose my reputation.

AT RHODE ISLAND NORMAL (1911-1925), Bird Study was introduced. We had to go to Swan Point Cemetery or the Butler Asylum grounds to find feathered folk. (Thanks for open spaces brought on by the dead and mentally disturbed.) I gathered statistics from the 33 most-used readers in the First Grade. Of these, 60 percent had such styles as: " 'Why? Why? Why?' said Goosey Loosey. 'Quack, Quack, Quack,' said Ducky Lucky . . . But the half chick only laughed and said 'I'm off to see the King.'" The wolf was blowing the house down and the hen was wearing a thinking cap, or baking bread for the ugly duckling. Against considerable opposition I managed to have a hen visit school. You should have heard the children announce the arrival of an egg. They cackled louder than any hen. The hatching of the chicks caused pandemonium. In those days there was also a kindergarten and a Montessori Room. When we sent our daughter to the realism of Montessori the kindergarten folks ceased to speak to us.

NATURE LORE SCHOOL was born in 1920 at Camp Chequesset, Cape Cod by vote of the National Association of the Directors of Girls Camps. Originally programmed for nature counselors in camp, many teachers also attended. Many distinguished leaders volunteered including: Anna Botsford Comstock, Dean of Nature Study at Cornell University; Edward Howe Forbush, Massachusetts State Ornithologist; Manley Bacon Townsend, President, New Hampshire Audubon; Schuyler Matthews, author of "Wild Birds and Their Music" (1921); Dr. George Wilton Field, Director of Massachusetts Fish and Game.

Dr. Field once asked the students "Do you want to see Bill's hens run?" Then he imitated a red-shouldered hawk and my whole poultry yard took to cover at the merriment of the assembled leaders. Dr. Field tried to save the heath hen on Martha's Vineyard Island. The first bill introduced in the Legislature said "To save the heathens of Martha's Vineyard" which the Islanders did not like. Dr. Forbush and I led trips by sailing dory to Great Island to band the young of Black-Crowned Night Herons. One of the students was Dr. John W. Aldrich who since 1941 is the ornithologist with the Bureau of Sports Fisheries and Wildlife.

WHILE AT WESTERN RESERVE UNIVERSITY (1927-1936). The *Nature Guide School* was established and here I knew Frances Hobart Herrick, author of "The Home Life of Wild Birds," the standard biography of "Audubon, the Naturalist," and the first book about America's national bird "The American Eagle." Harold Madison was then Director of the Cleveland Museum of Natural History and John W. Aldrich (mentioned above) was its Curator of Birds. The climate was favorable for a bird course with credit at the Nature Guide School. I initiated, with success, a movement to keep the bob-white on Ohio's song-bird list, when sportsmen (?) tried to make it a game bird.

THEN AT THE UNIVERSITY OF MASSACHUSETTS (1937 - 1951). I never claimed to be an ornithologist. My field is nature study, or as it came to be, nature recreation. Bird study is a part of nature study. You should have heard the "Course of Study" Committee argue on what my new department should be called. I really didn't care what they called it. To me a rose is a rose no matter what the name. They finally settled for "Biological Field Studies." That seemed to have some dignity. They ruled out a course in Camping but I had the pleasure of seeing 99 per cent of my students experience camp leadership with profit and credit only to themselves.

The Massachusetts Audubon Society (June 1939) had a photo of its traveling *Conservation Van* in its bulletin. On the side was painted "Massachusetts Con-

ervation Council," which was made up of 15 well-known organizations. It operated from the headquarters of the Massachusetts Audubon Society, the oldest Audubon Society in the United States, of which C. Russell Mason was then Executive Director. Frank Kingsbury and Bill Nutting, two seniors at Massachusetts State College, were in charge of the first expedition which was to visit New England Camps and demonstrate nature programs. The Van started from Boston Common with a handshake by Governor Leverett Saltonstall. The van had such things as two bunks, snakes, beaver, a de-glanded skunk, and charts. By 1952, twelve men had served who now have Ph.D.'s and four of which are nationally known ornithologists. This same year, sponsored by Massachusetts Audubon, students majoring in nature recreation started giving lessons in the public schools of Topsfield, Mass. Kenneth Pike and Evelyn Bergstrom were the first instructors.

**BIRDWATCHER or ORNITHOLOGIST?** I was brought up on a bird farm. I am not an ornithologist, nor do I deal with the science of bird classification or anatomy. I am a *Nature Recreationist* and as such am interested in flowers, trees, shellfish, gardening, camping, as well as the birds. But I have given many courses on birds.

Many people study birds as a hobby. I suspect that 90 per cent of my former students have feeding shelves, own at least one bird book, and that 50 per cent belong to an amateur bird society. Less than one per cent, I think, have caged birds, practice falconry, brag about skill with a shotgun, or collect bird corpses.

Among my flock of students have appeared about one ornithologist for every 100 birders. To say that I produced them would be boastful enthusiasm: \*Jim Baird, President, N. E. Bird Banding Association and foreign travel Audubon leader; \*Al Hawkes, Executive Director, Rhode Island Audubon and Editor of their magazine; \*Bob Wood, studying Skuas Penguins in Southern Antarctica during our winters; \*Marc Sagan, Interpretive Naturalist, National Park Service, Washington, D.C.; Fran Gillotti, Director, Hidden Valley Sanctuary and authority on hawk flights; John Aldrich, United States Ornithologist, Washington, D. C.; Bob Johnson, retired, but called back years to give course in Ornithology at the University of Indiana at Bloomington, Ind.; Helen Howland Passano, Assistant Director, Manomet Bird Observatory, south of Plymouth Rock; Grace Lowe Reed, who

listed 238 species of birds in 1970 and Harvey Segal, Co-author with teachers of "Birds of Eastern Carolinas."

There would have to be considerable research to determine whether this ratio of 1:100 is par for the course. If a person did become an Ornithologist through a chain of experiences, he became quite different in his chosen enthusiasm. I guess the moral is that one has to be careful about what he thinks is funny, important, or minor. It may be for the birds.

**FOR CAP'N BILL and the BIRDS and NON-FEATHERED NEIGHBORS.** Mother V and I were on the Cape for Thanksgiving last year. On returning we found a glass bottle and a note "for Cap'n Bill and the birds." The jug had a hole in the side. It was a "squirrel proof" bird feeder. Squirrels can tight-rope and even climb the side of a house, but not a glass jug. It has to be colored glass so that birds can find the opening without injury. I had to call my neighbor to learn how to make a hole in glass. His answer was: "A diamond drill is expensive but can do it in three minutes. A brass tube and carborundum takes 25 minutes." So far only chickadees have ventured into the bottle.

Two more incidents illustrate our continuing "affinity for birds." Mother V and I were dee-lighted to have two cardinals (feathered) move in. Then they disappeared and we were deeply concerned. The male reappeared with a band on his leg. I wrote to Helen Howland Passano inquiring as to who might have banded "our" cardinal. A few days later Myron Litchfield phoned to tell me that he lived one mile in a straight line from the Vinals and had banded a cardinal about the time "our" cardinal had disappeared.

A young man just home from Korea telephoned that he had a most curious bird. Could he come and show it to me. Pleased with the compliment, I replied, "Come on, but I do not promise to name it." He had a *dovekie*. I explained that they were often driven inland by storms and if they landed, could not get going again. I asked "Do you want to eat it, as the Eskimo would, or do you want to release it?" (I was sure of his answer as demonstrated by his stroking and fondling the bird.) "I know some people who band birds to learn about migration. Would you be willing to have me call to see if they might be interested?" He would. I called the Litchfields and Mrs. L answered. "Indeed we would. I have already banded two dovekies today, releasing one in Cohasset Harbor and the other in "Old Oaken Bucket Pond." The "warrior from Korea" gladly delivered his prize.

**CONCLUSIONS:** The prestige of bird study is coming to the fore. We must be cautious in drawing the boundaries of bird study. A formula for knowing bird activity is difficult. Relationships may be exploited for recreational, as well as economical, reasons. If bird study is complex, natural resources are many complexes. The earth, the water and the air are resources but so are all the inhabitants thereof, including humans. Renewable resources can be managed. Saving, or building, a qualitative environment for birds, children, teachers, in fact all people, is a must.

## Living Historical Farms Proposed

Several years ago Dr. Ruth Hopson Keen worked to get model farms set aside to serve as models which school children and others might visit. These would serve to orient the city children to the problem faced in providing them with food. There seems to be much apathy on the part of legislators and others and the idea had been set aside.

