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Theme of This Issue:

The Morality of Conservation

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EDITORIAL

Urbanized Man - The Fatal Misfit?

(Mis-fit' – "a person ill adjusted to his environment")

This issue contains several articles which deal with the morality of conservation. The accelerating despoilation of the earth by mankind has become a matter of grave concern to all thinking people. We are beginning to realize that no longer can we justify conservation on economic grounds alone The moral issues in conservation are of greater significance. Most of us do what we do because we *feel* like it – not necessarily because we *know* we should (or shouldn't). Our feelings are guided and motivated by our moral compunctions more than by rational analysis. Conservation will never achieve what it must until its precepts are a part of our ethical system. This is what Aldo Leopold told us thirty years ago.

I believe that the conservation crisis which we face can, in large part, be attributed to the urbanization of man. The increasing divorcement of man, a biological organism, from the natural world out of which he arose and to which he is still intimately related, is a contradiction without equal in our time. We possess thousands of genes which adapt us to the requirements of a world composed of an immense diversity of living things and subject to the forces of nature. Most of us now live in a man-made world composed of a minimum of diversity of life and immune from the forces of nature. We have created for ourselves an environment for which we are not biologically suited, a world increasingly befouled by human activity and in which sophisticated natural processes are being supplanted by crude chemical manipulations. Recent research in animal behavior suggests that man is possessed of territorial and social instincts which are rooted in his genetic make-up. The displacement of these basic drives in an artificial (as opposed to natural) environment may be the major cause of our social and psychological malaise.

An old saying (now much quoted in a modified form) is that "you can take the boy out of the country, but you can't take the country out of the boy." This is profoundly true in both a psychological and biological sense.

Biologically, our need for the "country" remains an essential part of our nature. Our physical well-being depends on clean water, wholesome food produced through the natural processes of photosynthesis and food chains, and air purified by the age-old processes of gaseous exchange and precipitation. Urbanized man is blithely unaware of these connections between himself and a natural world far removed from his daily experience.

Psychologically, "being versed in country things" has a most salutory effect on the human personality. A "country" person is more likely to display a healthy humility as he thinks about his place in the order of things. He is aware of the interrelatedness of all life and the processes of nature. Both the humility and the awareness are essential prerequisites to the development of a "conservation conscience." My experience teaching students about half of which come from the metropolitan New York area and the other half from "upstate" is that, by and large, those from the "country" are more naive and less sophisticated, but much more educable and open to the ecological concepts I try to impart, than are those from the urban megalopolis.

You will note that I titled this editorial "*Urbanized* Man . . ." I make a distinction here between being urban and being urbanized. There are thousands of people who are urban, but who are not urbanized – they have been taken from the country, but the country has not been taken from them. The critical problem we face is that there are so many people – perhaps a majority in our nation today – who don't have any "country" in them to take wherever they go. These are the urbanized. If the ignorance and prejudice – the "mind-set" if you will – of these people prevails, then there is, in my view, a high probability that mankind will befoul his environment with fatal results for us all. If such happens, then urbanized man will indeed be the "fatal misfit" of our species.

J.A.G.

The Land Ethic:

A Way Toward Environmental Consciousness

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A short time ago a youngster from a metropolitan school, whom I shall call "Billy," visited a nature center with his sixth grade class. Billy was understandably excited about the visit and he was also a bit relieved to get out of the classroom. "Hey, this is cool!" said Billy to two of his companions. "Let's go see the owl, and over there is something to look through." Beginning a pell mell race toward the cage a rather stern command is heard by Billy and his companions. "Boys! Please! Get back in line, and remember you are to stay with the class." "Uh, yes, Mrs. Schwartz." Then Billy thinks to himself, "This ain't going to be any fun. I can't go see the things I want to see, and I gotta stay in line and listen to some guy talk again, just like last year. But, gee, he's got a uniform on, and look at that swell shoulder patch!"

Now Mrs. Schwartz begins, "Children, this is Mr. Green, our naturalist for today. He is going to lead us on our nature walk and point out some of the plants and animals we came to see, and help us learn something more about ecology. Remember, while we are here I want you to all act like ladies and gentlemen, and pay very close attention to what Mr. Green will have to say."

While Mr. Green begins to replace Mrs. Schwartz in the leadership role of the class, Mrs. Schwartz begins to think through her own objectives, plans, and the details that she considers important to be gained on this trip. "Let's see now, we've discussed the meaning of ecology, we read some stories in our science books about the plants and ani-

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mals of our state, we've been using plant and animal stories in reading readiness for reports, and our bulletin board has our food web on display. Now, if he covers the woodland nature trail that we checked on our reservation form, we ought to be able to write a class newspaper about our study of ecology and visit to the nature center. The lead article might even be entitled 'Plants, Animals and Environment.' I think Susan could write that. I hope the children really get excited about the wild flowers, they've always been my favorite."

Mr. Green, in the meantime, has welcomed the class to the nature center, described some of the things they might look for along the way, and has reinforced the behavioral rules he expects the children to follow. After selecting a leader and a "caboose" for the group, and noting that the teacher intends to participate and assist with directing the attention and control of the children, he introduces the first question. "Boys and girls, the question we can think about as we move along the trail is: 'What is happening in our woodland community?' Look for some signs of spring, and be especially watchful for animal signs. If someone hears a bird call, hold up your hand and everyone stop and listen. Point in the direction of the call and we will try to find the kind of bird it is. Just yesterday we saw a wood thrush near the first teaching station, by the woodland stream. O.K., let's get started." The visit is off to a good beginning and the day promises to be enjoyable.

I'm sure situations similar to this have been faced by naturalists many times. You confront groups, some new and some repeats, and have occasion to lead many varieties all the way from preschool to adult. You are competent in your knowledge of natural history, you have considerable experience in handling the various levels, and you usually communicate well about your perceptions of nature, in the hope that some of your enthusiasm and values will come to be shared by the visitors. In the back of your mind, as you work with the visitor groups, lies a deep, almost subconscious feeling, that if only these people could come to recognize, accept, and begin using the "Land-Ethic" as you have, the world might become a better place in which to live. More support might be gained for better pollution control, more comprehensive urban and regional planning, and more voluntary action on the part of citizens to do what is right in an environmental context. But this is a long-range thing, and we only have this class of children for a little over an hour, once this year, even though they may visit again with their parents.

What are the possibilities for inculcating a philosophy that we call the "Land Ethic" in our usual situation like the foregoing? Can Billy acquire it, or the teacher? In fact, does the naturalist have a clear concept of it himself, in adequate detail to effectively teach it?

Before answering these questions, a few things ought to be considered about the reasons and motivations of Billy and his teacher for visiting the nature center. When Billy first heard about the trip about a week ago, he probably set a goal for himself of having a good time because he likes freedom of movement. He is curious about things most of the time and he eagerly looks forward to anything he can do at the nature center. In short, he wants participation and involvement. Billy is concerned with his immediate surroundings – short term gratifications; he will respond to some structure, and he exhibits good social control when directed in a positive way. Subconsciously Billy notes voice inflections that give indication of values, patterns are observed as certain concepts are reinforced, and of course, he is impressed by the uniform and readily identifies with the naturalist, perhaps because the role he plays is one to which Billy aspires.

The teacher had some reasons in mind for coming to the nature center which were different from Billy's. First was the search for a culminating activity that would tie together some of the loose ends of their ecology unit. It was based on the concept that "Living things are interdependent with one another and the environment," so the nature center immediately came to mind, because that's where these things happen. In addition, Mrs. Schwartz hoped the children could come in more intimate contact with a variety of plants and animals because two subcategories of information were: "There are many kinds of plants," and "There are many kinds of animals." Perhaps she also had hopes that man's role in relation to the environment might be included, but this did not appear in the curricular syllabus, so it wasn't verbalized in the unit lesson plan. Similarly, the man-land relationship idea had been heard by her from time to time in the mass media, but it was still an unclear concept. But she did like wild flowers.

Mr. Green, being a sensitive and effective naturalist, had evolved a standardized format for his group presentation that had considerable content and could be adapted to the interests of the various groups quite readily. He based his efforts on a concept of conservation that embraced a philosophy of living as well as land practices. Other categories of information to be included were the traditional things that can be better taught in the outdoors such as geology and minerals, soils, water, plants, animals, and of course, the various interrelationships. A concern that Mr. Green and his associates had been studying was how to provide more direct involvement activities for the visitors. But this was the third group this morning, and many other immediate duties kept him from giving a lot of thought to the problem.

Another problem that has confronted naturalists like Mr. Green is that of disparity in goals and objectives, and a concomitant lack of communication. Billy had his goals, the teacher had hers, and Mr. Green had his. All three individuals were at different levels of sophistication and approach, and as a result, a considerable challenge existed in determining whether or not any or all of these goals were attained. Note in particular the level at which the "Land-man Ethic," if we can call it that, existed in the minds of our three role players. Billy was not at the verbal level but he might have had a fleeting glimmer of the idea of land ethic as the naturalist gave some voice inflection that communicated an emotional concern. Mrs. Schwartz knew about pollution problems, over-population, urban sprawl, and that mass media promoted anti-litter campaigns as a public service, but here again, a verbalized knowledge of an ecological consciousness was not evident either. It can be inferred consequently, that for the school, the class, and Billy, the Land Ethic didn't really exist even though they were studying ecology.

What about Mr. Green? Just how adequate was his knowledge about the "Land Ethic?" In fact, how adequate is the Land-Ethic as described and formed by its author, Aldo Leopold? Does it contain sufficient dimension to cover all of the kinds of concerns to which we apply it, or not? Does it hold the possibility of conveying meaning to a boy like Billy who lives on the 18th floor of a high-rise apartment building in an urban renewal development? Can Mrs. Schwartz interpret enough from the statements about the "Land-Ethic" already in print to be able to incorporate it as part of her verbalized lesson objectives, not to mention, way of life? These are becoming crucial questions in interpretation of the land ethic, which need careful thought and consideration from all of us.

Leopold portrayed the Land Ethic in *A Sand County Almanac* in classical style. Because the book is composed of three sections, the first containing descriptive ecology; the second part the

dilemmas; and a third the prescriptive phase, the reader is informed about ecology and its innerworkings, he is asked to use some of the newly gained knowledge in exploring far reaching environmental problems, and then a few approaches to solution are described. He exhorts us to "Think like a mountain."

