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The Best Ecology Book is the Outdoors

The American Nature Study Society

Outdoor Recreation Is Not New

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

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

Scarcely a generation ago there was a rare child in America who didn't have grandparents, uncles and aunts or other relatives who lived on a farm where periodic visits were made. On these visits the local fields, woods, streams and meadows were explored. There was an identity with nature re-established which was a stimulating experience. This gave an outlet to pent up psychological and often misunderstood longings. This brought man's basic outdoor nature built through thousands of years to a sense of satisfaction and spiritual uplift.

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

Man longs for interpretation of the out-of-doors, perhaps vaguely. He may not understand clearly these longings, subdued by the sheen and vulgarities of civilization that have dulled his sensitivity.

In the espousal of the nature study idea, ANSS is deeply involved in the business of building perception and sensitivity into the "still unlovely human mind." —S.B.M.

Use of Adult Volunteers In A Nature Center

GERALD SCHNEIDER

Consultant, Environmental Matters and Planned Change

Many nature centers make use of adult volunteers in their programs. In fact, because of small budgets for full-time professional staff, nature centers often *depend* on adult volunteers to carry out programs. Effective use of such volunteers is important . . . perhaps critical.

Nature center directors must understand why a volunteer has volunteered if effective use is to be made of him. Without such information, a volunteer may be given a job that fails to meet his or her expectations. Without the right job, a volunteer will soon leave. For example, a volunteer interested in children and teaching will not stay around stuffing envelopes for too long.

There are a lot of reasons for volunteering. These can be loosely lumped into two groups: social factors and psychological factors.

Among the social factors is custom. Volunteering may be "the thing to do" in a certain family or social circle. To help one's neighbor is an important reason for volunteering. Such a volunteer may feel a democratic or puritan-like obligation to give his time freely to worthy causes. Power to get things done may be a motivation for volunteering. Social and vocational advancement may be a reason, for it might give new contacts, friends and companions. For one who has just moved into a community volunteering may help to get established more quickly in the new locality.

Therapy is still another social factor for volunteering. A change of place or the chance to get away from home for a while may be needed. To express creativity, particularly when such expression is impossible at home or on the job, may be a reason to volunteer. Some volunteer for inspiration. To follow a dream or belief not otherwise possible can be important.

To identify with a particular social group can be a social factor for some who volunteer. To fulfill a social obligation and to learn new skill motivates some to volunteer. Some people make the group they volunteer for a substitute family. (This does not give the satisfaction of a true family, unfortunately for such a volunteer.) Several of these social factors are probably in operation at the same time for a volunteer.

Psychological factors for volunteering include ego defending. Volunteering can bolster one's ego or increase status or belonging. Power in terms of control over others and as proof of virility are reasons to volunteer. So, too, is the search for identity. All the more so today when values of life appear to change so fast.

It does little good to say this or that reason for volunteering is "good" or "bad." We do things to satisfy a need or needs. What is important to the nature center staff is to try to meet the needs of volunteers through activities, not advice or lectures or criticism.

Moreover, why a person volunteers may be less important than what happens to him in his volunteer job. Love, recognition, achievement and acceptance will provide new reasons for remaining a volunteer. A supportive environment allows people to "cure" themselves and grow as persons. Be certain you can satisfy a person's needs before asking him to volunteer if you want to hold him.

Above all, perhaps, is awareness that volunteers are not cheap sources of labor. Consider hiring people to do the "routine, dirty work" and allowing volunteers to do the creative things. Train them when possible.

Trained volunteers can save you money. It is cheaper to hire maintenance and supporting staff than professional staff. While I'm not anxious to put college-trained naturalists, ecologists and biologists out of work, volunteers can be trained to do many professional level nature center jobs. I have done this for the Audubon Naturalist Society of the Central States, Inc. I can help others to do it.

Finally, effective use of volunteers depends on a nature center's internal management set-up. The best set-ups are those that focus on developing volunteers and giving them major program responsibilities. Such development not only creates a pool of talent to have on hand when budgets are cut or money for expansion is lacking, but builds community support for nature center activities.

Not sure you can trust volunteers? Try it . . . and you may just find volunteers to be the best thing that ever happened.

Welcome — New Members

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Peter Brooks, Darien, Conn.

Clayton Woods School, Ballwin, Mo.

Conservation and Environmental Studies Center, Browns Mills, N.J.

Neil K. Dawe, Coquitlam, British Columbia

Rick Farrar, South Woodstock, Vt.

Gayle Elementary Library, Chester, S.C.

Geraldine C. Hall, Norris, Tenn.

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Indiana Dunes National Lakeshore, Chesterton, Ind.

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Mars Hill College Memorial Library, Mars Hill, N.C.

Wendell Mohling, Overland Park, Kansas

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Rev. and Mrs. Leroy Schultz, Cuyler, N.Y.

Shawnee Mission Public Schools, Shawnee Mission, Kansas

Jennie F. Snapp School, Endicott, N.Y.

Waterloo Elementary School, Monroe, Mich.

Jonathan Wert, Concord, Tenn.

Wilkes-Barre Township High School, Wilkes-Barre, Pa.

University of Wyoming Library, Laramie, Wyo.

Ruth M. Yarrow, Leeds Point, N.J.

"The Good Eye"

P. B. Tomlinson
The Fairchild Tropical Garden, Miami, Florida

A visitor to my laboratory, where I do research on the anatomy and morphology of tropical plants, once remarked, "A good deal of nineteenth-century botany going on here." This remark I felt was very complimentary although that was certainly not its intention. It arose, no doubt, from the visitor seeing the modest way in which I work: living plants in various stages of dissection littering the benches, no impressive array of equipment, in fact, not much more apparatus than might have been found in a well-equipped botanical laboratory in the later years of the nineteenth century.

But I was unconsciously complimented because nineteenth-century biologists were great observers. They were fortunate in living relatively uncomplicated lives, they were not overburdened by an unwieldy literature, and particularly they were not plagued with textbooks, those formidable fossilizers of misconception. Their major source of information was plants and animals rather than the printed page. They were required to dissect and look in order to understand. Mistakes were made, countless times, but the most patient and painstaking observers were always rewarded by the truth because they studied the only reliable source – the living organism itself.

One of the pleasures available to the modern research worker, were he aware of it, is the reading of older scientific literature and the appreciation of the way in which ideas and concepts, and also dogmas, were developed. One thing this reading teaches is that a fact correctly observed is inviolate, something that cannot be refuted. Scientists who made these correct observations were those who looked carefully, whereas those who were least successful were those who turned aside from their dissecting trays and microscopes too soon and reached for their pens too early.

Dr. Nehemiah Grew, a seventeenth-century physician who may with some justification be referred to as the "Father of Plant Anatomy," stated that the essentials for studies of plant structures were "a good eye, a clear light, and a Rasor wherewith to cut." Albeit our modern "Rasors" may be a little more refined than that which Grew used, running from sliding and rotary microtomes to freezing and ultra-microtomes (but clear light may be concentrated and passed through powerful microscopes and may be of wave lengths uncomprehended by Grew or even represented by X-rays and electron beams, but all this refinement is worthless without "a good eye." Too often, however, the research worker assumes that modern machinery will do his research for him. He may even develop the lamentable attitude that without costly instruments no research is possible, assuming that all the progress has been accomplished already by nineteenth-century biologists. But new instruments and techniques merely enlarge the scope of our observations, being called into use when older methods fail to give us an answer. And there are innumerable problems which can still be solved with simple equipment or even with no equipment at all. For example, our knowledge of the elementary morphology of the plant, such as can be observed with a hand-lens, is still very deficient because we have explored only superficially the rich store of plant life the tropics retain and to which earlier botanists had only limited access.

The elementary biology student is a relatively fortunate individual compared with the student of the physical sciences. His observations can be taken from common and readily available organisms. He needs no apparatus to demonstrate natural phenomenon. It is much easier to dissect the flower of a common weed, whose passing nobody regrets, and perhaps thereby to understand its pollination mechanism than it is to find both described well in a library of textbooks. Still the student will be worried. How can he be sure that his observations are "right"? He feels that he must go to the textbook for the "right" interpretation, but surely the flower itself will reveal the "right" interpretation if looked at carefully! So the beginning student needs neither a "clear light" nor a "Rasor" – at least their twentieth century equivalent. He needs a "good eye" and this is something that biology teaching should develop in him. It is something that is not easily acquired and certainly it is something for which equipment is no substitute.

Continuing to examine plants and animals in just whatsoever way he pleases, the observer with the "good eye" will discover new facts, regardless of whether his laboratory looks old fashioned or not. After all, research is only the "good eye" without the textbook.

Reprinted from Carolina Tips

Sensitivity To Nature Necessary

Aldo Leopold, in his Sand County Almanac wrote, "Let no man jump to the conclusion that Babbitt must take his PhD in Ecology before he can 'see' his country. On the contrary, the PhD may become as callous as an undertaker to the mysteries at which he officiates. Like all real treasures of the mind, perception can be split into infinitely small fractions without losing its quality. The weeds in a city lot convey the same lesson as the redwoods; the farmer may see in his cow pasture what may not be vouchsafed to the scientist adventuring in the South Seas. Perception, in short, cannot be purchased with either learned degrees or dollars . . . But "On the back forty, we still slip two steps backward for each forward stride."

It is the colossal ignorance of the laws of nature "on the back forty" which is properly our consideration in the Nature Conservancy. And should we enlarge our policies to include this greatest challenge of all, it will take courage and time and hard work. To increase the knowledge of our own lay members beyond the sentimental, emotional approach, beyond the concept of human management to a true acceptance of the scientific fact of the biotic community, of which man is only a part, but, because of his present dominance, an important part, is an even greater challenge than to save the land. Of what value to preserve the greenbelt, to secure wilderness areas, to set aside natural woodland for school use, if man can still nullify that value by his lack of protective understanding, of sensitivity, of communication with nature? . . .