Another effort with a related interest is now in effect. This is centered at the Smithsonian Institution as the Association of Living Historical Farm and Agricultural Museum. ANSS members who have an interest in this field could request copies of the Living Historical Farms Bulletin. Write to John T. Schlebecker, Living Historical Farms, Museum of History and Technology, Smithsonian Institution, Washington, D. C. 10560. A publication tentatively titled "Living Historical Farms Handbook" is in preparation. This will include an index; Directory of Persons Interested in Living Farms; Beginning a Farm; Sources of Money; Historical Research; Staff; Visitors and Interpretation; Capital and Overhead; and Chronology of the Living Historical Farm Movement. This should soon be available.

Some members of Congress have shown an interest in the movement, but bills submitted to date have not made much headway. More public support is needed.

The winter day in the woods or fields has commonly the stillness of twilight . . . I hear only the strokes of a lingering woodchopper at a distance, and the melodious hooting of an owl, which is as common and marked a sound as the axe or the locomotive whistle. Yet where does the ubiquitous hooter sit, and who sees him? In whose woodlot is he to be found? Few eyes have rested on him hooting, few on him silent on his perch even . . .

— Henry David Thoreau

\* Served on the Conservation Van.

# An Early American Journal for Nature Study

RALPH W. DEXTER

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At the turn of the century, a magazine was founded and published for the promotion of nature in general and for bird study in particular. This was at first entitled *American Ornithology for the Home and School* and was edited by C. Albert Reed. The first issue appeared in January, 1901. For some reason, beginning with volume two the following year, the editor signed his name as Chester A. Reed by which name he then became well known as a leader in the field of natural history. Beginning with volume three, the title of the publication was slightly changed to *American Ornithology—Bird Magazine*, and a new cover design was used.

This was a monthly magazine published at Worcester, Massachusetts by Charles K. Reed. A subscription cost fifty cents per year, but after the first year the price was raised to one dollar. The subtitle read, "A monthly magazine devoted to the study of birds." The last issue was number seven of volume six for July and August, 1906. At that time, the post office would no longer accept the magazine as second class mail and hence it was discontinued for financial reasons.

The cover design was executed by the editor and cover photographs and drawings were contributed by both the editor and the publisher. The contents included articles on bird life, verses about birds, and a synopsis of selected bird species. These synopses included the Latin name, geographical range of the species, a description of the bird, and a description of its nest and eggs. Notes were given on habitats, habits, and behavior, with many illustrations including frequent color plates, although the quality did not match modern color printing. The species were not selected in any special sequence, but from four to six were usually included in each issue of the magazine.

The publisher, Charles K. Reed, was a dealer in nature books, supplies for naturalists, and educational materials for nature study. The editor was perhaps best known as the author of *North American Bird's Eggs* first published in 1904. This monograph of 384 pages contained 51 plates and 566 photographs of bird's eggs. Also included were 31 illustrations of bird nests. This classic work has recently (1965) been

reprinted and made available at a modest cost as a Dover reprint. Another notable work of Chester A. Reed was the production of a popular *Bird Guide* published in two parts, one for land birds and one for water and game birds east of the Rocky Mountains. These guides were the standard for most bird-watchers until the appearance of the eminently successful handbook, *A Field Guide to the Birds* by Roger Tory Peterson in 1934.

One of the contributors to *American Ornithology* was Dr. Robert Wilson Shufeldt, a Major in the U.S. Army Medical Corps, who devoted his spare time to the development of American Bird Study. He became one of the most notable amateur ornithologists during his lifetime (1850-1934). One of Dr. Shufeldt's articles was entitled, "Photographing game birds from life" (Vol. 2, No. 1).

With the publication of his monthly magazine, his field guides, and his book on bird's eggs, Chester A. Reed became one of the major contributors to the development of nature study, especially bird-watching, during the early part of the nineteenth century.

## Brief Report of the Treasurer

Evidently wondering what the effect of inflation and price freezes might be on the ANSS, Editor Stan Mulaik has asked that I give a brief report on our financial status.

As we have for several years, ANSS is running again this year on a very close budget. We are not a big operation by almost any standard—indeed, one wonders that an organization with so small a budget can accomplish so much and wield the influence it does. Perhaps I should keep our methods a secret and sell them to struggling giants like AAAS and some of our state governments for a handsome fee.

In 1970 we took in \$4055.65 from various sources—membership dues account for about 65% of this with sales of Packets, gifts from concerned persons, and tickets to annual meeting functions accounting for the rest. We began the year with a cash balance of \$2505, and ended it with a balance of \$2203—a slight decline, but not out of line with year-to-year variations. The picture of 1971 will probably be about

the same. Our membership holds fairly steady at about 850, with about a 15% turnover each year.

We have been most fortunate to have the good services of Park Press in Indiana, Pennsylvania in printing the journal. We feel we are putting out a high quality publication at a very reasonable price. We solicit no advertising (a decision of the Board of Directors), and at the same time pay no stipends for articles published. All our officers and the editor serve without salary of any kind—we manage to reimburse them for their expenses, although I suspect some have donated quite a bit by way of postage money, etc.

We also benefit by our association with the American Association for the Advancement of Science, with whom we hold our annual meetings each year. As an affiliate organization assigned to one of the AAAS sections (Education), we are able to have hotel rooms for meetings and the annual banquet without charge. We have our program printed as part of the annual meeting book.

We spend about \$2200 a year to publish NATURE STUDY (last year it was \$3124 because of the large over-run for the Teach-In issue). We pay \$50 in dues to IUCN, and \$25 to AAAS Cooperative Committee (science and education). Last year it cost \$534 just to keep track of our members—changes of address, printing stationery and ballots, postage and phone.

We have members in 47 of the 50 states and the District of Columbia and Virgin Islands (none in Alabama, Hawaii, or Rhode Island), in Canada, New Zealand, Australia, India, Brazil, Bahama and Japan. The journal is sent on an exchange basis to North Korea and Switzerland through IUCN.

There has been an increasing number of libraries and agencies of government subscribing during the past two years.

As I see it, there is no reason why ANSS cannot expand in influence along with its membership. We need some imaginative promotion and some new alignments with other organizations. Sectional and state nature study groups need to be formed (as has been done so well in Utah). There is much we can contribute to the cause of environmental education and nature interpretation if we all pull together.

JOHN A. GUSTAFSON  
Treasurer

Perhaps the deepest source of consciousness is nature. Members of the new generation seek out the beach, the woods, and the mountains . . . They go to nature as a source . . . The forest is where they came from, it is the place where they feel closest to themselves, it is renewal.

—Charles Reich, "The Greening of America"

# The Fantastic Growth of Our Nature Movement

HAROLD GILLIAM

The commentators and pundits who at the turn of the year endeavored to sum up the meaning of 1970 were so preoccupied with the dismal shape of national and world affairs that they almost unanimously failed to note the most hopeful development of the annum. In spite of the miasmal atmosphere hovering over the nation—a mood that grows out of the continuation of the war, inflation, unemployment, and a pervasive sense of disillusion reflected in the arts—there is at least one salutary portent that may signal a major change of direction.

It is the fact that hundreds of thousands of Americans are turning to nature for recreation, understanding and insight. They are going to "the woods" not merely as a hobby or diversion but as part of a search for meaning—and possibly even as a key element in the development of new life styles.

Most teen-agers a few years ago scorned bird watching as hopelessly square; today by the thousands they are boning up on Roger Tory Peterson and hiking miles for a glimpse of a marsh wren or a white-tailed kite. Businessmen whose outdoor excursions were chiefly limited to whacking a ball down the fairways are studying the life of the tide pools or probing the secrets of the bristlecone pine. Whole families attend courses in natural history and take group field trips to woods and mountains and wild beaches.

In the Bay Area a principal indicator of the new nature movement is the growing popularity of the imaginative Natural Environment Studies program sponsored by Berkeley's UC Extension. The program which in 1965 presented a single course has become so popular that there are now some 20 classroom and field courses per quarter, open to the general public, on such subjects as San Francisco Bay, human ecology, and one with the intriguing title: "Japanese Gardens, Zen, and Environment."

About half of the courses are field programs, such as the series: "Introduction to Field Natural History: A Program for the Family," which meets on Sundays in such places as Muir Woods, coastal marshes and Pinnacles National Monument. Other courses involve expeditions farther afield, ranging from Tamalpais to Mendocino, Asilomar, Yosemite, Lassen, the Grand Canyon, Bryce and Zion.

Impresario of the Natural Environment Studies is a quiet-spoken, bearded young biologist named Ronn Patterson, who is convinced that a knowledgeable, sensitive relation to nature is indispensable to a full life. Some 4000 people have taken his courses, a number that is particularly impressive considering the stiff fees required to make the program self-supporting. Depending on time and distance involved, costs range from around \$40 to several times that amount. Some scholarships are available, however.