Thinking like a mountain is a way of seeing the wholeness of an ecological community in objective ways and Leopold poetically suggests that we can and should do this. Lowenthal, in his work on perception, has obliquely labeled Leopold's approach as anthropomorphism, and as a result probably missed the message intended. Leopold was creating a philosophic orientation to ethics which he contended was an extension of ecological evolution. He tells us that an ethic is a differentiation of social from antisocial conduct, while ecologically it is a limitation on freedom of action in the struggle for existence. Both aspects have their origins in the tendency of interdependent individuals to evolve modes of cooperation. Our ethics have dealt with relationships between individuals, the individual and society, society and the individual, but have not yet been extended to the land, in Leopold's view. Such an extension is claimed to be an evolutionary possibility and an economic necessity.

"Conservation is a state of harmony between man and land." This terse statement embodies Leopold's "man-land ethic," "ecological conscience," and "recreation esthetic." When one examines Leopold's notes and background writings, it becomes clear that this concept of ethics evolved, was cultured, and developed over many years and through many experiences which to another observer may have made no sense. The ethic is not trite, but loaded. It is widely quoted, but as with Billy, his teacher, and our naturalist friend, it was not communicated in an effective way. Any one of you might have done a better job by fastening on it as a main theme, but I wonder if it is really possible in its present state?

A student who is compiling an historical analysis of the development of the Land Ethic, and who provided much assistance by way of photocopies of Leopold's original notes and chronology, believes the single best source of information on his views of the Land Ethic appeared in the 1938 issue of *Bird Lore*, the article being entitled "Conservation Esthetic." Comparing this work with his amassed notes leads me to conclude that the several phrases stated before (man-land ethic, ecological conscience, and recreation esthetic) are labels applied along the way as the idea was growing and developing, and all of which are appropriate.

In the "Conservation Esthetic" an often heard and paraphrased quotation, which also appears in the *Almanac*, sets the problem of interpreting the ethic squarely in front of us. "Barring love and war, few enterprises are undertaken with such reckless abandon, or by such diverse individuals, or with so paradoxical a mixture of appetite and altruism, as that group of avocations known as outdoor recreation." Conservation, and recently "environmental consciousness," have also been substituted for the words outdoor recreation, and judging from his notes it is permissible because he too thought of these things in this same wholistic way.

The five basic recreation values, described in the article, are as follows:

1. Components of recreation differ widely in their characteristics or properties.

By this it is suggested that mass use tends to dilute the quality of organic crop trophies like game and fish, and to induce damage to other resources such as nongame animals, natural vegetation, and farm crops. At the same time the artificiality of recreation is increased, thereby degrading the scale of trophy. The camera, and similiar forms of observation are considered inocuous in terms of the landscape and are acceptable in this respect.

2. The feeling of isolation in nature.

This is a subtle and complex issue that is diluted in quality in proportion to the amount of opportunities for isolation shared with others. This is a problem still to be resolved. More users simply leads to less isolation.

3. Fresh air and change of scene.

This value suffers little from mass use and is self evident.

4. The perception of the natural processes by which the land and the living things upon it have achieved their characteristic forms (evolution) and by which they maintain their existence (ecology).

He says "This constitutes the first embryonic groping of the mass-mind toward perception, which contains no consumption or diminution of a resource." It is further contended that "Like all treasures of the mind, perception can be split into infinitely small fractions without losing its quality." Herein lies a justification for using weeds in a city lot to convey the same lesson as the Redwoods. I wonder if we really are capable of making the transfer?

5. The sense of husbandry.

It is stated that, "Husbandry is unknown to the outdoorsman who works for conservation with his vote, rather than with his hands. This sense can only be realized when some art of management is applied to the land by some person of perception. Tourists who buy admissions to scenery miss it altogether." How then is it possible to provide the masses of today's citizens opportunity to develop a land husbandry value, since most no longer own the land or even the room in which they live?

At least two problems clearly remain to be resolved that have a direct bearing for educators and naturalists alike. One is the continual emphasis on emotional appeal used in conservation work, and used so beautifully by Leopold himself. The second is the implied and stated need to manipulate some land or never understand Land Husbandry, which is considered a basic key to acquiring the land ethic philosophy. I suggest that the emotionalism of conservation has not been particularly effective in the schools because of these obvious difficulties.

The schools have long attempted to translate pieces of our cultural heritage into teachable concepts, and have found that the related educational objectives exist at three basic levels — cognitive, the affective, and the psychomotor. The cognitive area is concerned with recall and recognition of knowledge and the development of intellectual abilities and skills. The clearest definitions also occur in this domain. Affectivity concerns are those centering on values, judgments, appreciations, and emotions. The associated learning experiences that are appropriate for this area are not at all clear. Psychomotor or motor skills as an area of study is just beginning to be scrutinized. Education has developed approaches to teaching that are based on the needs, interests, and abilities of the children and on the knowledge, comprehension, and application levels of concepts from the cognitive domains. Knowledge represents the specifics in terminology, comprehension, the understanding of what is being communicated, and is the ability to apply abstraction without prompting and no mode of solution being specified. Before the land ethic attitudes can be built, it seems probable that the ideas will have to be formulated in the cognitive, or verbal level first. Emotionalism, or affectivity, *per se*, will not do the job with the present state of the art. All of our past experience with failures in conservation education clearly indicate this. The only effective programs have been those that began in the knowledge area and then proceeded to blend with the emotional.

The second problem, that of a mandatory experience on the land, is equally difficult. The idea of direct citizen in-

(Continued on page 8)

The Roots of Our Humanities

NANCY AYERS

Not too long ago Romaine Gary wrote "The Roots of Heaven" which later became a movie. It was about a solitary and fanatical Englishman who fought to preserve the elephant herds of Africa. When someone asked him why he was fighting so desperately to save them when there were so many urgent human problems, he replied: "Because we need all the friends we can get." At another time he said, referring to all the elements in the landscape, *these are the roots of heaven.*

When the author referred to heaven, he was obviously speaking morally rather than theologically. And it is in this sense that we use his remarks to introduce our own type of moral case for conservation. Morality isn't just rules and regulations, especially or primarily having to do with sexual behavior. Morality also means informed, intelligent and sensitive judgment about conduct and its guiding aims and principals. This is the definition we are using.

The case we hope to make for conservation is not economic, agricultural, geographic, recreational or even (in the narrow sense) esthetic. All of these considerations are important. But the purpose here is to argue that conservation is important most of all in relation to our very humanity. *What we do with our natural resources, and our reasons for doing it, greatly effect what sort of human beings we are – and are to become.*

This argument falls into two major divisions. The first pertains to those conditions which members of the conservation movement seek to preserve much as they are now. They are important for the cultivation of the humanity of all of us, even though no single person can make use of all that we conserve. Their very existence serves to enrich our lives – the lives of those who pay little heed to the natural resources as well as of those who are devoted conservationists.

The second division involves an extension of our present ideas of conservation. We need to conserve much more than parks, forests, wildlife refuges and the like. We need to conserve the whole range of our resources, from wilderness areas to the cores of our cities. And we must go beyond mere preservation. We must learn to cultivate and wisely develop our resources by liberating our imaginations into generous visions, by using hard thinking and rigorous planning to formulate those visions into real proposals—and by working hard through negotiation, political action and technical application to achieve the best of which we are capable.

Let us begin with the idea of a morality of conservation. What are some of the human characteristics necessary for its development? What bearing do these characteristics have on the ways in which we use our natural resources?

The first characteristic to mention is *respect*. One kind of respect is the wariness of a dog for a porcupine after he has had a few quills in his nose. Another kind of respect is the esteem a carpenter has for his tools and materials. Still another example of this characteristic is the carpenter's *self*-respect, his pride of craftsmanship, his desire to do his task right.

There is yet another form of respect which is more difficult to explain. Perhaps we should begin by talking about lack of respect. This applies to the people who clutter the landscape with discarded cans and trash and names painted on rocks. There seems to be something about human beings everywhere that impels us to put our personal or social stamp wherever we are, to fill space and time with signs, constructions, motions and sounds. We fill the visual air with signboards and the audial air with the sound of radios and music, regardless of hour, place, sense or occasion. We seem to abhor quiet as nature is said to abhor a vacuum.

We should pay closer attention to those people who tell us that much of what we do results from a lack of respect for ourselves. To some undetermined extent, we cannot accept ourselves for what we are or care about what we are becoming; and without self-respect, we cannot accept and respect the physical and biological realities for what they are.

We respect something when we accept it and value it for being as it is. We do not feel obligated to transform it. If we do act to change it, we do so only in response to overwhelming reasons, and then work hard so as to maintain its integrity. Accepting either people or places as they are enlarges the individual's perspective and allows him to grow also in respect for himself.

As the protagonist in "The Roots of Heaven" said: "We need all the friends we can get" – not just other men or elephants, but rocks and plants. We do not need them so as to exchange favors – but because in the process of learning to accept their qualities as part of the stuff of existence, we will learn to accept ourselves.

A second moral trait which is required for us to appreciate the qualities of the world in which we live is *sensitivity*. By this is meant the ability to feel the varieties and gradations of qualities – colors, lights, darks, sounds, quiets, textures, odors, tastes, and also the more elusive qualities that have no simple names – and to respond relevantly to them.

Feelings are our feelers or tentacles. They are a necessary ingredient in all knowledge, understanding, good judgment or wisdom. The discipline to accept objects and events and to respond sensitively to their qualities is vitally important – for sanity, for imagination and growth. It is one of the sources of creativity.

Emotional spontaneity is important, too, for it goes beyond our feelings. We must learn to interpret these reactions rather than restrain them to the point of indifference. When customary expressions become more important than emotional spontaneity and honesty, we become emotional dwarfs, hypocrites or worse.

This brings us to the fourth moral trait on which conservation depends – *intelligent judgment*. Judgment is the interpretation and evaluation of experience. It cannot function apart from feeling and emotion, but rather incorporates them along with more intellectually formulated information and ideas.

A person who exercises intelligent judgment has won moral independence and integrity. Independence does not mean that he is heedless of others or of our accumulated wisdom, nor does integrity mean that he clings inflexibly to unquestioned principle. The man of independence and integrity is one who, in making important decisions, draws on all help and pulls together all his own resources in order to make the best judgment of which he is capable, and *accepts responsibility for the outcome.*

One hidden peril of an industrial and urban culture is that so much responsibility seems remote and impersonal, so much seems to be decided for us, so many materials and tools seem to consist exclusively of paper and words, that many of our sensitivities, emotional responses, skills and judgments atrophy. Perhaps this is one reason so many people resort to vandalism to make their existence felt – not just by criminal

vandalism, but by carving names on walls and rocks and by scattering debris.