. . . Ponds can change the entire ecology of a given community. But too often the swamplands of our backcountry are passed by, yet here especially lies fascinating research sport. It was Tam Deering who wrote in 1966, "We think that woodlands, swamps, ponds – as nearly in their original state as possible, should be within easy reach of everyone, always, so man may learn of the long, long road over which life from the beginning was brought to him, and through nature think in terms of cause and effect, for there he can see how essential to the whole world is the balance of nature."

It was to such swamplands that an energetic young teacher brought a busload of eager young 6th graders. For an hour they dashed about, shouting, throwing stones, trampling flowers. No respectable animal would have remained in the area. The teacher went home feel-

ing that he had taken his class for a field trip, thus meeting the requirements. But the wildlife research which could have been as exciting and absorbing as a football game, did not happen because of the ignorance and lack of understanding of the well-intentioned teacher. Interpretation, guidance, yes, but the basic requirement – sensitivity to nature and understanding of its meanings and of the nature of the student . . . No.

. . . The upsurge of outdoor education, environmental study, etc., must come in for intensive study, evaluation and change where necessary. Which means that before we begin research with our own members, we must cooperate with quality environmental attitudes, experimental outdoor laboratories. Pioneer training centers for elementary and secondary teachers must coincide with our initial efforts. For if we confine our efforts in lay research to our own members, we may leave a vacuum, which will be increasingly filled by professionals dedicated to the belief that man is the manager of all natural areas for his own good rather than as a partner in nature's processes. And with the asphalt jungles creeping in and out from city centers, there are too few elementary and secondary teachers with knowledge of nature's ways. Easy prey to economic pressures, they dimly recognize their need for training in new ways of learning in the out-of-doors and in sensitivity to the ecological changes which in affecting biologic systems in a woodland or beach area, also affect man's life upon the earth. Again, time is running out. Too few professionals, too little time, inadequate skill in planning for and guiding the lay researchers; not enough understanding of the life processes around us and how to offer protection. It is more difficult to work out guidelines for this kind of learning! It takes more time to prepare and deliver a lecture; there is no feedback; to meet the questions will require a whole new attitude and a sure skill. But the results hold a satisfaction unequalled, in addition to furnishing much needed data. There is also a spiritual growth in both child and adult student that is exciting, but to achieve these results, research must be more than cold figures. It must come alive. Can we do it? And could we possibly give some of the very able teenagers an opportunity on our project committees, with responsibility for guidance of younger children in the business of lay research? Perhaps this has been done somewhere. This might be a sure way to secure active teenage members, but there is another step in the process. No teenager will remain a member if our programs at member meetings are not geared, in part, to their needs, with time alloted for their contributions.

– Mrs. Tam Deering
from Conservation Vistas, USDA

Conservation and Human Values

Every biology teacher and every ANSS member should be a conservationist, and most of them consider themselves such. They believe that their students should be dedicated to the preservation of the natural beauty of their communities, and the protection of America's natural resources. While they might have been disturbed in a desire to preserve the Canyonlands or the Redwoods, there must be a growing concern for conservation problems close to their homes. These relate to the school yard, the street they live on and their neighborhood.

There is a desire to develop qualities of good citizenship among students. Attitudes must be generated which lead to making communities more healthful, comfortable and certainly beautiful. There must be a blue sky rather than an industry grayed one; there must be green fields, roadsides, hill and mountain sides instead of barren, over-grazed, burned and over-timbered areas to look at. There must be bird song rather than the silence resulting from an over efficient application of pesticides. Neighborhoods must be pleasant instead of devoured by ugliness of traffic jams and noise. Goals for these better things can be achieved, but the teacher must lead the way to discovering why they are worth achieving.

Value judgments about environmental concerns must be made sensibly. What judgments and values are made will determine to a great measure what kinds of environment we will have, and what we do with it. Technology has given mankind the power to cut every tree, make every stream and other body of water as dead as Lake Erie or worse, and to destroy every bird, insect and other life. A judgment must be made whether we want an insect free world and whether man could exist under such conditions.

The great urge to cut every tree which could be turned into lumber is not healthy for society, though it might be economically desirable for the profit it can bring to the lumbering community. We have the power to cut every tree, and we have the power to grow trees where none had been present for years. We need an understanding of why we like to go walking in the woods as we escape the hectic crowding of the city's masses.

Perhaps it might be easier to teach from a textbook or to conduct some experiments which are entirely unrelated to community or individual needs, but which the teacher feels would be good for the students because someday they might find that the material is useful. It must never be forgotten that education must have relevance to social needs. Since technology has so far run away from social reality, it might be worthwhile to slow up feeding students into the present technological mill and to develop students with a sense of worth of the individual and his social needs.

All Things Are Interrelated

". . . It is often said that technology breathes down the neck of science today; some even claim that they have become one. But this is a delusion because it is only technical science – the old mechanistic view of reality – that interests technologists. Most of them are manipulators who do not philosophize. Real science – reflective or philosophical science – has reset the stage by illuminating the realities we call Nature in a completely new way. No true scientist or rational technologist would become involved in the stupid poisoning of world ecosystems with DDT that has been a major blunder of our generation. These people, so clever in other ways, have blundered because they still think of Nature as composed of disconnected things, and because they fail to understand that biological systems are infinitely more complex than chemical or physical systems."

– Roland C. Clement

Waste and Technology

Reality is dawning on Americans that its technology has on the one hand expanded our gross national product, and on the other hand threatens to destroy civilization with its garbage.

Each American throws away about five pounds of garbage, rubbish and junk a day, but he doesn't throw it far out of sight. It accumulates as car junkyards, city dumps, cans, gum wrappers, and other castings along roads and even in national parks. The mountain of waste is growing faster than the population and promises to choke us in our own litter. A thousand people require about an acre foot of land a year for trash land fill.

Part of the growth comes from planned and built-in obsolescence which technology has implemented. In part, it is the result of an affluence capable of buying and rapidly casting away. People have not yet been sufficiently aroused to the dangers of their own filth. Can ANSS help to awaken more to this danger? The challenge is here.

TIPS *for Environmental Education and Interpretation . . .*

A SNOW STORM

ANNA BOTSFORD COMSTOCK

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. — Lowell

The storm which Lowell describes so delightfully is the first soft, gentle snow that comes in November or early December. "The silence deep and white" settles like a benediction over the brown, uneven landscape, and makes of it a scene of enchantment. Very different from this is the storm that comes when the winter cold is most severe and winter winds most terrific. Then the skies are as white as the fields, with never a sign of blue; if the sun appears at all, it shines cold instead of warm and seems but a vague white spot behind the veil of upward, downward whirling snowflakes; the wild wind takes the "snowdust" in eddies across the fields and piles it at the fences in great drift billows with over-hanging crests. On such a day the snow is so cold and dry, the clouds so low and oppressive, the bare trees so brown and bleak, that we shiver even though we gaze on the dreary scene from the window of a warm and comfortable room.

But another change is sure to come. Some February day the wind will veer suddenly to the south and breathe warm thawing breaths over the white frozen world. Then will the forests appear in robes of vivid blue-purple against the shining hills; and in the mornings the soft blue of the horizon will shade upward into rose-color and still upward into yellow and beryl green; these hues are never seen on the forest or in the sky except when the snow covers the earth to the horizon line. The eye that loves color could ill afford to lose from the world the purples and blues which bring contrast into the winter landscape.

The snow storm to our limited understanding, begins with a miracle — the miracle of crystallizaton. Why should water freezing freely in the air be a part of geometry, six rays of the snow crystal growing at an angle one to another, or sixty degrees? Or as if to prove geometry divine beyond cavil, sometimes the rays include angles of twice sixty degrees. Then why should the decorations of the rays assume thousands of intricate, beautiful forms, each ray of a flake ornamented exactly like its five sisters? And why should a snowflake formed in the higher clouds of the upper air be tabular in shape but still, in cross section, show

Photo S.M.

Heavy snows bring hungry deer which feed on evergreens usually avoided when there is other feed.

that it is built on the plan of six radii? Look at it as we will, the formation of a crystal is a beautiful mystery and is as unfathomable as is the mystery of life.

It is our desire to interest all teachers in the natural history of a snow storm, to the end that "they may love the country better and be content to live therein."

[*Comstock gives a variety of activities and raises questions related to snow. Some of these are presented below with some editorial license.*]

Hang a thermometer in a sheltered place away from the warmth of the house as a necessary preliminary to the proper observation of the phenomenon of a snow storm.

Use a dark woolen cloth on which to catch and observe snow crystals.

Note the condition of the wind and temperature when the snow crystals are most perfect in form.

Try to discover the conditions when the snow flakes are large matted masses of crystals.

Note the temperature before and during and again after a storm. Is there any relation to the storm period?

Is the direction of the wind shortly before a storm always from the same direction relative to the direction of the storm?

What in your view are the conditions which cause one to use the term blizzard for some kinds of snow storms?

When is the term sleet applicable?

Does frost formation have any definite bearing on the incidence of a snow storm?

Check the temperature next to the ground under a layer of snow and compare it with the air temperature.

Does snow as on a sidewalk always melt, or does it sometimes just evaporate?

Pack a quart jar tight with snow, then let it melt. Is there a quart of water?

— From Home Nature Study Course, December 1903

People are not born ready to participate in a democratic society; they must learn it by practice. — Arthur E. Morgan

Counting Rings

Richard F. Fleck

A close examination of Thoreau, the ecologist, serves to illustrate his deep understanding of the practical value of wilderness. One of Thoreau's scientific hobbies was counting rings in the stumps of various species of trees in the surrounding woodland. The practice gave Thoreau insight into forest growth and succession which is not denied even by modern day biologists. In a scientific article, Edward S. Deevey writes, ". . . the last volume (of Thoreau's *Journal*) is notable for a remarkably acute investigation of the growth of the pitch pine. Thoreau appreciated fully the uses of tree ring analysis, and although the growth curves constructed from his data appear to have remained in his head, he understood their value in ascertaining the most productive period in the life of a stand."[1] How long after Thoreau's death it has taken lumbermen to ascertain the same thing!