## Institute of Man in Nature

Sponsoring similar programs on a non-credit (and consequently lower cost) basis is the California Institute of Man in Nature (P.O. Box 932, Berkeley 94701), headed by naturalist John Olmsted, a lanky, 32-year-old, latter-day John Muir, who also serves on Patterson's UC Extension faculty. Olmsted takes school children by the hundreds (including underprivileged youngsters) on Cross-California Ecological Field Trips by "Earth Bus," supplies ecological teaching materials for classroom use, and conducts adult field trips to deserts and mountains and particularly to the "Million-Year Landscape" on the Mendocino coast, where he and his associates have been developing an Environmental Study Center and conference group. They are currently planning an equinoctial conference on "Whales, Pelicans and the Pygmy Forest," March 21 and 22.

One of the oldest groups involved in nature education is Audubon. In the East Bay, about 1000 people have attended Audubon's Nature Training Program (conducted in cooperation with the city of Berkeley) for teachers, youth leaders, camp directors, adults in general and such specialized groups as docents for the Oakland Museum's ecology section. Within the past two years the program has tripled in size to meet the increasing demand for nature information. One innovation is a special program for teachers and parents of pre-school youngsters.

More than 4000 people went to the wilderness last year under the auspices of the Sierra Club, camping and hiking on trips averaging from one to two weeks. The amazing growth of the club's membership is another index to the back-to-nature movement. Within the past two years, 43,000 people have

joined the organization, bringing the total to about 113,000 members. The club now has 33 chapters, covering every part of the nation.

The need for nature is also expressed in such statistics as California State Park attendance, which increased by 25 per cent last year (at a time when the population was growing by less than 5 per cent). A recent public opinion poll indicated that one of the most popular features of the parks was the nature-interpretation program, and visitors asked that it be expanded. Evidently visitors are no longer satisfied merely to be exposed to nature; they want to understand its workings and experience it more fully.

Further evidence of this deepening interest is the success of the regional Natural History Guides published by the University of California Press—paperback books on such subjects as Bay Area trees, mammals, climate, landscape, wildflowers and seashore life. Other titles pertain to Southern California. Last year nature buffs bought 36,500 copies.

## Organic Gardening

Another indicator is the growing enrollment in nature programs offered by the California Academy of Sciences in Golden Gate Park, by the Oakland Museum and by junior museums in San Francisco and other parts of the Bay Area. Other aspects of the new nature movement are the growth of organic gardening (see William Bronson's article on the remarkable UC Santa Cruz Garden Project in the current issue of "Cry California"), the "nature-sensitivity" sessions sponsored by Esalen and other encounter-group institutes; the rural communes; the intense interest among college students in Oriental religions and philosophies stressing relation to nature, particularly Zen.

The meaning of the contemporary turn toward nature seems quite clear: It is part of a dawning realization that our plastic, mechanical, hyperkinetic, industrial culture is not only destroying the natural resources of the earth and threatening the survival of all species, it fails to respect man's own sensory and spiritual requirements as well. The human psyche has needs that are not met by an environment of asphalt and neon. It needs to interact with the organic and the vital—with green plants

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# Youth in the British Landscape

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England, Scotland, and Wales include some of the world's most beautiful scenery and much of the natural resources for their several million people. Diversity of terrain lends charm—and challenge. The Cambrian Hills of Wales, for instance, are ancient worn-down mountains reminding one of the Appalachians, much sought for recreation. Elsewhere limestone ridges create pastoral "downs" where farmers graze sheep and cattle. Lowlands support patchworks of fields separated by innumerable hedgerows, a tight agricultural pattern resulting from 2000 years of social history—possibly on the verge of a land-use revolution. Quaint villages with chimney pots indicating lack of central heating stipple the landscape with their walls and roofs of brick and stone, wood for building having become scarce several hundred years ago. And cityscapes of vast industrial centers discourage tourists, who seek greener pastures or cathedrals surrounded by fewer traffic problems.

Students of the history of British land-use study the complicated geology of lowland southeastern and highland northwestern Britain, its chalk downs, slaty mountains, granitic moors, acidic bogs, alkaline fens, and estuarine plains. They consider the advent of native vegetation on the developing soils following Pleistocene glaciation, first tundra plants such as one finds now in the Scottish Highlands and coastal promontories, then the woods of Scots pine, and finally the great forests of oak, beech, and ash which came to dominate most of Britain. Significant also to land-use students are the animals, each colonizer becoming more or less native as it found its niche amid the rocks, soils, and plants. Along with other influential animals came Stone-Age Man. His mysterious megaliths still stand in places like Stonehenge. As centuries passed, Bronze-Age, Iron-Age, and Steel-Age Men brought their cultural impacts to the scene. Today in an age of awesomely complex alloys, petroleum, and nuclear power, men are making the greatest changes yet at an ever-increasing rate. What will the landscape be when today's youth are the adult decision-makers?

## Seek Trends in Britain

Early in the summer of 1971, my wife and I made a six-week visit to record present landscapes photographically and to try to assess experiences young people are getting which may be pertinent

to tomorrow's environmental decision making. Are they aware of the problems? Are they seeking responsibility? Are older, established people giving youths opportunities for gaining experiences for the arduous work of making more viable environments for a growing population? We wanted to get ideas for a new course, "Geography of Youth." I shall be teaching at Springfield College; to gather material for our next book, *Working With Nature*; and to bring back to America all possible new techniques to help our own youth to manage sensitively relatively natural environments. This brief article is to call to the attention of ANSS members some noteworthy developments of youth work in natural environments in Britain, ones we should be emulating.

## Aids to Youth

The Field Studies Council has several country properties with residential and laboratory facilities to aid young people in studying the land. They serve mostly the upper classes of secondary schools which come with their teachers for usually a week, most often to study biology, geology, and geography. These Field Studies Centers combine various aspects of American nature centers and school camps. Some college students participate, and some older people carry on ecological research. Local or county naturalists groups often cooperate, as in helping lay out "nature trails" (self-guiding trails), which are very popular now in Britain. We were guests at two of these Field Studies Centers and had good opportunities to talk and work a little with students, their teachers, and resident staffs. Students seemed well oriented ecologically before their arrival, and set about their studies with a good mix of diligence and fun. They are learning significant things and realized it.

The British Trust For Conservation Volunteers has taken the next step beyond studying. Its young people, over 2000 in 1971, have an opportunity to spend a week or more performing work of environmental management, such as creating or improving trails physically (as compared to setting up interpretive signs), putting up fences and hedges, planting trees, and clearing out ponds and canals. Barbara and I visited two of the work camps in Wales and then attended a week-long training session for about 25 of the leaders from England, Scotland, and Wales. These young

men and women are dedicated, dynamic and glad to listen to older people with experience in conservation. The sessions were of high quality with a good balance of lecture, discussion, field problems tackled by student teams, and reports with straight-from-the-shoulder criticism. I know of no directly comparable organization in the U.S.A. and greatly regret that my writing and teaching preclude my starting one at once.

The National Trust is a private organization which has been doing a gigantic job of procuring and maintaining diverse properties of cultural value, both natural and man-made. It has a Junior Division which administers Acorn Clubs. These provide a week or more of resident camp (or other living accommodations) for secondary-school and college-age youth who perform tasks of benefit to National Trust properties. A group we visited was pruning and thinning a conifer plantation and making a trail along a mountain stream.

In Scotland, we found an organization called Enterprise Youth. It facilitates volunteering in many kinds of social work. We watched a group of about 80 young people, of several nationalities, working on a continuing project of parkland development supported by a local county government much concerned about recreation facilities for a "new city."

## Britain Has Problems

Countryside Commissions are recently formed governmental agencies which stimulate interest in land-use at a high level of ecological understanding and esthetic awareness. Through them funds are made available to cooperating groups. Britain, like other highly developed nations, has severe environmental problems, many of them with ugly economic undertones. Yet special attention is being given to "amenities," a repeatedly heard term indicating cultural and esthetic consideration. Indeed, the long history of complicated land-use can boggle the New World mind. What value do you place on a pre-Roman stone wall? Beautifully made, withstanding twenty centuries, lichen-covered, its niches replete with flowering wall plants, it divides fields which could be more efficiently machine-farmed were the wall removed. Or consider the problems of conifer plantations, some over 100 years old. Many Britons loathe them because they constitute a geometrically planted

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# TIPS for Environmental Education . . .

## SNOW IN OUR LIVES

Anna Botsford Comstock introduced her Home Nature-Study Course of December 1903 with the following poem by Lowell:

The snow had begun in the gloaming,  
And busily all the night  
Had been heaping field and highway  
With a silence deep and white.  
Every pine and fir and hemlock  
Wore ermine too dear for an earl,  
And the poorest twig on the elm-tree  
Was ridged inch deep with pearl.  
From sheds new-roofed with Carrara  
Came Chanticleer's muffled crow,  
The stiff rails were softened to swan's-down  
And still fluttered down the snow.