This is not to condemn technical, industrial and urban developments as such. Things are not as they Used To Be – but then, they never were. And nature shouldn't be romanticized either. But we are also faced with real and unnecessary losses if we do not use our best judgment with imagination and restraint, both to preserve and to develop a significant range of natural resources.

The second division is predicated primarily on the Jeffersonian agrarian theory – in which he believed that every man should be a land owner to gain the necessary experience in exercising independent and intelligent judgment. The small land-holder would have a chance at moral virtue because he would have to exercise good judgment in the care of his land, and his varied skills would serve to improve his judgment.

It is easy, too easy, to criticize the details of this theory. Jefferson was saying in effect, that freedom, equality and independence cannot be had by severing ourselves from our fellows and from the rest of the world. Those traits stem from rational judgment. And rational judgment in human affairs is less likely to come from verbal facility, academic learning or the culture of a gentleman, *as such*, than from the cultivation of *diverse* skills that enable us to deal competently with our world.

Jefferson's land theory was soon obsolete, perhaps because he prematurely judged the consequences of industrialization. We now have the technical skill to break down the traditional barriers between city and country. We can make important elements of both available to both. With decentralization we can also have a new diversification of opportunities. But we must not lose sight of the fact that practical experience in the out-of-doors beats talking about it anytime.

The Jeffersonian ideal does have a contemporary relevance. We *can* have guidance in our thinking and in its application from our moral commitment to the value of respect, sensitivity, emotional spontaneity and rational judgment. For the first time in human history we have the opportunity, not just for more population, more technical developments, more money, more houses, more cars, more this and that – but for the qualitative enrichment of the lives of a steadily increasing proportion of mankind.

But our ignorance is vast. It is easy to write in general terms of the need for intelligent planning and use of our resources. It is desperately hard to do the job. There are always legitimately conflicting interests. We need to recognize them and, so far as possible, incorporate them in a goal that is better for including them. As yet we know all too little about those interests or those who voice them. We are just as uninformed about our natural resources. Well-laid plans are known to go awry; ill-formed ones are guaranteed to cause trouble – but refusal to do the best we can is even riskier.

Our ignorance – vast as it is – is not so bothersome as our acceptance of it, our indifference to the problem, our tolerance of the drab and the ugly, and our resistance to possibilities for improvement. We might begin by admitting our knowledge is minute compared with what we need to know; and we might then be able to come together for the purpose of enlarging both our knowledge and our aims.

Conservation requires planning for new possibilities, as well as planning to conserve what is already here. The way our cities grow – or sprawl – affects the rest of our land, water, plants and animals. And how we use or waste our mountains, plains, rivers, streams, ponds, lakes, subsurface water, subsoil, trees, shrubs, flowers, insects, birds and the air itself affects us all. *These are the roots of our humanity.*

It is my personal conviction that the salvation of the world rests squarely on the intelligent, sensitive, involved individual. We have a moral responsibility to preserve our world as well as the people who inhabit it. It won't do any good to run away to the moon or to bury our heads in politics or statistics or theoretics. Those of us blessed with food, clothing, and shelter – as well as a great deal more – must see to it that we all don't wind up with *no place to live*. As every gardener knows, roots must be nourished to thrive. It is up to us to see that they receive the necessary Tender, Loving Care.

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(Acknowledgment: The above is predicated on a sermon prepared by Dr. Francis Myers, Chairman of the Dept. of Philosophy at the University of Denver. The thesis and introduction are his; the editing and wording, mine. – Nancy Ayers)

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Editor's note: Mrs. Nancy Ayers is an active ANSS member from Endicott, N. Y., where she has been the guiding light of the Susquehanna Conservation Council.

Just Meditatin' . . .

The threat of a campground to accommodate up to 1,000 persons in our front yard, geographically-speaking, appears to have succumbed to engineering logic. The plan, proposed in 1965, to put a multi-unit campground between the present boundary of Mt. McKinley National Park and Kantishna was discarded by the Park Survey team sent out this summer to study the proposal. They stayed at Camp Denali, complete with helicopter, while they made a detailed study of the whole Wonder Lake area.

However, the concept of super campgrounds designed primarily for trailers and "camper-back" trucks, complete with all facilities, seems to dominate the thinking of Park planners as far as we can tell. Tent campers who would rather have much more primitive facilities in order to have less of a "mass" experience and be more in communion with the environment seem to be getting short shrift, at least in McKinley Park.

The general idea seems to be that there should be a large campground near the railroad station at one end of the Park road, and another in the Wonder Lake area, with most of the present small campgrounds in between converted to picnic waysides only. The spot most favored by the survey group for the Wonder Lake campground was at the "chain of lakes," a short hike above Reflection Pond, where so many of our guests have wandered, watching the nesting golden plovers, whimbrels, arctic terns and beavers. This is the place where we can give almost anyone a real "tundra" experience, as valid as tho they hiked miles from the road. Much as we were relieved not to have to look at Denali across a "supermarket parking lot" of trailers and truck campers, we cannot help but wonder at the wisdom of this choice, especially since it will be in the gathering basin of the inlet creek for Wonder Lake, and so present a pollution problem to the lake.

Of course, a campground of this dimension is difficult to "hide" in the tundra and scattered spruce at this end of the park. The real problem, which seems to be basic to almost all of our mid-twentieth century dilemmas, is too many people. But sometimes we wonder if planning for the year 1980, or 2000, or even 2050, isn't a self-defeating gesture. Whether it is pumping more water into the arid Southwest, taking more and more open space for freeways, or trying to accommodate more campers in Na-

(Continued on page 11)

God's Own Junkyard: Creation and Conservation

The Reverend Richard S. Gilbert
First Unitarian Church, Ithaca, New York

West Virginia is a beautiful state and the Kanaha Valley is a lovely place, unless you happen to be driving through Charleston on a summer morning. If you like to look at that lovely valley, too bad – there is a black surface cloud that obstructs your view. If you want to breathe fresh air, that's too bad – for your lungs are congested with the chemical waste from the local Union Carbide Plant. Or you may seek escape in the mountains to drink in their beauty, if you can avoid the great dark scars of the strip miners.

Indiana is a pleasant state in which to drive, with open fields of sweet-smelling corn, unless you happen to want to drive through Gary. Its much like Charleston, only worse, and the smell tells one he is in America's industrial heartland.

Lake Leman, Switzerland, is a lovely spot nestled in the Swiss Alps. It's a wonderful place for tourists, unless you want to swim there. It isn't fit for swimming, we are told – it, too, is polluted.

New York is a beautiful place, too, unless you happen to be driving off Interstate 81 near Cortland where a monstrous auto graveyard impedes your view of Southern Tier loveliness. And Lake Cayuga is a wonderful lake if you're careful where you swim.

The world is a magnificent place to live except that it is rapidly becoming a junkyard – in the words of a picture essay on conservation, "God's own junkyard." His creature, man, is befouling his own nest. He is creating both an affluent society and an effluent one. Inheriting a creation rich in natural wealth man finds himself unable to conserve it.

Conservation doesn't have a happy history in our beauteous country. We came upon this virgin land and forthwith began to despoil her. The Indians who lived here had preserved her natural habitat and were one with the earth. We drove them from the land and began to make the land work for us. There seemed no end to it, and so on we marched, taking out forests as we went, damming up rivers for our power. It was infinite, this vast and rich continent.

We pushed on with reckless abandon, little worrying about what the land meant to us save as it supported our lives. Men like the legendary Johnny Appleseed were trouble-makers, worrywarts. And then the frontier closed and industrialization came on apace. The land was good to us but we were not good to the land. We became not its partner, but its master, and it served us well. It made us the most prosperous nation on the face of the earth.

To be sure there were voices crying in the wilderness, or what was left of it – men like Gifford Pinchot and his White House supporter, Theodore Roosevelt. The problem in the early part of the century was the lagging reserve of timber, coal and other raw materials of the earth. Pinchot was not a great prophet, however. He said in 1910: "We have timber for less than 30 years, anthracite coal for but 50 years . . . Supplies of iron ore, mineral oil, and natural gas are being rapidly depleted." He was a good man, a sincere man, but he was wrong. Technology enabled us to extract more energy from raw materials, we discovered vast reserves we didn't know existed, and we created synthetic materials. We were home free.

It wasn't that we were too careless with our natural resources – luckily even our stupidity in their waste we corrected by our science and Mother Earth by her bounty. The real problem was that we were hell bent for somewhere – an industrialized utopia – or, in modern terms, a Great Society in which the fullness of the earth would free men from his toil. But in the process we were ruining this beautiful land which stretched from sea to shining sea – ruining her not so much by depleting her natural reserves, but by destroying her spirit and her beauty, and by separating ourselves from her.

Tom Lehrer puts our plight rather bluntly and rather well: "Just two things of which you must beware: don't drink the water and don't breathe the air." In a somewhat more sophisticated and scholarly way: "The struggle for man's survival seems to be no longer merely between and among nations seeking and possessing mutually destructive weaponry, but to be essentially between man and his constantly altering environment." Man has been tampering with his environment and he didn't know what he was doing. He is beginning to pay the price for that fateful error.

Just how high is the price? Space is one of our environmental categories. We know of the population explosion abroad and at home. But less obviously we have in our brief time on this continent succeeded in destroying 3 of the 9 inches of topsoil on the surface of the land. Ruined have been fertile areas equivalent to twice the size of the croplands of California and nearly ruined have been areas 4 or 5 times the size of California. And how do we measure the value of an acre of land? To a farmer in Asia it may mean the actual difference between life and death. To a Midwestern dairy farmer perhaps the price of a good cow. But how can it be measured in terms of *lebensraum* – of living space in which to live and move and be?

Let's take water. According to one estimate ⅓ of the population lives with a chronic water shortage, poor quality water, or both. The average American uses about 60 gallons of water a day, and of that much is re-used at least once and often five and six times before it flows from our taps. What with detergents and other pollutants, unadulterated water is rapidly receding from our land. By 1975 we will be in short supply across the country unless we tap new sources. This is not so hard to understand when we realize that demand for water increases twice as rapidly as the population.

Garbage disposal is a major problem, too. In 1940 the average person accounted for 2 pounds per day, the nation for 50 million tons a year. In 1960 the average production of garbage went up to 3.5 pounds a day per person and 115 million tons per year. Who among us has not been disgusted with smelling and unsightly dumps near our homes? Yet our manufacturers produce more and more disposable items to be heaped on the rubbish piles.