Thoreau was quick to realize that even in the 1850's and 60's the felling of trees was indiscriminate and overly destructive. "No wonder that we hear so often of vessels which are becalmed off our coast, being surrounded a week at a time by floating lumber from the Maine woods. The mission of men there seems to be, like so many busy demons, to drive the forest all out of the country, from every solitary beaver-swamp and mountainside, as soon as possible."[2] A basic understanding of ecological relationships was then lacking. It was his purpose to examine these delicate natural balances which could be so easily upset by human intrusion. He observed pines and oaks off the Concord area and noted their developmental stages in his *Journal*. "Here is a dense oak wood. I see many little white pines sprung up along its edge in the road, but scarcely one within the wood. They, too, want light and air, though not so much as the pitch pine."[3] Again he exhibits his scientific curiosity and understanding by the following description: "All the sound white oak acorns that I see now have sprouted, and many have sent a root down into the earth. This is often four inches long. But I see no black or scarlet nor red oak acorns sprouted, though I find some sound ones. The white are evidently very much more sensitive and tender than they."[4]

By walking into a forest and counting the rings of stumps, Thoreau could actually speculate the ecological history of the stand. "On what was Stow's lot . . . I count the rings of four oak stumps which are from eighteen to twenty-two inches in diameter. They are all about 120, and the oaks are evidently all from seed. This was both a pine and oak wood, and I suspect that about one hundred and twenty years (ago) pines were cut and burned or blown down or decayed there and these oaks succeeded."[5] In "The Succession of Forest Trees" Thoreau discusses the various means of forest propagation. He goes into detail in describing the winged seeds of pines and maples and humorously illustrates how heavier seeds such as cherry pits are transported. "Thus, though these seeds are not provided with vegetable wings, Nature has impelled the thrush tribe to take them into their bills and fly away with them; and they are winged in another sense, and more effectually than the seeds of pines, for these are carried even against the wind. The consequence is that cherry trees grow not only here but there."[6] Thoreau well realized that a natural seed cycle must be maintained in order to have normal forest growth. ". . . While the wind is conveying the seeds of pines into hard woods and open lands, the squirrels and other animals are conveying the seeds of oaks and walnuts into the pine woods, and thus a rotation of crops is kept up."[7] Unknowing lumber-

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ANSS board member Richard F. Fleck is on a University of Wyoming sabbatical to study Thoreau's influence on civil disobedience in Northern Ireland. His early conjectures seem to lead to the thought that Thoreau had a greater than just a superficial influence.

Fleck is accumulating much interesting material for future writing. Watch for his story of the climb up Slieve Gallion in County Doun, Ireland in a future issue of Nature Study.

ing operations destroy this cycle, and they left their slashings all over the forest floor (as Thoreau describes in "Ktaadn") preventing any young saplings from growing.

It was not only the woods and forests that attracted Thoreau's scientific attention but also lakes and rivers. Credit is now given to Thoreau for being one of America's pioneer limnologists for his basic understanding of food chains and aquatic biology. Professor Deevey states that Thoreau's ". . . wide-ranging observations embraced much that was new, and his reflections frequently are cautious, objective, and ingenious; he was a genuine scientist, if only at intervals."[8] Using his knowledge of surveying, Thoreau measured the varying depths of Walden Pond and made a hydrographic chart which is considered very accurate by today's limnologists. He knew the seasonal temperatures and levels of the various rivers and ponds in the area so well that he noted any fluctuations in his *Journal*. The aquatic life of the streams and ponds continually held his attention. "I also find near by a green zigzag, wormy, spawn-like substance in strings under the water, in which I feel a sort of granule, spawn like. Can this be the excrement of any creature? Can it turn and swell to that brown and floating jelly? Are these the productions of lizards or *Rana* fontinalis?"[9] Many other questions and observations about fish and other wildlife are made throughout his fourteen volume *Journal*.

Even though Thoreau continually dispersed his scientific observations with philosophical commentary and complained of the vestigial insight of science, it cannot be denied that he played a prominent role in calling America's attention to the need for biological investigation and the conservation of our natural resources. Stewart Udall, in his *The Quiet Crisis*, states that if a third wave of conservation is to develop in twentieth century America and if we are to develop a true land ethic, a large amount of our impetus will be attributable to such men of the wilderness as John Muir and Henry David Thoreau.

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1. Edward S. Deevey, Jr., A Re-examination of Thoreau's "Walden", The Quarterly Review of Biology, XVII (March, 1942), 9.
2. Henry David Thoreau, The Main Woods, (Boston: Houghton Mifflin Company, 1893), p. 4.
3. Henry David Thoreau, **Journal**, (Cambridge, Mass. Houghton Mifflin Co., 1906) Vol. 14, p. 258.
4. **Ibid.**
5. **Ibid.**, p. 255
6. Thoreau, **Excursions, op. cit.**, pp. 140-141.
7. **Ibid.**, p. 143.
8. Deevey, **op. cit.**, p. 8.
9. Thoreau, **Journal, op cit.**, Vol 13, p. 233.

Photo by LeRoy Behling

Many stories have been written about the white footed deer mouse. Rarely is a cabin in the woods without visits from this interesting mammal which finds what man builds often to its liking. Numerous species belong to the genus Peromyscus *in the family Cricetidae. Morris indicates that there are about 57 species in the genus. The specimen illustrated here is believed to be* P. maniculatus. *In the northeast two species are found which are hard to separate. They are* P. maniculatus *and* P. leucopus. *Be satisfied to call them* Peromyscus.

This mammal is an omnivore which finds such insects as grasshoppers and moths as palatable as numerous weed and grass seeds.

A Literary Heritage

MILLARD C. DAVIS

Part of our national heritage which has been largely forgotten is the prose style of our early naturalists. John James Audubon was a literary artist. Like so many who wrote before the mid-1800's, he is usually treated as one who presents a "pleasing and delightful" picture of the past. There is a hint of nature's romance, such as the odor of burning pine – but that is nearly all.

Fortunately certain publishers, especially Dover Publications, are now placing on bookstands inexpensive editions of some of the early works. I suggest that we lose no moment but begin to evaluate these writings from a literary standpoint. The message for conservation, love of nature, and so on will take care of itself if we can get popular recognition that the best are worthy of close literary analysis and therefore are fair game to be taught in general American Literature survey courses.

For instance, William Bartram's *Travels*, first published in 1791 in Philadelphia, needs consideration. At least one critic, Fagin, has written in length about the literary style of this book. Let us examine briefly one episode in which Bartram builds to his climax.

In one long paragraph of the Introduction he tells a story in which his hunter kills a bear dam. The scene opens langorously, with Bartram's ease at storytelling carrying the burden – the direction or topic not clearly evident (pp. 21-22):

> When travelling on the east coast of the isthmus of Florida, ascending the south Musquito river, in a canoe, we observed numbers of deer and bears, near the banks, and on islands of the river: the bears were feeding on the fruit of the dwarf creeping Chamaerops; (this fruit is of the form and size of dates, and is delicious and nourishing food); we saw eleven bears in the course of the day, they seemed no way surprised or affrighted at the sight of us.

Nature and man exist in a primitive state of partnership here, a golden age of peace between man and nature. Then the *hunter* makes his move (p. 22):

> In the evening, my hunter, who was an excellent marksman, said that he would shoot one of them for the sake of the skin and oil, for we had plenty and variety of provisions in our bark.

Man here has overstepped his own immediate needs finally. Yet all is blandly said and there is no increase in tension. The hunter fires and kills a bear as he (p. 22):

> laid the target dead on the spot where she stood.

Notice the personal pronoun in the concluding clause. Suddenly the bear has been switched from an insensible "target" to something or especially *someone* feminine, "she." Events now move rapidly as the bear's companion investigates:

> the other, not seeming the least moved at the report of our piece, approached the dead body, smelled and pawed it, and appearing in agony, fell to weeping and looking upwards, then towards us, and cried out like a child.

In contrast to its earlier state of innocence, the other bear is reduced to human-like despair. Bartram reveals it to be the cub with its mother. Then he writes of "the continual cries of this afflicted child," and the bear shifts from the resembling form of "like a child" to the identity. This neat bit of personifying is the climax in Bartram's story. A lesser writer might have been satisfied with either manner of stating the cub's relationship. Bartram uses one to build the other. He could well have called the cub its mother's "child," but we would have accepted at least part of this as another word for cub. His reticence to personify immediately actually helps create the distinction between human child and bear cub. The cub can only be child-like. The effect gained is that much greater when he shortly later refers to the cub as a child, for we can now accept it. The reader is more likely to feel personal sorrow at the murder.

Bartram closes the tale on a touch of irony. Two paragraphs earlier he had ended with the statement that philosophers regard animals other than man as having a "moral system" different from man (p. 21),

> a mere mechanical impulse, which leads and impels them to necessary actions, without any premeditated designs or contrivance; this we term instinct, which faculty we suppose to be inferior to reason in man.

Then he went on with:

> The parental and filial affections seem to be as ardent, their sensibility and attachment as active and faithful, as those observed in human nature.

The devotion of the child-cub to its mother appears to prove this point to Bartram. Not only that, but in man habit could overcome compassion. The hunter would, in spite of all entreaties, shoot the young (p. 22);

> by habit he had become insensible to compassion towards the brute creation; being now within a few yards of the harmless devoted victim, he fired, and laid its dead body upon the body of the dam.

In other words, man's habituated intelligence could overcome his instinct of compassion. Intelligence becomes the villain.

The great care with which he presents his case makes it clear that man can bring disorder to a benevolent Nature of which he is a part. Such writings emphasize a phase of our literary heritage of which America shares its pleasures.

A FEW THOUGHTS

There is a lot of excellent inspirational nature reading among some of the greats in the writing about nature. Some thoughts are gleaned from these, and for more, these authors should be checked out from your local libraries.

Henry David Thoreau tells that "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."