Snow bugs some people. Others thrill at the sight of the first snow of the winter. Children and even four-legged animals enjoy romping in it. Skiers enjoy it most when it is deep and powdery. The man who shovels heavy, wet snow from walks and driveways may grumble at it. Highway department crews hope a warm spell will melt it and so make it go away. Photographers look for patterns of drift or scenes of snow-draped trees and shrubs.

Snow reveals itself in different forms. Snowflakes all are built on a pattern of six points, yet no two snowflakes are ever alike. Their variety around the basic pattern seems infinite.

While differences do exist, there are particular patterns which reveal conditions under which the snowflakes were formed. Most are thin plates though some are long needles which, however, have the basic hexagonal pattern. All are beautiful.

Clean snow has a whiteness unmatched in all of nature. This whiteness is due to the large number of minute reflecting surfaces of crystals. Under pressure the adjoining surfaces come into close contact to form masses of ice. Such is the condition in snowballs or of glaciers.

Snow is formed from water vapor in the air at temperatures below freezing. Large flakes form at the higher temperatures when the moisture in the air is high. At great elevations snow forms in fine needle-like shapes.

Snow-like structures or crystals are commonly recognized. While dew is moisture which condenses on some cool surface, frost is such moisture which froze. Rime on the other hand is frostlike, but is formed on the windward side of objects when undercooled particles of fog carried by winds strike the obstruction and adhere.

Ice pellets are usually frozen raindrops or snow which partially melted falling through a warm layer of air and were refrozen in a colder layer near the earth. Sometimes nimbus clouds have violent updrafts. When an ice pellet is carried upward, concentric layers of ice are accumulated before the mass gets heavy enough to be pulled earthward by gravity against the force of the air currents. Such masses are called hail which at times are larger than grapefruit.

Fallen snow reveals a beauty made more fanciful when winds pile it in fantastic drifting curves. Along our highways such drifts may present a barrier to travel.

Few writings dealing strictly with snow are aimed toward gaining enjoyment and understanding from this phenomenon. Recently Dr. Phyllis S. Busch wrote "*A Walk in the Snow*"\* which is beautifully illustrated with photographs by Mary M. Thacher. The author challenges one to use all his senses on a walk during a snowfall. The air will be crisp. She points out that some people can smell snow before it falls. Certainly there will be delight at observing the infinite variety of flakes best viewed on one's coat sleeve.

The text leads to a variety of discoveries resulting from the fallen snow which has changed the appearance of the outdoor world. Snow melts and in favorable localities icicles are formed.

While the book will appeal readily to children at elementary and junior high levels, the adult finds it fascinating to read and to interpret the pictures. An urgency is built to get outdoors to have one's own "Walk in the Snow."

A valuable addition to the text is the supplement by Dr. Busch. It is a "*Leader's Guide for A Walk in the Snow*" providing "tips" for "implementing and enriching this theme" for teachers, scout leaders and others. Ten sections of the book\* are singled out with suggested activities. The page numbers which precede each section refer to the pages in the book.

*Sugar on Snow*—Snow that was made sweet with the addition of maple syrup was a delicacy eagerly anticipated by Colonial children as the month of March approached. It was then that the maple trees were tapped and the sap was boiled for several days until it thickened. When this was completed some of the syrup was boiled until it became very thick, then poured over snow for a special candied treat.

You can duplicate this, somewhat, after telling about this custom, by obtaining some good maple syrup and boiling it to a thick stage. Place some clean snow in cups and pour the hot syrup over the snow. (p. 5)

*Snowflakes*—Water is a liquid mineral, two parts hydrogen and one part oxygen. Snow is a solid crystalline form of water. Snowflakes form in the clouds. The cloud temperature must be below freezing, from 5 degrees Fahrenheit to minus 15 degrees in order for flakes to form. The low temperature causes the water droplets as well as the water vapor to turn into ice crystals. These crystals tend to stick together. When they become heavy enough to fall, they come down as snowflakes.

The snowflakes vary greatly in shape, and it is said that no two are alike. Each snowflake, regardless of its shape, is

\* From the book *A WALK IN THE SNOW* by Phyllis S. Busch. Photographs by Mary M. Thacher. Text Copyright, ©, 1971 by Phyllis S. Busch. Reprinted by permission of J. B. Lippincott Company.



Verne Rockcastle photo

*Patterns in snow are infinite.*

six-sided, a hexagon. The particular pattern depends upon atmospheric conditions; the higher the temperature, the more branching the pattern, and the greater the humidity, the faster the growth of the crystals.

A variety of six-sided figures can be cut from paper. Starting with a circle of paper at least six inches in diameter, fold the circle in half. Then fold the half circle into three equal parts. Fold once more. Cut with scissors along the edges to make a design. Unfold. You should have a hexagonal pattern. (p. 7)

*Snow gauge* – Estimate the amount of snow which is produced by each succeeding snowfall of a season. Keep a record of the amount and the date. A simple "snow gauge" can be made with a straight-sided container such as a wooden box. This should be placed in an open space. After the snowfall ceases measure the depth of snow with a ruler. (p. 10)

*Drifting snow* – Snowdrifts are interesting to study. Not all snow piles are caused by the wind. Some are the results of a passing snowplow.

If it is windy try to cause snow to drift. Use some large pieces of cardboard, several feet long and one or two feet wide. This will be used as the obstacle which will cause the blowing snow to drift. Snow collects on the leeward side of an obstacle. (p. 14)

*Snow removal* – Measure each layer of snow after you slice a snowbank. If you have a record of the amount of snow which fell each time it snowed, as indicated on *Page 10*, compare that figure with the size of the snowbank layers. Why are the layers of the snowbank not as thick as the layers of freshly fallen snow?

Snow is quickly removed from roads as well as from city streets. Salt is the chief ingredient used for snow removal. The salt dissolves in water and penetrates the soil, killing trees, shrubs, grass. Obtain a half-dozen plants of the same kind. Keep them in the same place, water regularly with the same amount of water for each. To the water of three of the plants add a teaspoon of salt. Try to obtain the salt that is actually used for melting snow. Observe the results. Keep a log of changes. Discuss alternatives to the hasty snow removal practices. (p. 15)

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*Snowprints* – Children might observe the patterns of their snow boots. Then they observe those of other children in the group. The group walks across a snowy area, then tries to identify the boot wearers by the tracks left by their boots. (p. 18)

*Snowtracks* – The presence of wing marks accompanied by bird tracks usually means that the wing marks were made as the bird flew away.

Animals that jump leave pairs of tracks. Tree jumpers such as squirrels and deer mice leave paired tracks of hind feet as well as pairs of front feet. Ground jumpers such as chipmunks and field mice leave paired tracks of their hind feet but unpaired tracks of their hind feet. The larger tracks are the hind feet even though they are in front. Figure out the directions in which the animals traveled. (p. 26)

*Snow scatter* – Look for fruits or seeds of wild plants scattered on the snow. How far are these from the plants which bore them? What propelled these seeds and fruits? Some are fine as dust and were probably blown by the wind over the snow, especially if there was a crust on top. Others have special structures which enable them to be carried by the wind. Examine them under a magnifier in order to appreciate the markings and structures. (p. 30)

*Snowbanks* – Where there are several snowbanks you can make a comparative temperature study of them. First record the temperature of the air above each one. Then take the temperature of each just beneath the crust. The next reading can be made of the snow twelve inches down from the top. Finally, get the temperature of the ground under the snowbank. If there are differences try to explain them. (p. 31)

*Snow cover* – The dandelion, mullein, and other plants form rosettes of leaves which persist all winter, especially under a snow blanket. Take a temperature reading of the ground under these rosettes and compare the temperature with that taken of the air above. (p. 32)

(A WALK IN THE SNOW, Phyllis S. Busch, *Photos* by Mary M. Thacher. J. B. Lippincott Co., East Washington Sq., Philadelphia, Pa. 19105. 1971. 41 pp. \$3.95 Tr.)