And air. The psalmist declares "the heavens declare the glory of God and the firmament showeth forth his handiwork." No wonder God is dead, for we can't see that glory nor behold that firmament. Granted that in our light-industry towns we do not face the crisis situations which have plagued New York, Chicago and Los Angeles among others. There inversion of the air makes mere breathing hazardous. Norman Cousins of the *Saturday Review* serves on New York City's Air Pollution Board. He

writes: "What would happen if the rate of population growth, automobile growth, and highway growth of the past two decades were to remain constant or to increase assuming a continuation of the present scale and pace of attack on the problem? The conclusion is inescapable that most of the large cities in the United States would be considered uninhabitable within 7-10 years."

In simple terms of the beauty of our environment, the picture is not much more encouraging. Billboards destroy much of the loveliness of our countryside – an ugliness, by the way, that is minimized in Europe. There is a serious proposal to dam the Grand Canyon so boaters can see it close up. The stately Redwoods in California are under siege by a smiling Governor who is reported to have said: "When you've seen one, you've seen them all." Our federal government is planning an outlay of billions of dollars on a supersonic transport plane which will save flying time by a good deal, but leave in its wake a sonic boom that can jar one million homes and startle 20 million people if it flies coast to coast. If you have never lived in a city which has been "attacked" by our Strategic Air Command, then you have no idea how disruptive such sonic pollution is.

Perhaps I am being alarmist. Surely these statistics will be challenged. What if they are? We still have problems of major proportions. We still have the problem of a loss of beauty and livability in our environment. And this is inevitably going to mean a loss in the quality of human living.

Now, just what is it in man or in American man which has brought the awful spectre of God's own junkyard so to the fore? In a fascinating article in *Science*, Lynn White of U.C.L.A. contends that our present state of ecologic backlash is mounting feverishly. He traces a man's tendency to exploit nature back to the Judeo-Christian conception of creation in which God creates all living things to serve man. He believes that this theology began to have practical results about 4 generations ago with the fusion of science and technology – a marriage of the theoretical and the empirical. Thus man was able to control his environment to an unprecedented degree. Man was then divorced from nature which he compelled to do his bidding. He was the master, nature the slave.

He casts his eyes on the story of creation in which man named the animals and established his dominion over them. Creation and all therein were there for one and only one purpose – to serve man. Christianity, according to White, is the most anthropocentric religion in the world and therefore the most activist one. Eastern religions are contemplative, nature oriented and quiescent. As a result he believes that "despite Darwin, we are not, in our hearts, part of the natural process. We are superior to nature, comtemptuous of it, willing to use it for our slightest whim."

There are alternative views of Christianity, however, as White points out. He singles out Francis of Assisi as one who believed in the virtue of humility – not merely for the individual but for man as a species, And, of course, we recall Francis writing his hymn to the sun and moon and stars and in other ways suggesting man's oneness with nature. White calls upon us to reject the "Christian axiom that nature has no reason for existence save to serve man." If we rid ourselves of that arrogance, he believes, we can begin to solve our ecologic crisis.

Wherever the blame may rest, it is clear that our environmental crisis stems in large measure from our tendency to make use of nature rather than to hold it sacred. Western man, as no other man before him, has exploited natural resources for his own selfish gain. Consequently, he has lost much of that reverence for nature found in the East, and even among our primitive ancestors.

Closely related to this is our acquisitiveness. Man, by nature, is an acquisitive animal – that is, he seeks his own gain above all else. Reinforced by the economic laws which drive this nation's technology and much of her science is a system of initiative which seeks to translate technological advance into immediate economic gain. A grove of towering redwoods becomes not a "sacred grove" to inspire the soul, but an economic resource to build a new housing development. That same economic system which has brought unprecedented affluence is also leading us to a misuse of our natural resources and a depletion of our own spiritual reserves.

What is this exploitation of nature doing to us? In the first place it most certainly is diminishing our natural resources. Though we seem to have compensated for this loss, there is not an infinite supply of any raw material on earth. How long we can afford to ravage our land is unknown.

We are also managing to create a continent wide garbage disposal pit in which we and future generations must live. It is undeniable that our environment is becoming less aesthetic and rewarding every year.

But most important, we are losing a kind of spiritual power in separating ourselves from nature. Technology interposes itself between us and the natural world that sustains us. The child who does not know the source of his daily milk is only the most obvious example of men who are losing a sense of identity with the earth. We are out of tune with the eternal rhythms of the earth which were the source of much early religion. We resist the ebb and flow of the seasons instead of celebrating their coming and going.

My own proposal for conserving both our natural resources and ourselves is not a plan of action. This is necessary but must be effected by those who know our ecological situation far better than I. My own contribution would be to suggest an outline for a theology of conservation – which would involve a transformation of our basic outlook on the totality of life and the interrelationship of man and his environment.

We need a doctrine of creation as sacred. Primitive man held nature sacred as he saw the divine manna in every living thing. The Christian sees creation as sacred because of a transcendent Creator God. We who may have jettisoned a transcendent God need not throw out the idea of the sacred at the same time. A view of reality which encompasses the dynamic evolving and naturalistic forces of the universe ought to embody the sacred fully as much. My own sense of awe and wonder at this cosmos is enhanced, not diminished, by my own understanding of the creative thrust of the universe operating within a framework of natural laws. Every living creature becomes, then, a manifestation of this noble process.

We must come to see man as a part of that creative process. Though we know better, we insist on seeing man as somehow separate from and superior to nature. We are always talking about man and nature as if they were two distinct entities. But we are products of the same evolutionary process. This will require of us a feeling of kinship with all that lives and an attitude of cooperation with nature rather than control over it. The earth is our host; we must be worthy guests.

This evolutionary process has given us what appear to be unique tools with which we can manipulate our environment for our own purposes. However, we must not forget that the very environment over which we have a modicum of control also makes its impact upon us. The kind of surrounding we create impinges upon us in subtle ways we can only guess. What the asphalt jungles of our cities do to the human spirit no one can say, but my experience leads me to believe they tend toward dehumanization. The incessant bombardment of

mass media can only desensitize one. I believe, then, our spiritual health depends, in large measure, on an environment of beauty and harmony. In despoiling that beauty, we despoil ourselves.

One of the central implications of seeing ourselves an integral part of nature is that we need to move closer to the earth. The city dweller needs to touch base with the natural environment and to feel himself a part of it. His technological surroundings separate him from a sense of natural beauty, order and healing which are possible in nature. We need to nestle close to the bosom of Mother Earth, to enjoy again the inexorable rhythms of the seasons as they correspond to the inevitable rhythms of human life and death. Man needs the capacity to feel a part of the power of the cosmos. A view of a mountain range puts one's own problems in new perspective.

An ethic for this theology of conservation can aptly be summed up in Schweitzer's memorable phrase – reverence for life. In his *Philosophy of Civilization*, he speaks of the source of this ethical principle in his own will-to-live. This leads him to extend that same reverence he feels toward himself toward other wills-to-live in both plant and animal worlds. All of life becomes sacred – a leaf on a tree or a wounded animal. Quite naturally one is forced to choose between higher and lower orders of life, but always one harms with anguish. One must not necessarily take life in any form.

Schweitzer said: "Only the maintenance and promotion of life rank as good. All destruction and injuring to life, under whatever circumstances they take place," is condemned as evil.

A theology of conservation results in action dedicated to preserving an ecologic balance in which all wills-to-live can thrive. It will require a stewardship which increases sensitivity to every living thing as of worth. It will require a program of education in the interdependence of all natural things. Ecology will hopefully lead to a voluntary responsibility for allowing the natural processes to work themselves out before severe restrictions on our actions are necessitated. Already the hour is late.

God's own junkyard is not a pleasant place in which to live. It is not only distasteful but it is destructive of what is most human in us – a sense of oneness with creation in which we live and move and have our being – in which we are born, grow and die leaving something of ourselves for the future – before which we stand rapt in awe – in which we find a badly needed perspective of life and history and eternity.

As we seek out a theology of conservation and practice a reverence for life, not only will our environment become a thing of loveliness, but we may become creatures who enjoy that tiny portion of creation in which we live. I want to close with these words from the poet Anthony Towner:

"The nation is consuming itself to death. We are surely the most oral of all the people ever to despoil God's green earth. The converse of consumption, of course, is production, and the nation is also producing itself to death, although, incredibly, despite Herculean effort, we produce more than we can consume. In old-fashioned economics this was called conspicuous waste; nowadays, in our sophiscation we call it the Great Society.

"Let us pray for the day when we will cease to produce and begin to create. Let us pray for the day when we will care more for what we create and less for how rapidly we can digest it. Let us pray for the day when consumption will be appreciation and production will be creation. On that day boredom will vacate the nation.

"The nation, in its anxiety to use rather than to enjoy, is ruining itself. Our cities are already totally lost, and our countryside is almost lost. Our air (which is to breathe) and our water (which is to drink) are human and industrial garbage pails. We literally breathe and drink our own eliminations, such is our egregious appetite for consumption. Let us pray for the day when we shall honor our land by tending it, and our wildlife by yielding to it, and our own handiwork by lavishing upon it the affection we now reserve for possessing it. Let us pray for the day when we will cherish what we have enough not to wish to convert it into what we neither need nor desire. Let us pray for the day when we shall deem it more prudent to save one oak tree than to double the gross national product. On that day the nation will be rich."

THE LAND ETHIC

(Continued from page 3)

volvement with the land was at least partly developed under the influence of Dewey's progressive education movement. Dewey's observation that we learn by experience and discovery from the environments in which we live made sense to Leopold, and was incorporated into his thinking. This idea still appears to be valid and our land laboratories, school forests, school gardens, and resident outdoor education programs have been some approaches to this problem in addition to traditional science laboratory programs.

The area being confronted today is of course that of the environment of man in its total form, its social, cultural, economic, esthetic, biological, and physical aspects. To seek an optimum total environment requires an understanding both of human needs and the needs of a healthy environment, natural and man influenced. Leopold knew this and was trying to show us the way. His sudden and unfortunate death in 1948 left us without the originator of the ethical idea. We have been groping ever since. But with the enormous complexity of problems facing us today in our environment we must get on with the search and see what can be done to draw closer to the philosophy he saw so clearly.

In the environment in which Leopold's magnetic personality and writings influenced so many people, his quest is continuing with increasing momentum. The Universtiy of Wisconsin is evolving ways of approaching the development of an ecological consciousness in a multidisciplinary atmosphere. Here are some of the main thrusts under way at the present time:

1. The appointment by the Madison Chancellor of an all-campus Environmental Studies Committee, charged with encouraging "inter-disciplinary studies that have as their orientation the discovery and dissemination of those attributes of his environment which will contribute to man's survival in a civilized state and to his progressive biological and cultural evolution."