Paul Brooks, whose *Roadless Area* and other works on the out-of-doors gave a new stimulus to many to increase their contacts with the world of nature, writes, "The impact of nature upon us occurs at many levels, and deepens with closer acquaintance. The infinitely complex, delicately balanced relationships in a natural community are a source of increasing wonder . . . And while few of us can hope to understand as thoroughly as a trained biologist, we can grasp the basic principles at work, and so come to appreciate the scientific as well as the esthetic values that it represents."

Joseph Wood Krutch expresses another viewpoint concerning the field of biology which has a grain of truth. He states that "The development of biology during the half century just past has led it further and further from the methods and concerns of natural history. It has made the biologist less and less a man of the out-of-doors, more and more a man of the laboratories. And in the laboratory he has been further a w a y from everything which tends to establish an empathy between himself and the subject he studies."

If I wished to see a mountain or other scenery under the most favorable auspices, I would go to it in foul weather, so as to be there when it cleared up; we are then in the most suitable mood, and Nature is most fresh and inspiring. There is no serenity so fair as that which is just established in a tearful eye.

– HENRY DAVID THOREAU

GOOD READING *for Environmental Education and Interpretation*

R. M. McCLUNG

As concern has grown over the deteriorating condition of our environment, books detailing that deterioration have increased. Many of these are now available in paperback. A few of the very good ones, noted at random on my bookshelf, are: *Since Silent Spring* by Frank Graham, Jr. (A Fawcett Crest Book, 95¢); *Moment in the Sun* by Robert and Leona Rienow (A Sierra Club-Ballantine Book, 95¢); *In Defense of Nature* by John Hay (A Viking Compass Book, $2.65); *The Diligent Destroyers* by George Laycock (An Audubon/Ballantine Book, $1.25); *Life and Death of the Salt Marsh* by John and Mildred Teal (An Audubon/Ballantine Book, $1.25); and – if you do not already have it in hardcover – *A Sand County Almanac* (with some essays from *Round River*, also) by Aldo Leopold (A Sierra Club/BallantineBook, 95¢). The following two paperbacks are also among the very best:

° ° °

Before Nature Dies by Jean Dorst (A Pelican Book). Penguin Books, Inc., Baltimore, Maryland, 1971. Illustrated with photographs and drawings. 352 pages. $2.45.

Written by the Curator of the Division of Mammals and Birds, the National Museum of Natural History, Paris, and with a Preface by Prince Bernhard, President of the World Wildlife Fund, this book gives an excellent overall look at what man is doing to his planet, and what he must do to bring about a reconciliation of Man and Nature.

° ° °

The Last Horizon by Raymond F. Dasmann. Collier Books, New York, 1971. Illustrated with photographs and drawings. 279 pages. $2.95.

First published in hardcover by the Macmillan Company in 1963, this fine book ". . . is concerned with the world we live in, particularly its wilder lands, and with the futures of people on this planet . . . it is worthwhile to pay more attention to keeping it a fit place for human occupancy," as stated by the author in his preface. Tracing man's effect on the earth from his emergence until today, the author winds up his book with a searching discussion of the human population explosion and its implications for the future. – R.M.M.

° ° °

The Most Dangerous Animal in the World by Charles E. Roth. Graphics by Salvatore Raciti. Addison-Wesley Publishing Company, Reading, Massachusetts, 1971. 128 pages.

As can be inferred from the title, this thought-provoking book is about *Homo sapiens* and his effect upon the planet Earth. Written for the 12-to-15-year-old, but with a great deal to say to adults as well, this is not simply one more book about man's ravaging of his environment. The subject matter ranges much more widely than that, and along the way explains *why* man and his civilization got the way they are.

Starting with modern man's remote ancestors, the author traces his physical inheritance of erect posture and advanced brain; then the growth of his cultural inheritance as he developed speech and writing as ways of passing along his ideas and knowledge. He explains how "Man," – for all his present know-how – "is just beginning to understand the many interconnected and intricate processes on this planet that make it able to support life as we know it."

He goes into the basic elements that are needed to form life, explains the nitrogen cycle, the water cycle, the energy of green plants, the workings of food chains. He traces the steps by which man has shaped his world from the earliest times to the present, from the simplest cultures to modern technology, with its promise of a controlled and manicured environment.

Today the workings of that technology have resulted in serious environmental pollution on a global scale. It is now the time – past the time – when man needs to put his know-how to work in the opposite direction – in cleansing our waters, in purifying our air, in restoring our land. This poses the basic question of the book: "What kind of a world do I want to live in today and tomorrow, and how can I help achieve it."

A longtime member of the American Nature Study Society, Charles Roth has since 1961 been Director of Education of the Hathaway School of Conservation Education – the education division of the Massachusetts Audubon Society.

The symbolic but striking black and white graphics which decorate the pages of the book are designs made up partly of photographs, and partly of drawings and prints. – R.M.M.

° ° °

Winter Search Party, A Guide to Insects and Other Invertebrates by Helen Ross Russell. Illustrated by Viola Kohl Mohn. Thomas Nelson Inc., New York, 1971. 171 pages.

Although aimed at the 10-to-13-year-old reader, this book should prove invaluable to teachers, parents, and budding or practicing naturalists of all ages. Written in a clear and informal prose, the book covers a great deal of material and gives countless helpful hints on how to find, collect, keep, and observe insects and other invertebrates in winter.

The introductory chapters discuss the simple equipment needed, how that equipment should be used in collecting specimens (the author takes the reader on an imaginary collecting trip in an old building as an example), and how the collected specimens should be caged or housed.

Subsequent chapters cover such varied subjects as: what you can find in a log, how to search for cocoons and pupae, galls, winter egg-hunts, honey bees in winter, collecting aquatic insects and other creatures, such snow-animals as stoneflies and springtails, "surprise packages" – the parasites that sometimes emerge from cocoons or chrysalids, and the micro-worlds revealed in a gallon of pond water by a microscope.

The Appendix provides a key to invertebrate animals. There is also a bibliography of books that will provide supplementary information, and an index. Hundreds of detailed and accurate black and white illustrations admirably supplement the text. – R.M.M.

° ° °

Backpacking Made Easy by Michael Abel, Naturegraph Publishers, Healdsburg, California 95448. 128 pp. $2.50.

This book has many ideas which are in line with the needs of present day backpackers.

° ° °

More Potatoes by Millicent E. Selsam. Harper & Row, Pub. 49 East 33rd St., New York, N.Y. 10016. $2.50.

This fact-filled story about children making an investigation to find how potatoes get from the farm to the warehouse to the store to the dinner table is good reading for beginners.

° ° °

The California Chaparral – An Elfin Forest by W. S. Head, Naturegraph Publishers, Healdsburg, California 95448. 100 pp. Good references, $2.50.

This is a narrative description of plants, mammals, birds and reptiles of the drier chaparral region. Numerous illustrations help in identification.

° ° °

Seashore by Robert A. Morris, Harper & Row, Pub. 10 East 53rd St. New York, N.Y. 10022. $2.50. Ages 4-8.

Here is a fascinating study of one of the most odd looking and beautiful sea creatures enchantingly pictured in its marine world in Arnold Lobel's three-color illustrations. With exactness and simplicity, marine biologist Robert A. Morris describes how the seahorse of the Atlantic Ocean protects itself camouflaged in seaweed; how it sucks its food; how it stands upright and propels itself with its various fins, and how the male seahorse broods the eggs. — S.M.

° ° °

Is This a Baby Dinosaur? and Other Science Picture-puzzles by Millicent E. Selsam. Harper & Row, Pub. 10 East 33rd St., New York, N.Y. 10022. $3.95.

A baby pelican can look like a baby dinosaur, and a sprouting potato can look like a puppet. This handsome book, with its fascinating photographic close-ups — a trout hatching, a porcupine quill, dewdrops on a spider web — present intriguing picture puzzles which will show young children how to observe nature. Mrs. Selsam introduces the concept of growth and change, as the pictures prove that things do not always look like they are. Ages 4-8. — S.M.

° ° °

Environment Action Bulletin by Robert Rodale, Rodale Press, Inc., Emmaus, Pa. 18049.

This eight page weekly reviews current environmental issues from air pollution, recycling, noise, eco-action, tourism, defoliants, garlic as a substitute for DDT, and others. The 416 pages and more a year is as up-to-date as tomorrow. 6 Mo. $5.00; one year, $10.00.

° ° °

Winter, A Field Trip Guide
Small Worlds, A Field Trip Guide
Soil, A Field Trip Guide

This series of three books by Helen Ross Russell, Little Brown and Co., Boston, will enrich any field trip. During the cold season, *Winter* will enrich an outdoor trip with its many hints from the text and the photographs. The other two books are likewise excellent. These are most suited for the elementary grades, but for the teacher with little environmental background, they will serve as well.

° ° °

Exploring as You Walk in the City by Phyllis S. Busch, photographed by Mary M. Thatcher. 41 pp., J. B. Lippincott, Phila., Pa.

Nature is everywhere including downtown city areas, and in this book Phyllis Busch shows how youngsters can be involved with nature and learn to identify with it. All senses — smell, taste, hearing — are involved.

Seeds which are blown into the city from outlying areas find lodging in cracks in asphalt of parking lots and sidewalks. Some of these seeds are of trees which in their growth enlarge cracks. Ants continue the work and all of these, Pryllis Busch points out, are excellent avenues for exploration in the city.

— S.M.M.

° ° °

Key to North American Waterfowl by Stephen R. Wylie and Stewart S. Furlong. Illustrated by Jack R. Schroeder with an introduction by Ira N. Gabrielson. Livingston Publishing Co., 18 Hampstead Circle, Wynnewood, Pa. 19096.

This new book is printed on polyolefin, an opaque plastic which is waterproof and washable. It illustrates North American waterfowl in full color and provides a method of easy recognition of water birds. There are 48 original, water color paintings. $3.95. — S.M.

° ° °

Investigation in Ecology by Beth Schultz and Phyllis Marcuccio, 1972. This is a boxed set of Seventy 6½"x9" Skill cards. Charles E. Merrill Publishing Co., 1300 Alum Creek Drive, Columbus, Ohio 43216.