ANSS photo

*Let's walk in the snow.*

# Mark Twain in the American Wilderness

RICHARD F. FLECK

(Continued from Summer '71 issue)

## The Hawaiian Islands

"No alien land in all the world has any deep, strong charm for me but that one, no other land could so longingly and so beseechingly haunt me sleeping and waking, through half a lifetime, as that one has done. Other things leave me, but it abides; other things change, but it remains the same. For me its balmy airs are always blowing, its summer seas flushing in the sun, the pulsing of its surf-beat is in my ear; I can see its garlanded crags, its leap-cascades, its plummy palms drowsing by the shore, its remote summits floating like islands above the cloud rack; I can feel the spirit of its woodland solitudes, I can hear the splash of its brooks; in my nostrils still lives the breath of flowers that perished twenty years ago." (Twain's prose-poem on Hawaii).<sup>9</sup>

No land with an unvarying climate can be very beautiful? Too much sentiment is wasted on the tropics? Of all the places described in *Roughing It*, Hawaii evokes the most exuberant, almost child-like enthusiasm from Twain. As soon as he landed and viewed the strange tropical palms, tamarinds and mangoes, he exclaimed "a beautiful, beautiful tree is the cocoa-palm!"<sup>10</sup> The vegetation as well as the active volcanoes of Kilauea and Haleakala reacted to such an extent on Twain's mind that he was compelled to re-create, if possible, their impressions in the form of artistic description. Indeed, his highly impressionistic jungle landscapes are remarkably similar to those of W. H. Hudson or even of Joseph Conrad. Hawaii, contrasted with "wretched" San Francisco, had "the balmy fragrance of Jasmine." Twain, himself, becomes an Adam figure in the midst of his own landscapes: "I moved in the midst of a summer calm and tranquil as dawn in the Garden of Eden . . . I saw on the one side a framework of tall, precipitous mountains close at hand, clad in refreshing green, and cleft by deep, cool, chasm-like valleys and in front the grand sweep of the ocean: a brilliant, transparent green near the shore, bound and bordered by a long white line of foamy spray dashing against the reef, and further out the dead blue water of the deep sea, flecked with 'white caps,' and in the far horizon a single, lonely sail—a mere accent-mark to emphasize a slumberous calm and a solitude that were without sound or limit." (II, 178-

179). Walter Francis Frear explains Twain's new psychological frame of mind as a reporter for the *Sacramento Union* in Hawaii: "Much impressed as Mark Twain was by grandeur and sublimity in nature, it was not so much that as the gentle elements of beauty, variety, peacefulness, salubrity and an atmosphere of freedom from care that enchanted him."<sup>11</sup> Since his feelings had much to do with his landscapes, in this regard there is, to some degree, an element of Romantic projection in Twain's writing.

## Twain Describes Honolulu

The gayety and lightness of the following passage describing Honolulu is directly related to Twain's own feelings:

"The moon rose and flooded mountain and valley and ocean with a mellow radiance, and out of the shadows of the foliage the distant lights of Honolulu glinted like an encampment of fireflies. The air was heavy with the fragrance of flowers. The halt was brief. Gaily laughing and talking, the party galloped on, and I clung to the pommel and cantered after . . . What a picture is here slumbering in the solemn glory of the moon! How strong the rugged outlines of the dead volcano stand out against the clear sky! What a snowy fringe marks the bursting of the surf over the long curved reef! How calmly the dim city sleeps yonder in the plain! How soft the shadows lie upon the stately mountains that border the dream-haunted Mauoa Valley!" (II, 189-191).

One cannot help but sense an enthusiastic attachment for the land as evidenced by the rhapsodic language punctuated with so many exclamation points. There is a certain primitive, ecstatic quality here that is obviously wilfully (perhaps not successfully) contrived. Whether or not Twain was familiar with Hugh Blair's *Lectures on Rhetoric* (1783), he and Blair arrived at the same conclusion—that a primitive response to nature is inherently more sublime. Primitivism is discernible in his description of Mauna Loa, especially with the use of the word "claw." "The rays of glittering snow and ice, that clasped its summit like a claw, looked refreshing when viewed from the blistering climate we were in." (II, 229).

## Jungle Impressions Described

One is reminded of the primitivistic impressionism of W. H. Hudson's *Green*

*Mansions* by Mark Twain's jungle passage in which "you find yourself buried in the forest in the midst of a rank tropical vegetation and a dense growth of trees, whose great boughs over-arch the road and shut out sun and sea and everything, and leave you in a dim, shady tunnel, haunted with invisible singing birds and fragrant with the odor of flowers." (II, 230). There is a sense of eeriness conveyed particularly with the word "haunted" reminding one of the haunted paradise of the South Sea islands of Joseph Conrad (e.g. "The Lagoon"). The "invisible singing birds" are like the invisible Rima in *Green Mansions*. Even Twain's jungle skies are depicted with mysterious "rain-dogs" or "little patches of rainbow . . . often seen drifting about the heavens in these latitudes, like stained Cathedral windows." (II, 244).

However, while the calm jungles, sea and sky did evoke the sense of the sublime and mysteriousness for Twain, the rugged, active volcanoes of Kilauea and Haleakala had such an effect on him that he produced his best descriptive passages of, perhaps, his entire prose. As Frear states, "Mark Twain had for some time been looking forward to making the ascent, and when finally his anticipation was realized, he found a subject worthy of his finest descriptive powers . . . He concluded: 'It was the sublimest spectacle I ever witnessed, and I think the memory of it will remain with me always.'<sup>12</sup> Mark Twain truly put into concrete terms Hugh Blair's notion of the sublime which entailed wonder, astonishment, awe, solemnity and even severity. He devotes five pages to describing Kilauea and the inner crater which temporarily blinded his eyes and dazed his mind just as Dante was imaginatively and metaphysically blinded by the infernal fires of Hell. One representative passage here follows: "The greater part of the vast floor of the desert under us was as black as ink, and apparently smooth and level; but over a mile square of it was ringed and streaked and striped with a thousand branching streams of liquid and gorgeously brilliant fire! It looked like a colossal railroad map of the state of Massachusetts done in chain-lightning on a midnight sky. Imagine it—imagine a coal-black sky shivered into a tangle network of angry fire! Here and there were gleaming holes a hundred feet in diameter, broken in the dark crust, and in them the melted lava—the color of a dazzling white just tinged with yellow—was boiling and surging furiously." (II, 273-274).

## Impressions of a Volcano

One might think that this would be the climax of Twain's descriptive landscapes; however, in my opinion, it is not. He and a man named Marlette had the severe and awesome experience of spending a dream-like night inside the crater of Haleakala Volcano. The highlight of the experience was the witnessing of dome-like bubbles of lava heave upwards and crash down into a boiling, molten lake directly below them. Twain became his most sublime and as close to Dante as prose is possible:

"Now and then the surging bosom of the lake under our noses would calm down ominously and seem to be gathering strength for an enterprise; and then all of a sudden a red dome of lava of the bulk of an ordinary dwelling would heave itself aloft like an escaping balloon, then burst asunder, and out of its heart would flit a pale-green film of vapor, and float upward and vanish in the darkness—a released soul searching homeward from captivity with the damned, no doubt. The crashing plunge of the ruined dome into the lake again would send a world of seething billows lashing against the shores and shaking the foundations of our perch. By and by, a loosened mass of the hanging shelf we sat on tumbled into the lake, jarring the surroundings like an earthquake and delivering a suggestion that may have been intended for a hint, and may not. We did not wait to see." (II, 273-274).

The description of volcanoes continues for the next ten pages. He has certainly conveyed that state of semi-consciousness between reality and dream-world where both play upon each other. Here is where Mark Twain could have produced poetry beyond the realm of nineteenth century conventions. His trance-like depiction of the "pale-green film of vapor" as a possible damned soul being released from the heart of a surging dome of lava balanced with the words "no doubt" well illustrates his hypnotic state. His mind is totally absorbed with the sublime awe of the inside of a volcano, and at the same time he is searching for comparisons and finally he adds an almost sleepy, mechanical response of "no doubt."

While the landscape passages are not, by any means, the whole of *Roughing It*, they must be considered as a significant element in that they not only illustrate Twain's techniques in language, but they also serve as a subtle barometer of his varying emotional attitudes toward the land.

10. Walter Francis Frear, *Mark Twain and Hawaii* (Chicago: The Lakeside Press, 1947), p. 217.  
11. Frear, p. 91.  
12. Frear, p. 58.

## Good Reading

Those who want the nature viewpoint, the philosophy, the meat of interpretation of out-of-doors should read Rachel Carson's "Sense of Wonder" (1965). Here there is no recounting of the paint used on nature signs, the depths of holes for posts along the trail, the slope of asphalted walks, the three-quarter round used by carpenters, the slope of windows in sheltered museums, or the quantity of cash income and outgo.

An article on what an author calls interpretation which centers on the providing of toilets for children, arranging for busses, checking on lunch supplies, getting children back to school on time and name dropping which includes everyone from the bus driver to the superintendent and president of the PTA is NOT nature interpretation. It is only a phase of the logistics common to a trip to the Zoo or to a football game. These do not give a "Sense of Wonder."

Rachel Carson in her book states that "A child's world is fresh and new and beautiful, full of wonder and excitement. It is our misfortune that for most of us that clear-eyed vision, that true instinct for what is beautiful and awe-inspiring, is dimmed and even lost before we reach adulthood."