2. The consolidation of three university extension arms into a single system, with one of its primary programs "environmental development."

3. An arboretum and a biotron, each administered not by a single department or college but by an all-campus committee.

4. An environmental sciences project, recently funded by the National Institutes of Health, to develop a unified concept for research and training, featuring interdisciplinary studies, seminars, and symposia.

5. A proposed "environmental awareness center," to demonstrate man's total relationship to the natural environment.

6. An emerging School of Natural Resources, lending a new thrust to the College of Agriculture.

7. A revitalized conservation education program to serve as a point of focus for university activities aimed at wise use of natural resources, including an inter-college course in the principles and problems of environmental resource management.

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EASTERN COTTONTAIL RABBIT

Sylvilagus floridanus

This common mammal uses unused woodchuck dens and other crevices and holes for hiding, or may make a grassy, fur-lined nest in a bushy place. It never is found far from brushy spots or patches of forest. As a garden visitor it can destroy tender shoots of leafy vegetables, but often eats weeds such as dandelion. May have four litters a year. Young are born naked and helpless, as opposed to hares, which are precocial, ready to run at birth.

Photo by Ritzer
U. S. Soil Conservation Service
Provided by the Audio-visual Committee
American Nature Study Society
No. 23

(May be removed for display)

Ritzer — Soil Conservation Service

E. W. Cole — S.C.S.

LEAST BITTERN

Ixobrychus exilis

This small bittern, a kind of heron, is found throughout the central and eastern parts of the U.S., but is not commonly seen. It nests in marshes and swamps — in this photo you see the young among cattails. Note the typical hair-like down of herons. Their stubby bills will elongate as they mature. These birds are not much bigger than grackles when grown. Feeds mainly on insects and other small animals of wetlands.

Photo by
E. W. Cole
U. S. Soil Conservation Service
Provided by the Audio-visual Committee
American Nature Study Society
No. 24

(May be removed for display)

NATURE STUDY TIPS

Squirrels - A Teaching Resource in Your Schoolyard

DAVID E. LAHART

Excellent teaching aids are available in your back yard or school grounds. These high quality, natural tools enable students to learn more and faster than in classroom demonstrations. Several common animals make excellent candidates for teaching ecological principles outdoors, but I think squirrels are exceptionally well qualified for this purpose. All you need to become a student of squirrel behavior and ecology is the desire to learn and the time and patience to observe.

Squirrels are diurnal (daytime) rodents that enjoy a wide distribution and many species have become uniquely adapted to both urban and rural areas. Squirrel populations can usually be found a short distance from any teaching situation. Semi-domesticated varieties, like those found in city parks, are often easier to observe than their wild cousins in a country wood lot.

Methods

The equipment used is very simple. A good field notebook and a pen (preferably with waterproof ink) and a careful observer is all that is really needed. A pair of binoculars is helpful. Many types of arrangements are possible for studying individuals, populations, behavior, and other aspects of squirrel ecology, but each will vary with the individual teaching situation. Certain general methods are adaptable to any area with a little imagination. These are some of the methods I have found acceptable.

Populations

One of the basic considerations of any field ecologist is the number of animals present. This problem has many facets and intricacies connected with it (including some rather involved mathematics), but for small areas, the *spot-map method* is quite effective.

Squirrels are easily seen and heard in their home ranges. A census taker can simply walk on a given route on different occasions and at different hours and record on a map the location of individuals seen. It doesn't take many trips before one can notice the clumping of observations on the map. These may be considered as separate individuals.

The Squirrel Society

As soon as a squirrel leaves his nest, he enters a society as complex and unusual as our own. Squirrels learn a *language* consisting of a variety of calls, each conveying a specific message. You will soon be able to distinguish these calls and be able to anticipate squirrel reactions. One evening I was watching a red squirrel feeding on tamarack seeds when another squirrel gave the call of fright or warning. It was too late. A red-tailed hawk scooped up the feeding squirrel before he could retreat from his exposed position.

A young squirrel will soon make acquaintance with the other arboreal creatures near his home. Many people think that where two similiar species occur in one community there is competition between the species. Ecologists call this *interspecific competition.*

Where two species of squirrel occur together, such as the fox and grey squirrel, interspecific competition and the *niche principal* can be easily demonstrated. By careful definition, the niche is the individual, but for practical purposes, we can say that it is the animal's "occupation" or place in the community. Different species have different niches or there would be direct interspecific competition. If two species of squirrel occur in one community, you can examine their roles in several ways.

Look carefully at the times they feed. Squirrels feed in early morning and toward evening. A close look at these habits often shows that where more than one species occurs, the time periods may be sub-divided with one species feeding earlier and ending sooner than the other.

Differences in food preferences are often noticed. Grey squirrels prefer tulip poplar seeds to pine cones, but a red squirrel will take the pine cone every time. When both species compete for the same resource, they may divide it by using different parts or feeding in different areas. This *spatial distribution* occurs in my neighborhood with red and grey squirrels. The reds are more often found on the farthest branches of trees eating spring buds, while the seemingly more cautious greys tend to remain closer to the trunk. When watching squirrels, divide the branches into four quarters and record in what quarter each species of squirrel is found. Perhaps you can find a similiar distribution pattern.

Photo by David LaHart

Eastern Gray Squirrel (**Sciurus carolinensis**) in a typical pose, holding a nut in his forepaws. The large tail is an excellent stabilizer as these agile mammals leap from limb to limb or run along telephone wires.

No. 36 in the series

Behavior

Studies have shown that *interspecific competition* is not as serious as *intraspecific competition* or competition among members of the same species. Intraspecific competition in animals that are not highly territorial leads to the formation of social orders or *hierarchy*. Young squirrels will soon learn that the older squirrels take the higher places, forming a "peck order," in which males are more dominant than females.

The hierarchial type of society can be studied by marking individuals with colored tags or dyes, but if you look at each animal closely enough, you may soon be able to recognize individuals. By placing food at feeding stations, you can observe which squirrels have the right to feed first. Record all encounters of squirrels and try to determine which ones get to eat first or which ones leave the feeder when others arrive. The "boss" squirrel in my neighborhood was an old, one-eyed male. Last winter he disappeared and now the boss of my squirrel feeder is a brown-headed, grey squirrel that was number two in the peck order last year. The top individual in the peck order usually has more freedom to roam over the feeding area and he will do most of the mating.

Squirrels soon learn their place in the hierarchy. The social order is strict, thus minimizing aggression and disruption to the everyday life of the squirrels.

Social behavior is just one of the many things squirrels are willing to show the nature observer and recorder. Ethologists have noticed several other types of behavior that can be easily observed.

Agonistic Behavior involves the motivations of attack and escape. Ritualized displays of threat are often seen in sciurids. The animals usually try to make themselves appear as large as possible and fold their tails over their backs. Such threats usually force one animal to flee without actual physical contact

Appeasement is also common in squirrels. Usually appeasement behavior consists of withdrawal or avoidance movements. The ears are laid back, with the head pulled in and the tail depressed. The function of this display is to avoid physical contact with a higher individual.

Reproductive Behavior can be observed twice a year in most parts of the country. This behavior consists of many parts, most of which can be easily observed and identified in squirrels. Coordination of sexual development is a physiological reaction which results in certain types of behavior. The dominant males become more tolerant of females and less tolerant of other males. Squirrel observers often see restatements of positions in the hierarchy during the reproductive period.

The sexually mature animal must be fully capable of recognizing the species, sex, and status of sexual development of a potential partner. This results in displays and ritualized courtships. Mating chases can be observed throughout the breeding season. Studies indicate that squirrels are promiscuous, thus males continue chasing females even though they have already mated. Unmated females are often chased by several males, although evidence shows that most of the mating is done by the dominant male.

Ecology

Ecology is the study of relationships. Plants influence the abundance and distribution of animals, but animals also influence plants and often other animals. Spring and early summer finds squirrels high in red maples, oaks, hickories, and other trees eagerly consuming tender buds. The "horns" on the sumac in my yard weren't even ripe before squirrels had stripped them of their fruits. Unlike the birds, who just digest the fleshy parts and leave the seeds to germinate, squirrels digest the whole fruit, seed and all, thus influencing the next generation of trees.

Squirrels play an important part in the reproduction of trees. Nuts are a well known squirrel food and every squirrel watcher has seen them bury acorns and other seeds in the forest litter. This behavior, known as "caching," has a great influence on the plant composition of the area. During the fall, squirrels bury thousands of nuts and during the lean months of the year, they retrieve their caches. Many nuts are not found and those often germinate. John Burroughs suggested that almost every hickory tree in America has been planted by a squirrel.

One fall I marked each nut I saw squirrels bury with a numbered stake. Early the next summer I went back and found that over ten percent of the nuts still remained in the ground.

Trophic level refers to a position in the food web. Squirrels are on a low trophic level because they are primarily herbivores. They eat plant material that converts the sun's energy into food. Squirrels are food for a variety of animals on higher trophic levels. They also form part of the food for parasites such as warbles and mites, thus adding more links to the web of the community.

The more links in a community's web, the more stable the community. If more than one squirrel community is available, study them both and determine which one is more complex. Measure the densities of these communities several times a year for a few years. It is surprising the fluctuations that occur in a park community when compared to a more natural situation.

Common animals can be used to study basic ecological principles without a great deal of equipment or field trips to distant regions. Existing animal communities can be used to study many aspects of ecology and behavior. This can be done by individuals and classes. Teachers only need imagination and a willingness to try something new to open frontiers in outdoor education to their students.

Some Helpful References

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Nature Study

by James Needham

The trees and the skies and the lanes and the brooks
Are more full of wonders than all of the books
And always outdoors you can find something new;
You never are lacking for something to do;
You never hurt others, or get in the road
In taking the pleasures by nature bestowed;
For there's room on the shore where the great tides roll,
And freedom and peace that are good for your soul;
There's hardly a way you can have so much fun
As in being out-doors with the brooks as they run,
With the birds as they fly, and the stars as they shine,
With the drift of the years as they rise and decline.
It doesn't cost much and it doesn't take long
To get your ear tuned to the mighty world's song.
It brings in its train no unpleasant regrets,
And the farther you go, the better it gets.
So, come where the wild things are waiting outside
And let your soul taste of the joys that abide.

Activities With Seeds

by Verne N. Rockcastle
Cornell University

The first few weeks of autumn represent a time for many field activities with children. Some of these activities involve trips for collecting, trips for observing things that cannot be collected, such as puddles, birds, stars, and weather, and trips for pure enjoyment of an ecological setting and the organisms or traces of organisms present in it. Autumn is a time for brilliant colors, and children are attracted to brightly colored leaves, to flowers, to strange growths such as puffballs, and to small creatures that move, such as wooly bear caterpillars.