These skill cards provide ecological studies by students in the world of science. They illustrate the importance of interrelationships and involve such disciplines as life and earth sciences, mathematics, and the social sciences. Subjects for investigation on population increase, traffic, lawns, rain, household pets and others are included. — S.M.

° ° °

Your Land, Your Jeep and You by Ed Zern is a well-stated summary of the problem of the off-road vehicles. Its reading is urged. Copies may be obtained from American Motors Corporation, 14250 Plymouth Road, Detroit, Michigan 48232.

° ° °

Words for Birds by Edward S. Gruson, Quadrangle Books, 330 Madison Ave., N.Y. 10017. This book is a "Lexicon on North American Birds with Biographical Notes," 320 pp., $8.95.

Gruson delves into the background of 800 birds. While most birds are accurately named as Green Pheasant, Spotted Sandpiper, Screech Owl, other names are not clear. Why is a wren called a wren? The Boobies refer to "stupid fellow" from the Spanish bobo for a dolt or buffoon.

One hundred and nineteen birds are named after people such as Brandt's cormorant, Baird's Sandpiper, Audubon's Warbler and others. This book is strictly for people, and has an index for common, generic and scientific names and of individuals for whom birds are named.

° ° ° — S.M.

Plastics, C. P. Vale, John Day Co., New York, 1972, 48 pp., $3.69.
Textiles, Walter Shepherd, John Day Co., New York, 1972, 48 pp., $3.69.
How Airplanes Fly, Walter Shepherd, John Day Co., New York, 1972, 48 pp., $3.69.
Jungles, Walter Shepherd, John Day Co., New York, 1972, 48 pp., $3.69.

These are four new books in the *Finding Out About Science Series* edited by Stella Robinson. The books provide a generalized review of a variety of science topics, and are probably suitable for about 5th grade and up. There is no attempt at vocabulary control. Alternate pages of the book are in color, although most pages have some kind of illustration on them. The last page of each book is used to define some of the new words mentioned in the book.

In *Plastics*, the author briefly relates the development of plastics. Bakelite was one of the first types used, but by combining longer and longer molecules called polyethylenes, a vast array of newer plastics was produced. Moulding and shaping devices, as well as methods of laminating plastics, are shown. Other uses of plastics include sheeting for packaging, paints, glues, and a variety of plastic foams. Written by a researcher in the field of plastics, the book provides a good simple overview of our plastic era.

Textiles are defined as materials made by interweaving threads or strips. Beginning with primitive means of preparing wool fibers, the author describes how other materials such as cotton, linen, and the less common hemp, ramil, and sisal are used. In describing the method of loom weaving (p. 28) the text becomes cumbersome with new terminology, undoubtedly an attempt at brevity yet with some thoroughness. The story of unwinding silk from silkworm cocoons suggests a way to manufacture artificial fibers such as nylon and dacron. Several pages are also given to a discussion of dyeing fibers.

How Airplanes Fly. The author uses a historical approach to describe the evolution of plane flight beginning with a study of kite flying. As in kite flying, an airplane requires controls for stabilized flight. The author introduces the terms and devices commonly used such as rudder, elevator, and ailerons, and explains how these operate. Illustrations show the development of the first one-seater planes to the modern 747 and flying wing types of planes. The discussion of sonic booms — a most difficult concept — is hardly ex-

Continued on page 14

There Are No "Varmints"*

Irston R. Barnes

Recently the mail brought a report of a local conservaton program that impressed me as being very soundly conceived and completely executed. In a quite extensive area, soil erosion had been checked, cover had been re-established, and trees had been replanted. A wildlife area had been created and much of the planting had followed the best precepts of wildlife management and soil conservation.

Then, in discussing the problem created by an overabundance of foxes, it was explained that the "varmints" were being trapped and exiled to distant parts. The word varmint may have been only a passing concession to the prejudices of some readers, but it cast doubt on the true orientation of the entire program.

"Varmint" and "vermin" are words that have been often the sole moral and biological justification for the misguided slaughter of hawks, owls, crows, cormorants and other fish-eating birds, mountain lions, bears, wolves and coyotes, foxes, raccoons, mink, weasels, and snakes.

The use of the terms varmint and vermin tells more about the speaker than about the animal designated. It reveals that the speaker is prejudiced, perhaps on the basis of hearsay or perhaps from his own limited experience, against the animal he describes. It tells nothing reliable about the animal or its role in nature.

There is only one safe rule approaching nature – *"Whatever is, is right."* The appearance of any form of life – other than an introduced exotic – is evidence that there exists those environmental conditions and natural roles for which the animal has been evolved by countless generations of natural selection.

No animal lives because it wilfully, perversely, and contrary to natural law, decides to be alive.

If this basic fact is recognized, the presence of particular animals in such numbers that they become pests may serve as illuminating "indicators." *They are evidence that the environment has changed, perhaps through man's activities, in ways to favour an unwanted abundance of particular species.*

Similarly, the absence of desired wildlife, when individuals of that species are present elsewhere, indicates that the local habitat lacks essential features which that species seeks or that individuals of that species have not had time to establish traditions with respect to the area since it became a suitable habitat.

The term varmint is commonly applied to predators. Yet, except in the rare cases of predators preying on domestic livestock that cannot be protected, *predators cannot become too abundant.* Predators can never increase beyond the limits set by the available food supply. And since predators take the easiest, most available prey, there is no danger that predation will eliminate or unduly reduce any prey population. Predators, however abundant, always adjust their numbers to the changing numbers of their prey.

To designate any animal "vermin" is to confess that the speaker knows little or nothing about the animal or its role in nature. Every animal has its essential natural task; every animal discharges a vital natural function. To ignore this is to invite trouble.

The farmer who has resorted to heavy application of lethal insecticides has killed myriads of beneficent insects along with the grasshoppers that plundered his crops. He has paid a high price in a less productive soil and prospects of a more troublesome insect problem in future years.

The plague of grasshoppers might have been avoided if he had not, the year before, resorted to the wholesale poisoning of field mice and other small rodents, which probably also reduced the number of birds; both had helped to keep grasshoppers and other insects within bounds.

And the rodent campaign would not have been necessary if the farmer had not carried on a relentless shooting war against hawks, owls, foxes, and skunks because he imagined that they were preying heavily on pheasants.

The balance which nature strikes is generally beneficent if man does not blindly tilt the scales, but *it can become costly and troublesome when human interference seeks to favour or to prejudice one species without knowledge of the ecological consequences.*

Those who aspire to understand natural phenomena will accept every designaton of an animal as "vermin" or of a plant as "weed " as a challenge to discover the role of the "vermin" or "weed." The inquiry will probably lead to the discovery that fundamentally this is another instance of man working *against,* rather than *with* nature.

* WILDLIFE REVIEW, Vol. IV, No. 4. Victoria, B.C.

Are Weeds Needed?

When the winter snows are deep birds carefully glean seeds from the weed heads which stick out of the snow. Perhaps this should be hint enough for us to do the same, but not for food. One could learn what seeds the birds are gathering, and the great variability in the sculpturing on some seeds. Of course many seeds will be polished smooth. Some will be round and pock marked like tiny golf balls; others angular and provided with a variety of minute projections.

Farmers are much interested in weed seeds, for these often plague fields of grains, vegetable crops and other plantings. The common weed seeds of the local community vacant lots collected in small vials will be a good educational venture. Many of the weeds will be invaders in recent times brought by early settlers. Some are more widely spread by birds when some of the seeds pass through the digestive tract without being digested.

Fence rows are areas of considerable concentration of a variety of weeds. Winds blow plants across fields and pick up weeds which lodge against the fence. In cultivated areas the fence row is least disturbed and here the variety of weeds propagate without interference. Thus a lesson in ecology related to plant distribution can be a good motivation to looking more critically at the surroundings.

NEWS and NOTES for Environmental Education . . .

1973 SOCMA Medal

Competition for the 1973 SOCMA Gold Medal, and its accompanying $1,000 honorarium, is now underway. The award is designed to recognize "outstanding accomplishments in the application of environmental chemistry which contribute in a significant way to improving the nation's environment and the general welfare of its citizens."

There are many distinguished research scientists whose work in the field of pollution control over the past few years warrants consideration for this award. You may be in a position to nominate one or more of these individuals, either from within ANSS or from outside.

Any individual employed by a company in the United States or affiliated with a government agency or U.S. educational institution is eligible. There are no time restrictions regarding completion of the work on which the nomination is based, although first consideration will ordinarily be given to an accomplishment within the preceding five years. Joint entries on behalf of research teams are eligible for consideration.

All nominations should be sent to John Gustafson, Treasurer, by March 10, 1973.

The SOCMA Medal will be presented at a luncheon meeting of the Association in September 1973 at which time the recipient will have an opportunity to address leaders of the chemical industry on a subject of his own choosing.

Pierson Available

David Pierson, former Board Member and long-time member of ANSS, writes that his science education department at Fort Hays, Kansas is being phased out. Anyone looking for a "true interdisciplinarian" with doctoral-level experience in general biology, environmental education, and science curriculum education, please contact Dave at 2705 Woodrow Court, Hays, Kansas 67601.

UNSS Group Camps in Desert Mountains

Over the Labor Day weekend about 20 Utah Nature Study Society members camped in the Lehmann campground in the Humbolt National Forest in Nevada. This three-day weekend afforded a visit to the cave in Lehmann Cave National Monument, and hikes in the campground area. Perhaps the highlight of the trip was a drive to the base of Wheeler Peak campground (9500 ft.) which afforded some views across many miles of desert and to mountains some of which were over fifty miles away.

From the parking lot at this elevation the group hiked two miles to the Ancient Bristlecone Pine Forest. This forest tells a great story. While many believe that the giant redwoods of California are the oldest living things, recent studies of bristlecone pines give them the credit for the greatest longevity. This exceeds the redwood by over a thousand years. The oldest bristlecone pine is estimated from ring count to be over 4,600 years old. This is "Methuselah" in the Inyo National Forest in the White Mountains of California. The bristlecone pines in the Humbolt National Forest Area are not much younger.