Those who have climbed on the recent bandwagon of outdoor education now going by, who have only enthusiasm and will, and who know little of nature, should consider learning something about it through sheer effort. It is not enough to be learning with the children. A good start would be the reading of Rachel Carson's "Sense of Wonder," Harper and Row, 49 East 33rd St., New York, N. Y. 10016. 95pp. Many photographs by Charles Pratt and others. \$5.95.

*Everyman's Guide to Ecological Living* by Greg Caillet, Paulette Setzer and Milton Love, Macmillan Co. N. Y. 119 pp. \$9.95.

While there have been hundreds of books which dealt with the problems in human ecology, this book deals largely with telling what the reader can do about the problems. There are a large number of practical solutions which can be implemented by the individual or by small groups.

*Reading the Landscape of Europe* by May Thielgaard Watts. Harper and Row. Ill. \$8.95.

Those who have read May Watts' "Reading the Landscape" set in the American scene are offered a real treat in her book on Europe. She is deeply

sensitive and keenly aware of nature, and she interprets what she sees with deep insight. She relates glove wearing and corseted feet to the roofs of some homes as symbols of the stylist Louis XIV. Food habits of people are intuitively related to history, agriculture, architecture and astronomy.

Whether for the visitor to Europe or for the armchair tourist this book gives an excellent overview of the land and its ecology.

*Environment* is a monthly publication that is independent, scientifically accurate and certainly socially responsible dealing with the environment. This monthly journal we consider among the better ones which has come on the American scene.

Everyone interested in ecology should join the other 25,000 subscribers who are brought up to date on many issues which bear on the question of a quality life we want and must fight for.

This magazine is closely associated with Barry Commoner's politically and socially oriented academics at Washington University in St. Louis. This is the Committee for Environmental Information.

If you haven't seen a copy of *Environment*, write to P.O. Box 755, Bridgeton, Mo. 63044 for information. \$8.50 a year and worth it.

*Wildlife and Plants of the Cascades* by Charles Yocom and Vinson Brown, Naturegraph Publishers, 8339 West Dry Creek Road, Healdsburg, Cal. 95448.

This is the eighth volume in the American Wildlife Series. Most of the common plants are described and illustrated as well as common fish and other vertebrates. Westerners should find this volume useful. Paper \$3.95; cloth \$5.95.

## Good Listening

America is being swamped by the Tape-Cassette which is making a radical change in tape recording and the availability of prerecorded tapes in many fields.

Robert M. McClung has had three of his books for children age 6-10 recorded on tape by a professional narrator. These are *Bufo*, the Story of the Toad, *Stripe*, the Story of a Chipmunk, and *Tiger*, the story of a Swallowtail Butterfly. These are available from William Morrow and Co. Wilder Warehouse and Shipping Co., Order Department, LP8, 6 Henderson Drive, West Caldwell, N. J. 07006 at \$5.95 each.

# NEWS and NOTES . . .

## on Environmental Education and Action

### Western Section Holds Meeting

The Western Section of the ANSS held its annual meeting with the AAAS in San Diego in June with Dorothea Mulaik as chairman. Edith Curry was most helpful in making the meeting a success. A special feature of the meeting was a film entitled "Time Lapse Cinematography of Glacial and Fluvial Processes, Athabaska Glacier, Alberta, Canada" by R. E. Kucera, University of British Columbia, Vancouver. (The cover photo is of Athabaska Glacier.) Richard F. Fleck read an interesting account of "Mark Twain in American Wilderness," and Stanley B. Mulaik gave an illustrated paper on Watersheds, Floods and Stream Channels.

Outstanding was the field trip to the Silverwood Wildlife Sanctuary of which Edith Curry is chairman of the Sanctuary Committee. Frank Gander, resident naturalist, led the trip. Edith also led the group to the tragic burn of thousands of acres a year ago which almost reached the sanctuary.

Next year's meeting will be held at the University of Oregon at Eugene.

### NWF Summits Scheduled

The week-long conservation summits of the National Wildlife Federation have proven popular beyond expectations. There were 825 participants at Estes Park, Colo. and 525 at Ashville, N. C. Next year's program calls for two one-week sessions at Estes Park, June 30 to July 6 and July 7 to 13. Write to National Wildlife Federation, 1412 - 16th St. N.W., Washington, D. C. 20036 for information. Early registration will be heavy. The August dates for the Ashville summit are not clear. Stanley and Dorothea Mulaik are among the faculty.

### Ecology Seminars

The Rocky Mountain National Park Seminars, which include courses in Mountain Geology, Mountain Ecology, Alpine Ecology, Animal Ecology, Plant Identification, and Conservation Ecology Workshop, had its tenth successful summer.

A staff of experts highly skilled in their field presented the program. The seminars are held in Rocky Mountain National Park and consist primarily of

field trips in the park—an area "designed" for the study of ecology. Accommodations are available in Estes Park or in several campgrounds in the park. Credit is available from the University of Colorado Extension Division. For further information write to Tom C. Thomas, Executive Secretary, Rocky Mountain Nature Association, Estes Park, Colorado 80517.

Last June ANSS President-elect John I. Green attended this seminar and recommends it highly. He and his family camped in the park in choice spots.

### May T. Watts Awarded Citation

May T. Watts who is well known to ANSS members as the author of *Reading the Landscape* and Naturalist Emeritus of the Morton Arboretum was awarded a special citation by Secretary of the Interior Rogers C. B. Morton for her original idea which led to the establishment of the Illinois Prairie Path in DuPage County, Illinois. The presentation was at a National Symposium on Trails held in Washington, D.C. June 2-4.

At this symposium ideas were presented for over a dozen different kinds of trails. These included State Scenic Trails, bicycle trails, motorized vehicle trails, inter-city trails, nature trails, equestrian trails, cross-country ski trails and trails for the handicapped. These were in addition to the Scenic and National Trails.

ANSS members who are interested in boosting and promoting any type of trailing should contact the Bureau of Recreation in Washington for information and to offer support and ideas for establishing a nationwide system of trails authorized by the National Trails System Act of 1968. There must be local support if local trails are to be established.

Federal highway funds now can be made available for trails by State Highway Departments on a 90% Federal and 10% State sharing basis. Write to the Assistant Secretary for Environment and Urban Systems in the Department of Transportation for more information.

### Land in Short Supply

"We are running out of our supply of land" is a cry often heard even from recreationists. The vacationer makes up a

large part of these. Are we, however, running out of land?

A trip to the four corners of this country reveals some facts which need exploring. There are evidences that our use of land is very inefficient. In a trip over the country on its freeways, there are hundreds of stretches from a few miles to up to twenty where there is no exit which means that there is no ready access to the adjoining land.

What exits are available are to communities where the camper-recreationist had no choice for a realistic camping experience. There was only that supplied by a densely crowded commercial entity calling itself a place for camping. Between the exits often were wooded areas which were potentially far more useful for camping than those in commercial operated campgrounds. But for reasons of ownership, management, and often location, access to this land is not available.

To make such lands available brings up arguments of loss of taxes to communities when commercial camp operators might lose some business. Here is a question of priorities. Land is there and must be made available.

By the turn of the century practically every valley in America where there were a few acres of tillable land was occupied by a family. A few chickens, hogs, cows and a horse or two were supported. Modern farming which is run like a factory forced most of these small farmers to seek a living in the cities. Too often these turned to government hand-outs.

The lands these small farmers vacated are extensive in number of plots. Today there is more open space in America where no one lives than there was in 1900. Were these lands inventoried and the best set up for camping, recreationists would be heartened. They would realize that we are not running out of land. We are just not using it efficiently.

The ANSS plans to print a collection of outstanding writings in Nature Study philosophy, nature teaching goals, examples of methods and just plain good writing, poetry included. John Green will edit the work and requests that material be sent to him at Biology Department, St. Lawrence University, Canton, New York 13617. Send excerpts with proper source or references to accessible sources and if possible include publisher and copyright date.

## Non-Returnable Bottles and Cans Banned

Congressman Joseph P. Vigorito (D-Pa.) praised the action of the City Council of Bowie, Maryland in banning the sale of all non-returnable soft drink and beer containers, citing it as an example for the rest of the nation to follow.

Bowie, a suburban community of 40,000 in the Washington area, is believed to be the first city in the country to pass such an ordinance, which provides for a penalty of \$100 per day against any store selling beverages in throw-away containers after the effective date of the ordinance, April 1, 1971. Mayor Leo Green stated the effective date of the ordinance was delayed in order to give the Maryland legislature a chance to pass a state-wide ban early next year.

T. J. Hamilton, Director of the Crusade for a Cleaner Environment, lauded the Bowie City Council for "their foresight and leadership in helping the people of Bowie to protect their environment."