To capitalize on the natural curiosity of the children, on the often fine weather, and on the efficiency of teaching with real things, you can make use of many local materials. Among the easiest to use are weeds and weed seeds. Some kinds to look for around school (in vacant lots, along roadsides, and near the border of woods, ponds, and golf courses) are:

red-root pigweed
teasel
wild carrot
milkweed
cattail
dandelion
dock
staghorn sumac
Indian hemp
goldenrod
aster
burdock

Seed surplus

It is doubtful if children (or adults, for that matter) really appreciate the fact that nature's overabundance of seeds is insurance that some will survive and carry on the species. This is not a fact to be told to children. But they can grasp some of its significance by engaging in a seed count of some common weeds.

On your tables are two common weeds — a teasel head (the prickly one) and a stem of red-root pigweed. The former is easily recognized by its cylindrical, brown head and its prickly stem. It is a tall weed, common along roadsides, and easy to find even in winter. Examine your sample. It is one head from a plant that usually has five or six such heads growing from a single main stem. Rap the head on the table and then observe carefully the seeds that spill out. Look closely at the head. Can you see where the seeds come from? How many such seeds would you expect from your own sample? (As carefully as you can, count the depressions or pockets from which the seeds issue and write down the figure.) At an average of, say, five such heads per plant, how many seeds would a single such teasel plant produce? If each seed grew into a mature plant (it takes two years for this to happen), how many seeds would be produced at the end of the school year? At the end of the fourth year?

Try planting some teasel seeds to see what they look like at germination, how long it takes, and whether any special conditions are necessary for germination to take place (freezing, drying, scratching, etc).

Next, on a sheet of paper (preferably white) rub off all the fuzzy stuff from the stem of a single pigweed plant. Among the fuzz you will see tiny black or dark brown seeds. When all the seeds have been rubbed from the plant, count them as accurately as you can. How many were formed on your specimen? These seeds can sprout and produce a seed-bearing plant in one year. At an average of 10,000 such plants per acre of cultivated-and-left-idle soil, how many seeds would be produced in a year? How many would be produced at the end of the second year if all the seeds of the first year germinated and matured?

As with the teasel seeds, try planting some pigweed seeds. How soon do they sprout, and what do the sprouts look like? How are they different from, or similar to, bean sprouts? Teasel sprouts? Radish sprouts?

Now examine the pod from a milkweed plant. Which way does it point? Do you think the flowers pointed the same way? What must have happened after the flower was pollinated? Since from twenty to a hundred flowers grow in a single cluster, what must have happened to the rest of the flowers?

Open the pod and examine the way in which the milkweed seeds are packed. Tease away the seeds, one at a time, and count the number in a single pod. At an average of five pods to a plant, how many seeds would have been produced by your plant? At an average density of one plant per two square feet, how many seeds could be produced by an acre of milkweed plants (43,500 square feet in an acre)?

If your seeds dry during the class period, put a few on a table and walk past the table. Do any of the seeds move as a result of the breeze you cause? Remove the seed from some and repeat the activity with fuzz alone. Can you see a use for milkweed fuzz in studying air and air currents (convection, winds, etc.)?

Finally, open the pods of some other weeds such as Indian hemp. How do their seeds differ in arrangement and number from those of milkweed? How do the seeds in a catalpa pod differ from those of milkweed? How are the seeds inside a honey locust pod arranged? How do you think they are scattered?

Try similiar activities with burdock (letting the pupils take apart a single bur to see the seeds in it, then counting the numbers of burs on one plant and multiplying to get the total), with pitchforks or bur marigold, and with dock. Also, let them plant fall seeds to see what comes of them. Do not overlook acorns, nuts, and seeds of non-showy plants such as the grasses.

JUST MEDITATIN' . . .

(Continued from page 5)

tional Parks, it seems as though all you do is to compound the problems that will exist in the years 1990, 2010, or 2060. Has anyone thought that if there weren't any more water, freeways, or super camp grounds provided, more people might not move to Arizona, or drive more cars, or stay in National Parks — and the problems might solve themselves through some sort of check the way population dynamics work themselves out in the biotic community?

We also challenge the idea that something has to be done, no matter how self-defeating, "because the public demands it." It would seem that camping in national parks should upgrade tastes in outdoor recreation, not encourage an experience that has all the gadgetry, insulation from one's environment, noise, and "togetherness" of most everyday living. Where are the outdoor ethics of future generations to come from if children grow up "camping" in trailers and apartments on the backs of trucks in campgrounds complete with electricity, hot and cold showers, and neighbors a few feet away?

Even if we have to be so "undemocratic" as to establish quotas or overnights in National Parks commensurate with what the environment can stand, the public would benefit overall by having a quality experience, however rationed.

Reprinted by permission from the 1966 **Tundra Telegram**, issued by Camp Denali, Mt. McKinley National Park, Alaska.

Lenses On Nature

PAUL V. WEBSTER
Audio-Visual Editor

Bird Close-Ups

As reported in the previous article, (Winter 1967-68 issue) a blind is absolutely essential for most bird photography. Various types of effective blinds were described.

Once the blind has been built, other aids may prove helpful. A telephoto lens is required for most bird photography, and even then, a great amount of patience is involved. Since one must get very close to the subject even with the telephoto lens, it is important to purchase one which focuses to a short distance – not over seven feet. If one specializes in larger birds such as birds of prey, vultures, ducks, herons, etc., use a lens featuring a longer distance.

It adds much to have the light shining in the animal's eye, as it seems to give them more personality. For this reason, I always employ flash even if the sun is shining. The birds do not seem to be frightened by the flash.

Photo by W. G. Hassler
Close-up of a Great Horned Owl

If you are taking a picture at a nest, it may be necessary to cut a few branches. If possible, it is best to tie most of them off to one side so they can be returned for concealment when you are finished. Heavy black thread is good for this just in case some of it may accidently be in the picture.

A cable release is necessary for taking pictures with a telephoto lens. I like to use a long one as it allows more chance for varying ones' positions while waiting for a bird to come into view. Cable releases can be lost so easily that I tie mine with a long string to the tripod. Always keep an extra cable release.

For a tripod, I prefer a heavy model with clip attachments for positioning the tripod legs rather than the common screw type which is slow and cumbersome. They cost a little more but the price is worth it when speed is essential.

One should not disturb nesting birds for long periods of time. It may be best to set up two blinds fairly close together at different nesting sites. With these, one can alternate from one blind to the other between pictures, giving periods of non-disturbance for each nest. Two telephoto lenses which are interchangeable with one camera, makes it more convenient. Or if you can have two cameras in addition to the telephoto lenses, one can save still additional time. It is important that the camera not in use be covered to protect it from heat, etc. An extra camera body without lenses can be purchased fairly cheaply.

Film Review
Diversity of Animals, No. 10
Birds and Mammals

AIBS Film Series in Modern Biology, McGraw-Hill Test Films, 330 West 42nd Street, New York, N. Y. 10036. Twenty-eight minutes, color or black and white. For sale.

This is certainly one of the best of the AIBS films. The guest lecturers are Dr. Harvey Fisher of Southern Illinois University, dealing with birds, and Dr. William Burt of the University of Michigan on mammals. The first part of the film deals with different types of bird eggs followed by anatomical and behavioral studies of birds. The mammal portion classifies mammals as to terrestrial, fossorial, aquatic, arboreal, and aerial habitats. It presents a study of the evolutionary development of mammal bone and teeth structure.

Before showing an AIBS film to a class, I have found it wise to tell the class that these films are different from ones to which they are accustomed in that they are merely filmed lectures and that they should consider the lecturer their teacher for the period. This is well illustrated when a bat escapes Dr. Burt's grasp during the filming.

For those from small schools, such as my own, who cannot afford to purchase the AIBS Films, it is good to rent a different one each year. The teacher can learn much, along with his students, as well as learn interesting techniques of presentation of biological materials.

Here is a multiple choice test which you might wish to use with this film.

1. The habitat of the roadrunner is the (a) tropics (b) desert (c) polar ice cap (d) coniferous forest (e) deciduous forest
2. The wood thrush is found in the (a) tropics (b) desert (c) polar ice cap (d) coniferous forest (e) deciduous forest
3. The smallest known bird is the (a) condor (b) wren (c) tufted titmouse (d) hummingbird (e) goldfinch
4. The largest bird is the (a) condor (b) bald eagle (c) ostrich (d) great horned owl
5. The earliest bird of which we have record is (a) platyberix (b) archaeopteryx (c) ichthyornis (d) hesperornis
6. A vitamin in high concentration in the oil from the oil gland of birds is vitamin (a) A (b) B (c) C (d) D (e) E
7. A unique feature of birds is (a) wings (b) hair (c) bones (d) feathers (e) eggs
8. The internal temperature of birds is (a) 120 degrees-130 degrees (b) 140 degrees-160 degrees (c) 66 degrees-74 degrees (d) 112 degrees-115 degrees
9. A bird whose egg tends to roll in a circle is the (a) murre (b) owl
10. A bird one would most likely find at sea is the (a) oriole (b) chat (c) grackle (d) albatross (e) veery
11. The spruce grouse is most often found in (a) deciduous forests (b) coniferous forests (c) grasslands (d) the desert
12. Shedding of feathers in birds is called (a) molting (b) scaling (c) migration
13. The metabolism or metabolic rate of birds is (a) low (b) high
14. Birds (a) are invertebrates (b) have radial symmetry (c) have air sacs (d) have teeth
15. The trachea divides into two (a) esophagi (b) bronchi (c) lungs
16. Terrestrial mammals live mainly (a) in water (b) in air (c) on land (d) in trees
17. Fossorial animals are (a) underground diggers (b) tree dwellers (c) aerial animals
18. An aquatic mammal is the (a) tuna (b) whale (c) atlantic salmon (d) albatross
19. Arboreal creatures spend most of their time in (a) underground dens (b) trees (c) water
20. An example of an arboreal mammal is the (a) mode (b) whale (c) monkey (d) deer
21. An aerial mammal is the (a) bird (b) bat (c) monkey (d) whale (e) ground hog
22. An animal eating many different kinds of food is called (a) herbivorous (b) carnivorous (c) omnivorous
23. The smallest mammal is the (a) shrew (b) mole (c) mouse (d) humming bird
24. The number of heartbeats per minute of the mammal in question #23 is (a) 70 times (b) 1200 times (c) 200 times
25. The upper bone of the front limb of mammals is the (a) radius (b) ulna (c) tibia (d) carpel (e) femur (f) humerus
26. A mammal which hangs upside down by hook-like toes is the (a) spider monkey (b) raccoon (c) sloth (d) armadillo
27. Monkeys which have prehensile (grasping) tails are from the (a) New World (b) Old World
28. An insectivore is the (a) squirrel (b) deer (c) bear (d) mole (e) mouse
29. Carnivorous animals have well developed (a) incisor teeth (b) canine teeth (c) molar teeth
30. The largest mammal on earth is the (a) elephant (b) whale (c) squid (d) ostrich

Content - Concept - Conscience

Education's Third Dimension

JOHN A. GUSTAFSON

It is often stated that education is our hope for the future. Certainly the problems which beset mankind will be solved only to the extent that people are informed about them and know what must be done.