These remarkable pines are the upper timberline trees. At the base of Wheeler Peak the trees are subjected to violent winter storms with severe cold. The winds pick up sand grains and ice crystals which do an effective job of removing the bark from the windward side and often scouring away much of the wood leaving a beautiful yellow wood which often shows the rings of growth. One such sample showed over a hundred rings in three quarters of an inch growth.

Some of the trees may have a circumference of over six feet, yet there might be less than a foot of bark. The remainder was given up to the elements. Even for all the fierceness of the winds and the abrasiveness of the sands and ice it carries, the needles on the living portion persist through five or more years.

Thomas C. Desmond

Thomas C. Desmond, former New York State Senator and long-time member of ANSS, died October 6, 1972 at the age of 85. A graduate of Harvard and M.I.T., he nurtured a love of plants and nature as an avid botanist with a large private arboretum at his home in Newburgh, N. Y. He is survived by his wife, the former Alice Curtis, a noted author of historical novels for children.

Senator Desmond was a close personal friend of Theodore Roosevelt. As an engineer, he organized the regiment of engineers for the proposed Roosevelt Volunteer Division during World War I.

Mr. Desmond was an innovator. He fathered such legislative "firsts" as an eight-hour day for state workers, premarital medical examinations, foot paths along state highways, low-cost housing, school lunches, and help for the aged.

After our long-time benefactor, C. M. Goethe, died several years ago, Senator Desmond picked up his mantle, sending an annual contribution of $100.00 toward our work. We will miss him and his valuable support.

Will Western Section Disband?

Twenty-three years ago — in 1949 — nineteen ANSS members meeting in Vancouver with the Pacific Division of the American Association for the Advancement of Science organized the Western Section of the American Nature Study Society. Every year since except in 1962 it held meetings with the Pacific Division of AAAS.

Sessions have generally been very well attended, but the majority of those who came because of the excellent programs provided, were not ANSS members. The field trips have been quite successful and well attended. As a whole, the Western Section has provided an excellent service in the cause of nature study to a large number of people.

There has been some discussion among some members that the section be disbanded because of the relatively small number of ANSS members who attended. Others stoutly defended continuance at least as a service to those who did attend though they were not members. They felt that the function of the Society was broader than just to be self-serving.

The Western Section is laying the groundwork for the 1973 meeting in Salt Lake City, June 13-14 with the Pacific Division of AAAS. Dorothea Mulaik is serving as general chairman. Besides a program of papers, there is a choice in this desert and mountainous country for a great variety of field trips to significant environmental areas.

Undoubtedly the question will come up whether the Western Section of ANSS should disband. Help will be needed from the parent organization and officers if this group is to continue as a vital force. In the last decade, to the best of our recollection, only one national officer from east of the Rockies ever attended one of the western meetings or ever sent a note of encouragement to those who seemed unrelated to the national group.

CHANNEL — CHANNEL — CHANNEL

Channelization programs to ditch and straighten natural streams and rivers are being developed in every state. In the process, our nation's swamps and wetlands are being rapidly drained and the rich natural habitat which they provide for the fish and birds is destroyed.

After channelization, the forests and woodlands bordering the new watercourses are often cleared for commercial development and concentrated agricultural use. This work of channelization is done under the excuse of flood prevention.

Over 6,000 miles of streams have already been channelled and 12,000 miles approved by the Soil Conservation Service for channeling. The Administrator of the SCS estimates that 150,000 miles of our nation's waterways will be ditched by his agency under current SCS programs.The environmental costs of the gutted streams and wasted natural areas bordering these watercourses are almost completely ignored by the SCS and the special interests which support the agency.

ANSS members interested in this problem are invited to contact the Citizens Committee Against Channelization, 917 15th St., N.W., Washington, D.C. 20005.

How Is Your Bicycle?

The Bicycle Transportation Act was before Congress, but its passage will await the next session. This act would set aside a portion of the federal highway monies for the development of bikeways.

Oregon has passed a law which sets aside one percent of highway money for the construction and maintenance of bicycle and hiking trails. Similar laws are proposed for California, Nebraska, Massachusetts, New York, Michigan and Arizona.

The Oregon plan calls for a bike route running the length of the Oregon coast, and another in the Columbia Gorge.

Thirty or so years ago many thought that the bicycle would completely disappear from the highways of America. The reaction against the automobile has been building. Even NATURE STUDY sensed this in an article by Dr. John Brainerd published in the winter 1967-68 issue, Vol. 21, No. 4 under the title "Bicycle Routes for Conservation of People and Natural Resources."

Some months before this article NATURE STUDY carried a shorter item entitled "Bicycles Returning." These indicated a sensitivity to the new trend in a healthy recreation and a solution for some transportation problems.

LET'S GO TO MEXICO

On November 6 thirteen members of the Utah Nature Study Society in six camping rigs entered Mexico for a trip which hopefully will be long remembered. This trip includes a "Piggyback" ride by rail from Chihuahua, Mexico to Los Mochis on the Pacific Ciast. Campers will be loaded on flatcars and proceed across the 450 miles of the little explored wilderness through the Tarahumara Indian country. This part of the trip will take one from near sea level to over 8,000 feet, around countless hairpin curves, over 39 bridges, and through 86 tunnels. Stops will be made at quaint logging villages, and side trips to cave dwelling Indians.

The trip will be at a leisurely 20 miles per hour with overnight stops, the whole trip taking four days. From Los Mochis the group will go south to Mazitlan for a five day session of trips into the jungles, beach combing, deep fishing and doing what ever else interests the individuals. From there the trip goes north to Nogales, in Arizona. The stay in Mexico will be for 19 days.

We Must Not Degrade Clean Air To a Standard

At best it is disturbing when some trained scientists examine plants in an area where effluents from industrial smoke stacks descend on them. Some make the conclusion that no evidence was found of damage to plants. What they are not aware of, or choose to ignore, is that those plants which could not stand the sulfur and fluoride compounds were all gone within a few years of operation of the industries. Those plants which were more tolerant are the survivors.

Air quality must be improved. Under a federal law passed in 1970, the Environmental Protection Agency promulgated national ambient air quality standards. An integral part of these standards was the "non-degradation" principle, long recognized in air and water pollution control law. This principle means that clean air regions cannot be polluted down to the standards. The purpose of the law is to enhance the air quality of dirty air regions, not to provide a license to pollute clean air regions.

There are numerous other environmental conditions which need the thoughtful consideration by ANSS members to be followed by action. Our parks, forests, rivers, shorelines and wildlife refuges must be protected. The laws to protect these are generally clear and definite, and it is essential that agencies concerned be reminded, even through court action, that they must enforce the law to protect the environment.

Following court action by citizens groups which brought a decision from the District Court of the District of Columbia, the court prohibited further degradation of ambient air quality anywhere regardless of how far it exceeds the minimum standards set by law. In short, the clean, fresh air of our mountains and deserts would not be allowed to degenerate to common urban standards.

Energy Policy Needed

Congress finally adjourned shortly before election time. The next congress must make energy conservation a key element in a national energy policy.

Predictions of a doubled demand of energy consumption in the next two decades demands that we can no longer tolerate waste and inefficiency. There must be improved conservation practices. There must be a reduction of the total energy demand.

Senator Jackson states that "the Congress must face up to our nation's traditional waste of energy sources . . . Our use of these resources – from driving cars, to heating homes, to producing electricity, to electric intensive industrial processes – have been seriously inefficient."

Copies of "Conservation of Energy" produced by a committee on Interior and Insular Affairs may be obtained from this committee, Room 3106, NSOB, Washington, D.C. 20510 requesting publication Serial No. 92-18.

Stockmen vs. Wildlife

Sally M. Snidow from Cape May, N.J. writes in *Science* (Oct. 14, 1972) that "It is incredible that the Western stockmen have found yet another way in which to abuse the privilege of using public preserves.

"They have already quite successfully fenced off the people's land, decimated the people's wildlife (some to the point of extinction), sprayed with illegal herbicides the people's plant life and generally have taken over and made the people's land their own for their own profit.

"And now they want to eliminate the buffalo which they say is a source of brucellosis, even though there is a vaccine to prevent this disease in cattle. Cattle can be replaced; our wildlife creatures and places cannot."

Appalachian Hikers Note

Eastern ANSS members who are interested in hiking the Appalachian Trail will be interested in a new relocation purchase for a portion of this famous trail. The Potomac Appalachian Trail Club at 1718 N Street, N.W. Washing-

ton, D.C. 30036 has acquired a key section for the relocation plan. Much of the trail suffers from overuse. Sections passing through private land have been closed and contributions are needed to acquire right of way. PATC would welcome contributions dedicated to such right of way acquisition.

— *After Better Camping*, Nov. 1972

BORED?

Bored? Robert A. Nisbet writes in *Public Interest* that "Boredom is one of the least understood, least appreciated forces in human history. A few years ago, the scientist Harlow Shapley listed boredom as third among the five principal causes of world destruction. Today it might seriously be considered first."

Individuals who become interested in the flowers of the fields and woods, of the birds which seasonally visit one's area, of the "pretty" rocks which might lend themselves to tumbling or for jewelry, or the individuals who attack ecological issues, never are bored. They are the serene individuals who find life full of interest. They are too few in number.

Perhaps our schools with their preoccupation with innovation are at fault to a large degree. Innovation has brought about the building of schools which are windowless. A child cloistered in such a building can not day-dream as he watches fluffy clouds float by, or watch a storm sweep over the playground. Too few teachers leave the university with any interest or hobby related to the natural world of which mankind is such an intricate part. How will the children get to know the natural world? Books as a source are not enough. Boredom is the most likely end product.

Escape To The Trail

The back packing fad has spread over the country as an effort to get away from it all. The present trend has brought swollen numbers of young people who are disenchanted with the trappings of society. These were the "hippies." Today many others have discovered a wealth of pleasure in freedom from vehicles out among the hills and mountains.