Rep. Vigorito, in his statement said, "For their action in outlawing non-returnable bottles in their city, the citizens of Bowie, Maryland, should be commended. The foresight of Bowie should serve as an example to cities and towns across the country — and also to the Congress of the United States. I am presently researching possibilities for introducing legislation of this type on the national level in order to bring to the attention of Congress this basic problem of environmental pollution."

Hamilton called on all Maryland Congressmen to join with Rep. Vigorito in his efforts and noted that the Maryland-National Capitol Park and Planning Commission has also banned the use of "no-deposit, no-return" bottles and cans in parks under its jurisdiction. The Washington City Council has scheduled hearings on an ordinance similar to the one Bowie adopted.

"By using returnable bottles and cans for such beverages as soft drinks and beer, Americans could have their cake and eat it, too," Hamilton said. "This is one area in which the public could carry on a positive 'do-it-yourself' ecology campaign which would clear up one phase of pollution, leave landscape and cities more beautiful and save both in the cost of beverages and in the cost of litter pickup and waste disposal.

"By using more returnable, money-back containers for soft drinks and beer, consumers and taxpayers could save money on the out-of-pocket cost of such drinks, as well as the cost of trash collection disposal.

"It is estimated that Americans could save \$705,000,000 per year (based on prices in the Washington, D. C. area) if they purchased all soft drinks in returnable, money-back bottles. If all beer were purchased in returnable, money-back containers, the consumer could save an additional \$800,000,000. This total estimated savings of over one and a half billion dollars a year would go a long way toward financing the program proposed by the President to clean up our environment.

"A recent nationwide survey taken by a major polling firm for the National Wildlife Federation found that almost all of the nearly 1,500 persons questioned were willing to have the federal government spend more on natural preservation than it does now — but only if the money is raised by cutting other outlays, not by increasing taxes or costs to the consumer. In light of this survey, the potential savings Americans could make by using only returnable, money-back bottles or containers for their soft drinks and beer becomes even more significant. For the \$1½ billion savings involved are the equivalent of \$25 a year for each of America's 60 million families — enough to pay a good share of the cost to clean up our air and water. In addition, we would be getting rid of approximately 800,000 large trailerloads of trash bottles and cans."

Wisconsin Congressman Henry S. Reuss believes in the law, and recently provided the U. S. Attorneys for the Eastern and Western districts of Wisconsin a list of 149 industries pouring harmful refuse into Wisconsin's lakes and streams without permits from the Corps.

Reuss says he'll turn any bounty money over to the appropriate agency of the Federal Government concerned with water pollution, and urged people across the country to take similar action to help end industrial pollution.

"Other State and Federal laws on industrial water pollution are full of holes and hopelessly inadequate," Reuss said. The 1899 Refuse Act, with an alert citizenry, can help the country move from talk to action in the fight on polluted waters — including by the citizen himself bringing the suit if need be."

He emphasized that the sums paid by industrial polluters under the 1899 Act procedure are essentially to recompense the public for having its waters ruined by non-permit violators: "I hope that public-spirited citizens will cover every river and lake in the country and take notes on who is polluting them. By turning the fines over to Federal water

pollution authorities, we can be helping to pay for needed municipal waste treatment plants with the proceeds of action against the industrial violators."

Jack McLellan, conservation chairman of the Uinta Chapter of the Sierra Club writing in *Uinta News*, provides the following comment: "We cover 1½ million acres of ground each year with asphalt and concrete so we can drive our cars, build parking lots, etc. Here are some figures for mass transit enthusiasts: If one lane of freeway were used for a train, 40,000 people per hour could be transported. If one lane were used exclusively by busses, 30,000 people per hour could be transported. BUT AN ENTIRE SUPERHIGHWAY CAN CARRY ONLY 3,000 people per hour in autos — autos that not only pollute but require between 10 and 20 percent of downtown areas for parking.

The expression of righteous indignation over our deteriorating environment is merely hypocrisy unless followed by some small specific individual action. To fight effectively we must inform ourselves and become experts on the issues with which we are involved. Threats and vindictiveness aimed at public officials and corporate officers only tend to bring discredit. — Paul Salisbury

It is very significant to the environmental movement that the Ford Foundation has made a grant of \$285,000 to the ENVIRONMENTAL DEFENSE FUND which enlists lawyers to defend the environment for the general citizens against the destructive activity of resource users. Many individuals have also contributed within their means to the EDF.

A film worth viewing critically is "THE GIFTS" a documentary about the American landscape and the impact man has had on it in the past two and a half centuries. Information about the film may be obtained from the Federal Water Quality Administration, Environmental Protection Agency, Washington, D. C.

For at least 12,000 years, possibly far longer, man's existence has depended upon the close symbiotic partnership between man and plants . . . All the higher achievements of civilization have rested on this partnership.

—Lewis Mumford, "The Pentagon of Power"

In wilderness is the preservation of the world. —Henry David Thoreau

monoculture of dark forest whose floor is a "desert," and because all the conifers are foreigners except Scots Pine (*Pinus sylvestris*). The Forestry Commission sees the plantations as the most productive land-use for sites ill-suited to tillage or pasture, and expects to harvest its long-term timber investment. Other Britons have become so attached emotionally to the old pines, spruces, and firs that they think it sinful to fell them. An acrimonious three-way debate is in progress, with young people apparently taking increased interest and favoring a return to oak-beech woodlands. Is this conservative nationalism? ecological enlightenment?

We attended a meeting of a 20-member advisory board to the director of The New Forest (founded by William the Conqueror shortly after 1066). Unfortunately young people were not present, but many of the various organizations represented were concerned about the forest's future environments for education and recreation. (One of our most delightful experiences was visiting classes of a Hampshire Rural School whose learning experiences are mostly in the depths of The New Forest, with the Forestry Commission's blessing.)

We were heartened to find that at least a few thousand young people in Britain, including some from London, Birmingham, Glasgow, and Edinburgh, were learning about the countryside while they cared for it. They will be better custodians of the land because of the opportunities provided by the organizations named above. If any ANSS members wish to take steps to promote in America set-ups similar to those of the British Trust for Conservation Volunteers, or of other groups mentioned, I can supply names and addresses of Britishers who can be helpful. I should personally like to try to give some leadership in these matters but feel that instead I must continue to prepare my book, which I hope will greatly facilitate environmental management by young people in both Britain and America.

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Education for crisis, to be effective, must take place long before the crisis appears. Good liberal education in values in general will fit men to meet any crisis in which men's values and attitudes are controlling factors.

— Arthur E. Morgan

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A porcupine can destroy two trees in a single night and has been known to cause damages ranging from \$10 to \$100 per acre. Porkies feed largely on conifer bark and when they girdle a tree it dies.

## Fish Spawning Habits

PAUL M. KELSEY

In the animal world there are a great many ways of accomplishing the same thing. This variability makes it possible for some animals to live in areas which are completely uninhabitable to others. Over eons of evolutionary development, each species has evolved its own particular way of doing such things as nest building, feeding, courting, and all the other things which make life possible for them — and interesting to us.

There are some surprising seasonal differences in activities of closely related fish. The famous Finger Lake rainbow trout runs, when they come up from the deep lakes to spawn in gravel riffles of tributaries and become readily available, may have given fishermen the idea that trout are spring spawners. On the contrary, rainbows are the exception, with the rest of the trout spawning in the fall. Even some strains of rainbows spawn in the fall. The grouse hunter who takes time to check gravel spring runs in the upland cover he is hunting may be rewarded with the sight of vividly colored brook trout that have moved upstream to these clean cool waters to spawn.

When silt builds up in streams or lakes to the point where it actually smothers eggs, whole populations of fish may be drastically reduced or eliminated. Silting is overcome by some fish, like the bass and sunfish, which furnish parental care to the eggs in the form of continual fanning with their fins. Their nests can be identified along edges of ponds and streams as light-colored wash-basin-like depressions contrasting with the darker surrounding bottom. Males guarding the nests are particularly vulnerable to fishing because they will pick up anything that is dropped into the nest and carry it away.

Parental care on the part of bullheads and catfish, which lay their eggs in holes dug in the mud, has its own built-in hazard. Adults pick up the eggs and wash them in their mouths, replacing them in the nest free of silt. Sometimes they forget to return them to the nest.

Most fish that spawn in muddy water have eggs that adhere to vegetation and in that way are kept out of the silt. In March and April the pike-pickercel clan move almost unnoticed into weedy spawning areas. Carp, with very similar habits, are better known, for they make a real show of spawning in weedy bays and backwaters during May and June. It is at this time, when they are massed in shallow water, that they make such tempting targets for archers.

Yellow perch lay long strings of eggs which become entangled conspicuously

in lily pads and other aquatic vegetation where they can be seen by fishermen throughout the summer, long after the young have hatched.