The ultimate proof of the effectiveness of any educational program is the degree to which there is a change in behavior of those being taught. If this is the goal of education, then we must include in our educational processes those elements most likely to produce changed behavior.

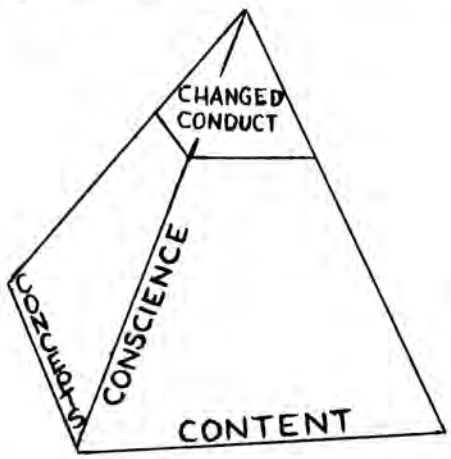
Educational methods have been evolving over the past century, from an emphasis mainly on *content* to an emphasis on the teaching of *concepts*. These are two dimensions of the educational structure, but they, like a two-dimensional card, cannot stand alone. It is time to add a third dimension – the teaching of *conscience*. When what a person learns affects his conscience, then it will affect his conduct.

We have an excellent example of the need for three-dimensional teaching in conservation education. There is plenty of *content* in conservation education – the facts of soils and forests, names of plants and animals, figures on resource use and population growth, facts historical and geographical (to say nothing of mathematical). Out of this welter of information we attempt to impart some of the great *concepts* of conservation: the inter-relatedness of all living things ("web of life") and the necessity for cycling of energy and materials, to name two. The sad fact is that after we have "taught" these facts and concepts, our students go home and continue to shoot the frogs in the pond or litter the countryside with trash. We have failed to reach their consciences – and their conduct is unchanged.

It is perfectly obvious that the problem in reaching the conscience is that it is such a hopelessly intangible activity. One can write facts down in a book or on a chalkboard. We can, with skill and perseverance, get the great concepts across to the minds of our students. But how do you get to their consciences?

Insofar as conservation education is concerned, I believe the only way to translate content and concept into conscience is through meaningful contact with nature. The most significant aspects of anyone's education weren't *taught* – they were *caught*. Along with the content and the concepts, the emotional impact of direct experiences in the natural world are necessary to develop conscience. We are, after all, biological creatures with ancestral roots deep in the world of nature. We relate, especially when young, to the wild places, to birds and flowers and brooks and meadows. If undistracted by others of our kind, we can soak up, as by osmosis, a feeling of kinship with nature, with the result that we develop respect, if not reverence, for things natural. Conservation education must contain this third dimension or it will not really be educational at all. When Johnny chides his older brother about tossing a can out along the highway, then we know we've gotten through to *Johnny's* conscience, anyway. And a boy who feels strongly about throwing cans along the highway will grow into a man who feels strongly about water pollution in his city or the contamination of the world with pesticides.

The difficulty of the task of adding this third dimension to conservation education must not deter us from doing it. As with the great moral principles upon which democratic society is built, the moral and ethical aspects of the "conservation conscience" is the foundation upon which the perpetuation of a livable natural environment rests. We've got to make people *feel* like preserving the viability of the earth. If they don't, then our days are numbered, in smaller figures than we dare admit.



VIVA BIOLOGIA!

JOSEPH ENGELBERG
in "Bioscience," April, 1967

"An increasing need for biologists will exist even after the major problems of classical biology have been reduced to the physical level. This need will express itself on the social and ecological levels. The biological scientist, by temperament and training, has the ability to translate science into social and life preserving terms: biologists have traditionally played an anabolic role with regard to human affairs. The biologist, who in his daily professional life, is devoting his energies to the life-destroying applications of biology is the exception, not the rule. It is to be hoped, therefore, that biologists will assume roles of constructive leadership in the realm of human affairs. The despondency of some contemporary ecologists for example, with regard to the state of their science, seems unwarranted. They appear to work under the assumption that ecology must be reduced to the formulae of physics. Is it possible that ecology is not a primitive, underdeveloped discipline but rather is already a highly fruitful and effective approach to the study of biological interactions? Is it conceivable that rather than squeeze ecology into a preconceived intellectual mold that it would be better to start to apply ecology to the preservation and integration of life on earth? Should ecologists instead of merely attempting to save wilderness and streams attempt to save man in addition to these? And is it possible that in pursuing these high aims the methodological questions which currently perturb ecologists will solve themselves?

The task of the biologist is to remain true to himself and to his tradition. His is a tradition which has scored victory after victory over ignorance, hunger, and disease. Such a tradition cannot but ultimately be successful in any field of human endeavor. Let us strengthen and support it!"

On May 12 and 13, 1967, a symposium on *The Crisis in the Environment* was held in New York City at Rockefeller University, sponsored by the Scientists' Institute for Public Information. Such well-known biologists as E. L. Tatum, Barry Commoner, and René Dubos were speakers at the meeting. The general theme of the meeting was "The Scientist's Responsibility to the Public." Mrs. Ruth Scott, a director of ANSS, represented the Society and also the Rachel Carson Trust for the Living Environment and the Garden Club Federation of Pennsylvania at the meeting.

News and Notes

Cole's Lecture Featured In The New York Times

Dr. LaMont C. Cole's lecture to the joint teaching societies at the AAAS meetings in New York last December was printed in the March 31, 1968, issue of the *New York Times* magazine. Entitled "Can the World be Saved?", Dr. Cole's challenging and disturbing address has been given wide coverage in print. His speech was one of two or three at the entire AAAS convention which got highest publicity.

Conference On Canada's National Parks

A Dominion-wide conference, entitled "The Canadian National Parks: Today and Tomorrow," will be held at the University of Calgary, Oct. 9-15, 1968. The purpose of the conference is to bring many thinkers and ideas together regarding the recreational problems of Canada's national parks. It will promote interchange of ideas among parks managers and administrators, scientists, conservationists, students and citizens at large. The questions raised and the discussions are intended to aid in solving the problems connected with Canada's national park system. During the meetings there will be a short field trip to Banff National Park, and to the Environmental Sciences Center at the University of Calgary. Persons interested in giving papers at the conference should contact Mr. J. G. Nelson, Dean's Office, Faculty of Arts and Science, University of Calgary, Calgary 44, Alberta.

California Group Lobbying For Conservation

A new non-profit organization has been founded in California, called the Planning and Conservation League. It serves as a conservation and planning lobby to press for needed legislation in the conservation area. A Board of Directors consisting of twenty-seven prominent members from throughout the state has been selected. It issues a bulletin "California Today," which describes the current status of bills before the Legislature. Individuals and conservation groups may belong to the PCL. The group has held a legislative workshop at the University of California during each of the past two years. For further information, write to the headquarters of the organization at: 2636 Ocean Avenue, San Francisco.

Dr. Fluck Receives Award

Dr. Paul H. Fluck, of Lambertville, New Jersey, has been given one of the Interior Department Conservation Awards for 1967. He was selected for the award because of his many activities associated with nature preservation at the Washington Crossing Nature Conservation Center in Pennsylvania and for his exceptional record in banding wild birds for scientific purposes. Dr. Fluck has given nature lectures to hundreds of thousands of people at the Center, where he established a bird banding station in 1952 and since has banded nearly 100,000 birds.

Secretary of the Interior Stewart Udall sent Dr. Fluck the following citation on February 15, 1968:

Dear Dr. Fluck:

In recognition of your contribution to public understanding of wildlife conservation, it is a pleasure to present to you the Conservation Service Award of the Department of the Interior.

The message you have so effectively delivered at the Washington Crossing Nature Conservation Center has increased the interest and participation of thousands of people in working toward better wildlife management. While your bird-banding record alone is outstanding and provides data of scientific value, of even greater value to wild life is the insight you give visitors into natural history studies and conservation problems.

A large proportion of the 400,000 people who have heard your lectures at the Center are children whose future decisions will benefit our wildlife resources — and these beneficial decisions are necessary if wildlife is to survive in our expanding civilization.

My deepest thanks for the unstinting use of your time, energy and talents in behalf of wildlife conservation, go with this award.

We wish to add our congratulations to Dr. Fluck for this singular honor.

The New Mexico Department of Game and Fish proposed a program to improve natural resources education in Secondary Schools and was approved by the State Board of Education. The plan permits employment of a conservation expert in the Education Department, provides for updating education materials related to conservation, and in other ways improving the view of natural resources.

Welcome To New Members

Russel E. Bachert, Jr., Delano, Pa.
Mrs. Lenore T. Bingley, Strong, Maine
William Day, New York City
Stanley E. Dutton, Antrim, N. H.
Mrs. Grace Groce, Austin, Texas
Mr. Jay Jarrett, West Palm Beach, Fla.
Donald R. Kuhn, Mt. Morris, N. Y.
Frances J. Lake, Westfield, Mass.
Mrs. Elinor Lea, Pottstown, Pa.
Carol T. McCarthy, Washington, D. C.
Melinda McCreary, Houston, Texas
Mrs. Donna Parsons, Caldwell, Idaho
Miss Margaret M. Pons, Rutherford, N.J.
Arline B. Powley, Glassboro, N. J.
Elizabeth Roller, Nashville, Tenn.
Margery Rutbell, Endicott, N. Y.
George E. Terney, Pittsburgh, Pa.
Philip B. Weld, Andover, Mass.

New York Outdoor Education Association Formed

The New York State Outdoor Education Association has been re-activated after a lapse of several years. George Fuge, director of the Outdoor Education Center at Raquette Lake, operated by the State University College at Cortland, is president. The group is seeking to provide a regional framework within which persons engaged in the many aspects of outdoor education may cooperate and assist one another. An annual conference is being planned for the Fall of 1968, with Earle Helmer as program chairman. Dr. Richard Fischer and Dr. Harlan Metcalf, both active ANSS members, are on the planning committee.