Equipment has been greatly improved in recent years, and living in the outdoors from a pack has become easier.

Whereas a decade ago one could get away easily from the press of people, today one needs to leave the usual trails and head across country; so if you make a mile or two a day and don't make ten, nothing matters. Perhaps even some pleasant spot will urge you to tarry several days to enjoy its offerings.

The pleasure of being on your own is a rich reward gleaned from a back packing trip across country and will not soon be forgotten. So many are seeking such experiences that Great Smoky Mountains National Park has required registering of those who wish to go into the back country. When a quota for a given route is filled, no more are permitted to enter. Several other parks have done the same. This is only a small measure of the attraction which the outdoors has for those growing numbers who take their pack and try to get away from it all.

Find Your Mate

We have all wondered at various times, how a male insect — a moth for instance — is able to find a mate in the vastness of space in field or forest. Experiments have shown that males detect females from nearly a mile away. Studies show that detection is largely a chemical one. The amount of chemical released by a female, and dispersed through the air is usually extremely small, and the number of molecules to reach a male even at a few hundred yards is indeed minute.

After much research, physical chemists have succeeded in isolating some of the female-produced attractants, and a few have been synthesized in the laboratory. These opened doors to new experiments with insects, their sexual, social and other behavioral oddities. Obviously, the recipient of air-distributed molecules through chemical sensory apparatus showed changes in behavior. These chemicals had been released directly into the air or laid down as trail markers, or to serve as an attractant for a mate. Some were released in situations interpreted as expression of alarm, or to identify members of various households or colonies.

There are species of moths which have wingless females, yet males from considerable distance find them. Queen bees produce a chemical which reduces the ability of males to produce more queens, and during nuptial flight virgin queens have attractants for males.

A Popular Summary

You live at Number 23. The robin who bathes in your bird bath also lives at number 23.

Both you and the robin live there for the same reasons. You both like the good shelter provided against the elements: the adequate supply of water for drinking and bathing; and the good constant food supply. These essentials of a good wildlife environment are occasionally produced naturally. More often they are present because somebody purposefully created a good wildlife environment, perhaps simply by the addition of one essential ingredient.

Ann Haven Morgan, who wrote the only authorative handbook we have on the life of ponds and streams, is quoted as saying: "The major attraction for any animal is food."

Wildlife and you live where you do because in that particular geographic spot can be found all the necessary elements for the good life.

Man must understand and learn that he shares the earth's surface with all wild creatures.

Eastern Wilderness Areas Possible

For over a decade concern for wilderness was centered largely in the West. The following item shows some eastern wilderness problems and comes from an "alert" sent out from the Wilderness Society.

A major battle is now on to preserve wilderness areas in the national forests east of the Rocky Mountains. Citizen groups have put together more than a dozen sound eastern wilderness proposals and are at work on more — all to give the strong statutory protection of the 1964 Wilderness Act to these threatened areas in the most populated part of the country. On the face of the citizen effort to preserve the eastern remnant of wilderness, the U.S. Forest Service proposes a weaker system for "protecting" eastern wild lands.

The Forest Service position is based on its predetermined policy judgment that no area in the east can possibly qualify as wilderness under the Wilderness Act. This policy results from the claim that eastern national forest lands have generally been logged or roaded or have contained temporary works of man in the past and therefore lack "purity." This self-serving and erroneous argument has resulted in confusing the public. Bills have been introduced in Congress to set up a new, complicated and dangerously competitive system under the designation "wild areas." These would have only second-class protection and not be truly protected as wilderness.

We recognize a need for other land-use classifications in the east such as scenic and research areas. Primitive recreation opportunities must be made widely available in these national forests. But with the Forest Service unwilling to use the wilderness preservation mechanisms already available to it, there is no point in now discussing some

ill-considered new statutory classification. At this point, these alternative-to-wilderness proposals pose a serious and fundamental threat to the integrity of the 1964 Wilderness Act itself, a landmark conservation measure for which citizens across the country waged an eight-year battle. The controversy intiated by the Forest Service is tragic and unnecessary. The 1964 Wilderness Act is the best tool for preservation of wilderness in the east, as it is for the west. It has already been used in just this way by other federal agencies and Congress. The act was intended to be applied in the east no less than in the west.

Conservationists must answer the challenges which the Forest Service has perpetrated to the applicaion of the Wilderness Act in the east.

The Forest Service now argues that any forested area which has ever been logged or had temporary roads, cannot now qualify as wilderness, and never will. Since most of the National Forest land in the east, mideast, and south has been subject to such uses to some degree in the past, none can qualify as wilderness – says the Forest Service. This "purity argument" ignores the language of the 1964 Wilderness Act, which deals with practical application rather than with an ideal concept. The Act's definition is broad and inclusive: "an area of undeveloped Federal land retaining its primeval character and influence . . . and which . . . generally appears to have been *affected primarily* by the forces of nature, with the imprint of man's works *substantially unnoticeable.*" (Sec. 2 (c) Italics ours.) These key phrases were specifically written into the definition by Congress to make clear that absolute purity is not required. Those who wrote the Act fully realized that an absolute standard would be self-defeating, and could be used to block the protection of most wilderness lands where some signs of past human activity, however unobstrusive, can usually be found.

There is a clear recognition, by implication, that insubstantial intrusions which are not compatible with wilderness would be overcome in time by nature itself. This is true in even greater degree in the east, where forest and vegetative growth is relatively rapid.

The Wilderness Act itself designated three wilderness areas in the eastern national forests. A growing record of post-1964 wilderness designations of eastern areas having some historic adverse use gives further Congressional precedent for applying the Wilderness law in the east. The evidence of past human activity in these areas has been healed by nature. These areas are now designated for protection under the definition set forth in the Wilderness Act.

HINTS

Horse chestnuts should be available in late November and December. Plant some of these seeds in odd corners around school yards, vacant lots, or your yard at home. Next spring watch these sprout. You might be able to start a forest. Some seeds placed in suitable germinating pots in the classroom will open up some interesting studies when they start sprouting. Students might take these home for planting in suitable spots.

° ° °

On a real cold day during the winter take a cloth well soaked with a mixture of alcohol and water and rub this over a cold windshield or other window. The rapid evaporation of the alcohol and quick freezing of the water into fantastic jack frost patterns will be a great action to catch on movie film. Even stills of such fernlike painting make excellent pictures.

° ° °

After a series of snowfalls have accumulated in drifts along roadsides a cut made through such formations will reveal some interesting snow geology. Snow collected from each of several layers can be melted down to reveal varying amounts of particles of dust which may be pollen grains, vegetable materials, fine sands, and even radioactive particles. The water filtered through fine filter paper will show that the white blanket of snow was not so white after all.

° ° °

Be a string saver. Have a handy bag in some cupboard into which to place one's savings. There is a qualification, however, and that is that one must cut up the pieces of string into five or six inch lengths.

When spring comes, and the robins are out looking for nesting materials, place some of these strings draped over low branches, thrown on the ground, or hung from some container. Robins welcome such short pieces and will become very bold in gathering up what is offered.

Next summer drop NATURE STUDY a card telling what success you had with your cut up string hoard.

° ° °

From *The Environmental Educator*, Slippery Rock State College we glean the following: "In a clean, large tin can place a small amount of cold water. Carefully dry the outside of the tin can and observe the formations of drops of water condensng from the water vapor in the air. This is dew. Pour out the water and add chopped ice cubes and salt mixture (2 cups ice, 1 cup salt). Dry the outside of the can and observe again. This is frost. Place a thermometer in ice and salt mixture and record the temperature." (Snow may be used in place of chopped ice. Ed.)

Persons who want to receive the *Environmental Educator* should send their name and address to Dr. Craig C. Chase, Environmental Education, Slippery Rock State College, Slippery Rock, Pa. 16057.

1973 Conservation Summits

During the coming summer of 1973, the National Wildlife Federation will conduct three Summit meetings for its associate members. Last summer three sessions were conducted, two at Summit West at Estes Park in Colorado and one at Summit East in North Carolina at Black Mountain near Ashville. In 1973 the Estes Park session will be July 1-7; Seashore Summit on the Monterey Peninsula of California July 30-August 5; and Summit East August 12-18.

Stanley and Dorothea Mulaik will conduct the Nature creeps which past ANSS president Edwin Way Teale expressed so well in *Journey Into Summer*, p. 6, Dodd, Mead & Co. 1960 as follows:

". . . The way to become acquainted with an area intimately, to appreciate it best, is to walk over it. And the slower the walk, the better. For a naturalist, the most productive walk is a snail's pace. A large part of his walk is often spent standing still . . . For his goal is different from that of the pedestrian. It is not how far he goes that counts; it is not how fast he goes; it is how much he sees.

"And, in deeper truth, it is not just how much he sees. It is how much he appreciates, how much he feels. Nature affects our minds as light affects the photographic emulsion on a film. Some films are more sensitive than others, some minds are more receptive. To one observer a thing means much, to another the same things means almost nothing."

GOOD READING

Continued from page 9

plained by the three sentences of text on page 38. The last two pages provide instructions for making a simple paper glider which would interest the young reader.

The title *Jungles* is a fascinating topic for most youngsters. The author locates the tropical jungles by an illustration and also shows the typical stratification occurring in jungle forests. Some of the unique tropical plants and animals are mentioned and sketched. It should be noted that there are at least four species of pirahanas although the author implies only one, and birds and insects obtain *nectar* from blossoms, not honey.

The tropical grasslands and mangrove swamps are briefly described, for they are often associated with jungle regions. The lack of pagination in much of the book is a little inconvenient.

– M. F. VESSEL

Traditions Are Challenged

STANLEY B. MULAIK

There is evidence building up that new priorities, new viewpoints regarding the environment are coming to the fore. Thomas W. Wilson in THE ENVIRONMENT: TOO SMALL A VIEW states: "Without reference to peace protests or 'student unrest' or underground movements, it may well be that the current chorus in favor of new values and social change is already out of date. We may, in fact, be deep in an unmeasurable and unpredictable process of transformation in traditions and value systems.