Shad probably are the prime example of a lack of parental care. After swimming 300 miles upstream through the dangers of pollution from cities along the way, groups of males and females, swimming side by side in the shallows, discharge milt and eggs in a burst of activity at dusk. Not many eggs are laid at a time, so the spawning period extends over several weeks. The egg becomes fertilized if egg and sperm happen to unite as they drift downstream. It continues to drift with the current until the fry has developed and settles to the bottom. It takes about 35 miles of good drifting water to permit successful spawning.

The common shiner spawns on clean gravel, but may take advantage of the work done by one of its more industrious neighbors. The fallfish, the largest of our common minnows, spawns at the lower end of a gravel cone it has built of rocks carried by mouth to the nest site. It covers the eggs with more gravel and prepares for further spawning, with a nest of a large male sometimes being as much as six feet in diameter and two feet high. Common shiners and other small fish often take over part of the nest, driving away egg-eating raiders for the fallfish, but using the gravel pile for their own nest. This cooperative arrangement often results in hybrids.

### Fantastic Growth — Gilliam

(Continued from page 6)

and wildlife, with soil and fresh air and flowing waters. In a time of drift and chaos, going to nature is going home — home to the perennial rhythms and cycles of organic growth and mutual interdependence.

### Out of Kilter

The sudden rush of concern for the environment within the past year results from an implicit recognition that our industrial civilization is out of kilter, that it is in conflict with the natural processes of the planet and the natural needs of human beings. We turn to the world of nature to study its workings, to re-learn its laws and balances, to re-establish an intimate relationship with the elemental forces that have nurtured life from its beginnings.

As we do so, we will be better able to create technologies and life styles in harmony with the earth. There is no more urgent task confronting the human enterprise.



## Interpretation versus Logistics

A group leader who feels that a picture is worth a thousand words in an interpretive program has gone only part way when he shows many slides and movies. Few interpreters who speak well, who are skilled at photography and the manipulation of projectors are good interpreters of the meat in the natural world when they are in the field with a group. The basic tool of the leader should be the object—almost any outdoor object—about which he can use words, oral and written. The object with some help from the leader will tell its own story.

He should not alone tell about something. He should skillfully ask questions to stimulate deepened perceptions about the object. Increased knowledge gained from curious observations will increase one's sensitivity toward nature of which the object is a part.

The object may be a rock, a seed, a hole in a weed leaf, the scat a parent bird carries from a nest, a mass of pollen on the leg of a bee visiting a flower, the hoarfrost on a tree branch or any other of the myriad objects of nature.

A leader of a group in the outdoors who finds that he must hike his group long distances before he can find something about which to ask questions, or to expose curiosity among his followers, is poorly oriented to the outdoors. A leader must be knowledgeable of nature. One who knows no lichens, as an example, cannot spend much time on the broad interrelationships of this plant to the area. It isn't enough to call attention to this pretty one and that pretty one. Simply stated, "He must know."

An interpreter of birds seen on a hike must know birds regardless of how spellbound his voice and choice of words might hold his audience when he speaks about pictures on slides and movies. He must know birds.

Many of our classrooms suffer in quality of the product in terms of changed behavior of children toward their natural world. A teacher with the highest skills in the usual parlance of educationese who faces a first grade whose interests run to such things as caterpillars, snails, rocks, ants, fossils, butterflies, and bees will fail to bring deepened meaning of these to the children unless he holds some knowledge. It is not enough to be learning with the children for a lifetime of teaching when four years of college should have been spent learning something about the things children normally have in their daily lives through the year. It is only through knowledge that one can interpret meaning.

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## Pollution By Noise

There may be a temporary reprieve from sonic booms, yet there are many other sources of noise which pollute the world around us.

Motorcycles, cars and trucks, power saws, unmuffled lawn mowers and public music sources plague humanity in many quarters. A tide of opposition to these sources of noise is rising in many communities.

One such community is Edmonton, in Alberta, Canada. Here the police are equipped with a device to measure the decibel level of noise sources suspected of being greater than the prescribed maximums. When a car or motorcycle or other sound production seems to exceed these, a standardized test is performed and the operator is cited if the noise exceeds the prescribed limits.

Loud noises have definite effects upon hearing. A loud noise repeated for long periods produce permanent damage to hearing. Sounds of 80 to 85 decibels are proven to cause severe loss of hearing. This is the intensity one has with a large food blender, a noisy tool such as a sander, or even an excited, talkative group at a cocktail party. Under such sound bombardment one must practically shout to be heard. Louder noises than this come from poorly muffled motorcycles, power lawn mowers, and even thunder. All affect the hearing; more than that, other kinds of effects are noticed. In factories and offices, high noise levels reduce efficiency, raise blood pressure, and many trigger allergic reactions. Loss of sleep is often caused by cars, planes and other mechanical devices. A neighbor's TV or radio, even if not loud in decibels, can be a strain on one's mental stability or his desire for peaceful sleep.

Noise unquestionably is pollution in

our environment. Europeans have been more outspoken in objecting to noise. Americans who objected to the SST were vociferous against the noise it would produce. This was a greater factor even than the arguments of poor economic feasibility.

To minimize the effect of noise there are several things which can be done. Wear ear plugs for one, but this will hinder hearing normal speech. Homes can have double panel windows to limit street noises. Heavy drapes and carpet help reduce reverberations. Heavy doors and partitions will keep street sounds from coming to the back of the house.

The type of noise control which Edmonton and other communities have must be extended more universally. Night chariot driving in the streets of Rome was banned by Julius Caesar, and today similar regulations are found elsewhere in north European countries. American communities have few ordinances except that of disturbing the peace. Redress from noise in the average neighborhood cannot be had before near midnight, and then only when the noise comes from a dwelling. Noise from trucks, motorcycles, airplanes and poorly muffled cars may go on all night.

Noise as a pollution must go. Legislators are hearing a crescendo of objections to noise from their constituents. Local commissioners and other governing bodies must hear of these objections. There has been objection against the noise of snowmobiles and motorcycles on forest camps and park lands where people congregate.

Many patient people finally fell into the celebration of Earth Day April 22, 1970. Watch for the ground swell against noise breaking on the scene in the not too distant future. Many people are ready for it. Will you be ready?

### Too Late

The fields are strangely quiet all around.  
If anything still breathes it's underground  
To listen, if it cares, at my approaching sound  
To wonder why I've stopped and what I've found.

I might appear to be the autumn-god  
Come back to put the flowers down to sod,  
Who hesitates because he finds it odd  
In seeing neither brake nor goldenrod—

In finding that even the asters have been burned  
By frost which must have come when his back was turned.  
Gone is the flower whose name I would have learned,  
The one that I saw earlier from the road,  
My reason for coming back and being concerned.

— ERNEST SPAINHOWER

# 1971 ANSS ANNUAL MEETING:

## *A New Look*

by

Kingsley L. Greene

This year the ANSS symposia in Philadelphia will stress environmental impact and action. Those of us who love and study the natural environment must realize that our concern alone is not sufficient to insure the stability of its ecological communities. The great diversity we know to be so vital, can only be maintained through the impact of concerted actions by those who are aware of the inevitable consequences of mankind's present course. A deflection in this course will only come about through a general change in attitude and priorities, and perhaps a drastic alteration of life-style.

The ANSS has always emphasized education and this year's meetings will continue that emphasis but not so much as an end in itself as a motivator for "doing," "changing," "reordering" and "conserving." Talk and conjecture will not preserve our complex ecosystems. We have done that for a decade or more with little result. The time has come for those knowledgeable in the ways of nature to add "impact and action" to their efforts.

Attend this year's symposia and find out what can be done. Support your ANSS and strike a blow for the environment.

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## THE ANNUAL ANSS MEETING

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## QUESTIONS *to be asked*

The genetic pool, the organic diversity, the earth's thin, miraculous essential epithelium — these are what man has heretofore hastened to dissolve, to poison, or to inundate with smog, reservoirs, and pavement. The tithe of the earth's surface we like to think of as wilderness is no longer unsullied. When we discover DDT in the fatty tissues of penguins in the Antarctic we know we put it there. Man has so disrupted the natural forces of succession everywhere that a forester recently advocated that we should now turn to synthesizing ecosystems of our choosing, inasmuch as there is no true wilderness left. His audience of students liked a question from the floor: "Because the lady slipped once, must she go professional?"

To steady her, perhaps, Mr. Jerry Mander . . . has suggested that there should be an Earth International Park to protect on this planet what man has not destroyed, what he cannot replace, and what need not be destroyed if he uses his genius well. In this action, all the nations could unite against the one real common enemy — rampaging technology. Here might be rescued instead . . . the natural places where answers can be sought to questions man has not yet been wise enough to ask.

— D. Brower, *Sierra Club Bulletin*

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