"One can state in respectable society that 'the automobile must go' without being accused of being drunk, and noise has become a current topic for dinner conversations.

"There is open talk of enforced limitation of families, and little doubt that abortion will be legalized generally.

"Several hundred conservation cases are pending before the courts, many involving injunctions against projects which even months ago would have been welcomed by almost everyone as sure signs of 'progress.'

"Lawyers are boning up on 'environmental law' and scientists are rallying to the side of the environment in the name of public interest.

"The 'zero growth' movement finds adherents.

"The Los Angeles Chamber of Commerce confronts an organization called 'For a Lesser Los Angeles.'

"A majority of industrial leaders polled by *Fortune* are in favor of Federal establishment and enforcement of nationwide air and water pollution standards and oppose the introduction of new products without adequate testing of their possible side-effects.

"More or less radical young lawyers argue cases supported by local chapters of DAR and retired Admirals.

"Citizens are no longer sure that they want their community or county or even their country to grow.

"It can be argued that widespread public demand for change comes to the surface only after the forces of change already are in motion and moving irresistibly. Whether or not this is always true, there is considerable evidence that the sudden explosion of public concern for environmental quality follows rather than precedes the unleashing of forces of social change, related or unrelated to specific environmental issues.

"Thus the 'value' problem may not be one of engineering changes in attitudes but the shaping of actions in accord with attitudinal changes already in process."

We can raise questions which can be embarrassing to promoters of progress and growth. Are the efforts of Chambers of Commerce aimed at developing a quality life for our citizens, or is their aim mainly to promote growth in bank deposits?

Are the excursions to entice industry to come to "undeveloped" areas aimed to give our people a better life or to bring with the industrial growth and population increase a greater conglomeration of roads, freeways, increased taxes for increased schools? Will the crowding of more people bring greater air pollution, increased crime, and the inevitable increase in the police state to cope with an urban-frenzied citizenry? Is this what people want?

These are hard questions for which there are no easy answers. But the answers must recognize that growth for growth sake is not the best. For a century and more the cry was for growth and progress. But we have seen that there was a growth in pollution, in crime, in riots, and in the overall destruction of the life support system which the earth offered. We cannot afford to let those who strive for growth at the cost of social, moral, and ecological degredation continue.

Each generation thinks that the problems it confronts are of truly crisis proportions. There is more reason than ever to feel this way today. We in America are beset by a racial crisis, a youth crisis, a war crisis, an urban crisis, a population crisis. A crisis is simply a situation which has become so bad that something has to be done about it and done soon.

Each person looks back over the period of his own life to find the framework for judging the seriousness of present situations. Three major crises of deep social significance have occurred in this country in our time. First was the Great Depression of the 30's, at the time altogether baffling in its nature, which severely shook our optimism and self-confidence. Then there was World War II. The meaning and direction for action was clear for facing this war, and while it was disturbing to many individuals who were called upon to take part in the war effort, a solution of sorts was arrived at.

The crises of today seem bigger, more baffling, and clearly with no solution which has a remote possibility of succeeding because of the magnitude of the elements in the crisis.

S. B. M.

"Everything You Have . . ."

Ye Editor has received scores of requests for, in substance, "everything you have in conservation" from school children from coast to coast. The source from which my name is identified with ANSS is not known. ANSS has limited supplies of nature study TIPS and other helps, which may be obtained from the Secretary. The Packet of NATURE STUDY TIPS and PHOTOS is also available—send $2.50 to the Treasurer for each packet. We would recommend that individuals write to such organizations as the Sierra Club, the Nature Conservancy, National Wildlife Federation, National Audubon Society and others.

New York Plan

Various conservation groups in New York state have endorsed a proposal to create a state park management plan. This plan would place state owned lands in four broad categories: wilderness, 997,960 acres; primitive, 75,670 acres; canoe area, 18,000 acres; and wild forest, 1,150,300 acres.

The remaining 3.5 million acres of the park which are privately owned will be the subject of a later land-use plan to be submitted to the governor and the state legislature.

Shortly before adjournment in October, Congress passed legislation establishing Lassen Volcanic Wilderness in Northern California.

There are other areas which should be given full wilderness status by legislative action, but pressures on Congress by a variety of interests motivated largely by political considerations have deferred such action. Mining, lumbering and live stock interests are the major blocks to more effective action toward the creation of qualified wilderness areas.

Littering is a problem on water as well as on shore. The State Conservation Department reminds you that the law states that no person shall place, throw, deposit or discharge any litter into the waters of the State from any watercraft, marina or mooring.

ANNUAL MEETING PROGRAM

Washington, D.C., December 27-30, 1972

Building Environmental Understanding

Arranged by HELEN ROSS RUSSELL
(Author and Consultant, Jersey City, N.J.)

WEDNESDAY, DECEMBER 27 Washington-Hilton, Military
Chairman: Helen Ross Russell

With the current concern about the environment it is imperative that all citizens be in a position to make knowledgeable decisions. This means that educational programs must foster sensitivity to the natural and man-made world, develop the ability to distinguish between fact and propaganda and offer an opportunity for group and individual participation.

The afternoon sessions will feature five programs aimed at these goals; the evening one provides the audience with an opportunity to share their own experiences, to exchange materials and to ask questions.

Teaching material will be exhibited and distributed.

2:15 p.m. – ENVIRONMENT CENTERED SCHOOL PROGRAMS

Reading the Landscape with Elementary School Children to Build Ecological Understanding
Millard C. Davis, *(Coordinator of Outdoor Education, Hopewell Valley Regional School Dist., Pennington, N.J.)*

Using Field Trips as a Teaching Tool in Secondary School
Shirley R. Kohler *(Science Teacher, Emmaus High School, Emmaus, Pa.)*

Burgundy Wildlife Camp and Experiment in Summer Education
John Trott *(Director, Wildlife Camp, Burgundy Farm School, Alexandria, Va.)*

A Three Year Water Pollution Study in Gwynn's Falls, Baltimore
Jessie M. Perkins *(Head, Science Dept., Frederick Douglass High School, Baltimore)*

Tenth Graders and Teachers Study Environmental Education Together
H. Seymour Fowler *(Chairman, Science Education, Pennsylvania State University, University Park)*

7:15 p.m. – INFORMAL DISCUSSION
Washington-Hilton, Military
Chairman: Helen Ross Russell

THURSDAY, DECEMBER 28 Washington-Hilton, Lobby

9:00 a.m. – COMMUNITY-BASED RESOURCES IN THE INNER CITY
Chairman: Gerald Schneider *(Consultant, Environmental Matters, Silver Springs, Md.)*

Adams-Morgan Community Nature Center, a Store Front Enterprise
James E. Contee III and Malcolm Leith *(Co-directors)*

Anacostia Neighborhood Museum, Blending History, Culture and Natural History
Zora Martin *(Director, Youth Programs)*

Shapiro Park, Outgrowth of a Neighborhood Planning Council
Walter Pierce *(Planning Council Member)*

Frederick Douglass United Community Center, A People Project
William Sanders *(Executive Director)*

The four sites selected for this field trip are outstanding examples of successful environmental education because they recognize the universality of the laws of ecology within the particular socio-economic-cultural base of the ecosystem of the participants.

7:15 p.m. Washington-Hilton, Jefferson-East

LENSES ON NATURE – A program of nature photography – innovation and technique
Chairman: Richard J. Baldauf
(Curator of Education, Kansas City Museum of History and Science)

FRIDAY, DECEMBER 29 National Arboretum

12:30 p.m. – PRESIDENTIAL ADDRESS AND LUNCHEON
Book Exhibit of ANSS Authors
Chairman: John A. Gustafson *(Chairman, Biology Dept., State University of N.Y., Cortland)*
Speaker: John I. Green *(President, American Nature Study Society)*

3:00 p.m. Washington-Hilton, Military

AREAS FOR ENVIRONMENTAL EDUCATION
Arranger: Adele N. Wilson *(Chief, Branch of General Inquiries, Office of Information, National Park Service, Washington, D.C.)*
Chairman: Hugh B. Miller *(NESA Coordinator, Office of Environmental Interpretation, Washington, D.C.)*

Panel:
Eugene M. Ezersky *(Director, Environmental Education Project, Educational Facilities Laboratory, N.Y.C.)*
James R. Pepper *(Assistant NESA Coordinator, Office of Environmental Interpretation, Washington, D.C.)*

Cultural areas – natural areas – city areas – each bring their unique contribution to environmental learnings. How do we obtain them for school use? What do we do with found space? What facilities do we need to create learning laboratories? How can we finance them?

7:00 p.m. Washington-Hilton, Lobby

EXPERIMENT IN MULTI-MEDIA
Arranger: Richard A. Baldauf

SATURDAY, DECEMBER 30 Washington-Hilton, Lobby

8:45 a.m. – FIELD TRIP to Chesapeake Bay Center for Environmental Studies at Annapolis, Sandy Point Park and Kent Island
Arranger: Edward F. Rivinus *(President, Audubon Naturalist Society of the Central Atlantic States, Washington, D.C.)*

Nature Study

The journal of the American Nature Study Society

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Winter

Only the growing and open season is thought to be attractive in the country. The winter is bare and cheerless. The trees are naked. The flowers are under the snow. The birds have flown. The only bright and cheery spot is the winter fireside . . . Only those who have little time appreciate its value.

But the winter is not lifeless and charmless. It is only dormant. The external world fails to interest us because we have not been trained to see and know it; and also because the rigorous weather and the snow prevent us from going afield. In spring, summer and fall, the hours are full to overflowing with life and interest. On every hand we are in contact with nature. If (one's) winter is to be more enjoyable he must have more points of contact with the winter world. One of the best and most direct of these points of sympathy is an interest in the winter aspect of trees.

Liberty Hyde Bailey, 1899

The American Nature Study Society

Invites you to join us in promoting Environmental Education

Send in this membership form to J. A. Gustafson, R. D. 1, Homer, N. Y. 13077.

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