Dr. Palmer Under Study

A graduate student at the Pennsylvania State University has undertaken a study on the topic "E. L. Palmer, his Impact on Conservation, Rural, Nature, and Science Education, 1888-1968." Under the direction of Dr. H. S. Fowler, past president of the ANSS, Mr. Joseph Bellisario has distributed a questionnaire regarding Dr. Palmer's work. This is a most appropriate year to undertake such a study, since Dr. Palmer celebrates his 80th birthday in 1968.

Nature's Disposable Diapers

Cattail fluff is used beneath and around Cree Indian babies of Manitoba when they are strapped to papoose boards. The high absorbency of the hollow fibers protects both mother and child. In addition, the insulating properties contribute to the baby's comfort in hot and cold weather. — H.R.R.

Youth Takes The Lead!

Teenagers who've been wanting a piece of the action, are getting it! Four thousand young people, ranging in age from 13-20, are working nationwide – from countryside, suburbia and the inner-city – in fifty different projects in a field test of guidelines developed to help youth plan and carry out their own activities.

The guide, "Youth Takes the Lead," is being developed by Science Research Associates, Inc., a subsidiary of IBM, to assist teenagers in selecting, planning, and carrying out community service projects especially suited to their own needs and interests. "Youth Takes the Lead" is intended to guide the young people toward wise decisions as they plan community projects, while directing their adult advisors to give youth the optimum amount of freedom to reach their own decisions. This unique guide is based on the attitudes, experiences and even failures of other teenagers, already engaged in community service through their two-year involvement in the National Youth Conference on Natural Beauty and Conservation. Information was obtained from these teenagers during the course of SRA's evaluation of the National Youth Conference, sponsored by eleven national youth organizations with a combined membership of more than 20 million: Boy Scouts of America, Boys' Clubs of America, Camp Fire Girls, Inc., 4-H and Youth Development, Future Farmers of America, Future Homemakers of America, Girl Scouts of the U.S.A., Girls Clubs of America, Inc., Red Cross Youth, Young Men's Christian Association and Young Women's Christian Association.

Youth participating in the field test have selected and undertaken projects primarily in the areas of environmental improvement, recreation and working with disadvantaged youth. They have raised funds, enlisted technical advice and materials and services from their communities. In many communities, the local Coca-Cola Bottler, as part of a continuing program of The Coca-Cola Company to support the National Youth Conference, is providing matching funds of up to $200 to assist the young people in their projects.

One of the most dynamic projects – incorporating the principle of letting youth take the initiative – is underway in Tulsa, Oklahoma. A group of Red Cross Youth, of which 18 year-old Kathy Reeder is project chairman, have planned a program of immunization against polio, measles, diptheria, tetanus, whooping cough and a TB skin test, in a disadvantaged area of North Tulsa. Beginning the first Thursday in June, youth teams are going into a six block area every Thursday morning for a ten to twelve week period to pick up mothers and their pre-school children and drive them to a clinic. The Public Health Office will provide the vaccines and a Public Health nurse will administer them. After the shots have been given, the children will take part in an organized playtime and their mothers will receive instruction in the need for follow-up shots – both programs will be conducted by Red Cross Youth.

Another innovative project is being undertaken by 85 members of the Bridgeton, New Jersey Future Farmers of America who plan to forge a nature trail through 100 acres of land adjoining the Bridgeton High School. Headed by 18 year-old Alan Platt, they will identify 40 different varieties of tree by both their scientific and common names, plant more trees and build a picnic area. This new center will be used by students, the Boy Scouts and 4-H members.

A very exciting project is being undertaken by the Phillipsburg, Kansas chapter of the Future Homemakers of America. Headed by 17 year-old Jody Hunziker, 95 FHA members together with 20 students from the psychology class of Phillipsburg Welfare Department – will work through the Presbyterian Church of the greater Kansas City area to reach slum children and bring them out to live in Phillipsburg homes for one to two months, beginning the second week in June. The young people undertaking the project range in age from 13 to 18 years. Their idea is not so much that they can change the lives of the disadvantaged children by bringing them to their rural community (population 3,000), but that "it will show them that we care, and maybe get more friendship going."

In Washington, D.C. a youth group living in the core city is working through its organization called Roving Leaders to set up a hobby shop where eventually the young people hope to make artworks and toys and repair electrical equipment to earn needed pocket money. The project chairman, 16 year-old Llewellyn Hall, reports that a local businessman has donated a garage and another some equipment. With a $200 grant from the local Coca-Cola Bottler, they are getting started.

The young participants in this field test will report back their experiences to Science Research Associates, Inc., who will publish "Youth Takes the Lead" in late 1968. The organizations sponsoring the National Youth Conference welcome "Youth Takes the Lead" as an opportunity to improve programs for youth – to make them more suited to their changing interests and relevant to the times. "Youth Takes the Lead" will help all youth groups as well as any adult groups, including business, labor and government who are searching for a way to give young people a greater voice in their present and future.

THE LAND ETHIC

(Continued from page 8)

8. A "school for professors" in environmental studies.

9. Plans for an outdoor recreation area to extend the scope of the student union.

10. Interdisciplinary majors in such fields as urban and regional planning, environmental design, river basin planning, water resources management, biometeorology, land-use law, conservation journalism, conservation education, and park administration.

11. A water resources center for focusing hydrologic research and supporting the state's new water resources management act.

12. A proposed environmental management center.

13. Active discussion of ways to further integrate these and other related developments.

A project in which I am engaged, and that represents one segment of the whole, is concerned with conceptualizing the idea of conservation and environmental education. Our purpose is to build an integrated multidisciplinary approach to conservation education, K-12, to be used in both science and social studies in our public schools. The project draws information and advice from 35 different professional fields to form a hierarchy of concepts, and the resulting list is being prepared for national validation in the various biogeographic regions. This work will form the foundation on which teaching and evaluative procedures and techniques for environmental education will be built.

What is happening in Madison is also happening in other universities across the country, and perhaps out of the flux will come a more highly developed understanding of Leopold's dream. The biggest job to be done is as Leopold said in concluding his *Bird Lore* article, ". . . not a job of building roads into lovely country, but of building receptivity into the still unlovely human mind." Let's talk to each other, naturalist, educator, citizen. Let's build a concept of culture which permits us to enter the consciousness of another and understand. Let's help Billy, Mrs. Schwartz, and our friend, Mr. Green, come to know. Let's prod the ecological consciousness into full bloom.

"One's Own Hearth and Neighborhood"

M. Graham Netting

Reprinted from Journal of the Alleghenies

In the halcyon days—or so they seem in retrospect—just before World War I, the poet Vachel Lindsay wandered westward from his home village of Springfield, Illinois, to Colorado and New Mexico, quite penniless but amply supplied with printed handouts, his *Gospel of Beauty* and *Rhymes to Be Traded for Bread*. His self-imposed code was to have nothing to do with "cities, railroads, money, baggage, or fellow tramps." (Automobiles were not then a temptation or a menace to hikers.) Lindsay's gospel infringed upon no faiths; he merely asked that all persons add to their existing creeds the concept that love of beauty is holy because beauty of sky and landscape stem from God. Nor was he an isolationist; he taught that men should travel widely, then return to their homelands to introduce new ideas of beauty, for "the things most worthwhile are one's own hearth and neighborhood."

In Lindsay's day both he and the few conservationists were considered at least a mite queer. It was then commonly held that natural resources had been bountifully bestowed upon certain favored peoples for man's use as he saw fit. Attaining the better life through energetic exploitation of whatever was conveniently at hand was a laudable goal. This attitude is still defended by some "practical" men and even by some members of Congress.

Now we have the better life: a car in every garage and a junkyard heralding every town; more leisure to fish and fewer waters that can grow fish; and more miles of concrete to speed us to vacation spots more crowded than the neighborhoods we have just left. Many Americans enjoy the highest standard of living ever achieved; others suffer dire deprivation. All share the togetherness of breathing each other's polluted air, drinking each other's wastes, boasting the world's shiniest bathrooms and the world's most poisoned streams. Some consider every valley that doesn't have its own dam as underprivileged; every hill is a potential bulldozer target. We select dwindling unspoiled areas for parks so that urban people may enjoy the benison of contact with nature, and then cannibalize the "preserved" lands for parking areas, playing fields, golf courses, trailer camps, and service complexes – most of which could be located on denuded land outside the parks. We build multilane highways through scenic areas so that tourists may absorb beauty at a mile a minute as they whiz through in order to "enjoy" another beauty spot the same day. We send food to peoples whose ancestors failed to realize that without soil and trees on the hillside the town in the valley dies, without recognizing that we are busily engaged in emulating the ancient error.

Man Cannot Conquer Nature

All vainglory to the contrary, man cannot conquer nature. We are a part of nature, bigger and more noisy and destructive than a mouse, but subject to the same inexorable laws. When the good water is gone, the good soil covered or wasted, the good air tainted, we shall surely perish. This has happened in many times and places: it is happening here and now.

Each of us should look at his own community with sober awareness of the mortality of the individual *and the species*. No blind faith in the saving grace of science should delay community introspection. Which woodlots have trees so majestic that they are irreplaceable in human lifetimes? Which farms are so rich and productive that it would be sheer folly to plant them with ranch houses? Which streams are still unpolluted and worth battling to keep so? Which venerable buildings, weathered barns, or narrow bridges are links with a past that must be remembered if we are to have a future? What loveliness that sustained us has been set aside for our grandchildren to enjoy?

Let us travel as purse permits and fancy dictates, let us observe man's unnatural treatment of nature, his profligacy in wasting his resource birthright, and return determined, as Lindsay recommended, to make our "own home and neighborhood the most democratic, the most beautiful and the holiest in the world."

Thoughts of April and Spring

It is a natural resurrection, an expression of immortality. – Thoreau

'Tis Spring-time on the eastern hills!
Like torrents gush the summer rills;
Through winter's moss and dry dead leaves
The bladed grass revives and lives,
Pushes the mouldering waste away,
and glimpses to the April day.
– Whittier

This is being written the day before the first day of spring. Often Nature is in a rebellious mood, not timing the arrival of Spring according to the almanac. After treating us to two or three days of spring-like weather, this morning a dazzling mantle of snow covers the land with the chilling temperatures to remain for another day or two.

Such are the varying moods of Nature! But there comes a time when the whole earth surges with life and energy, bringing a warm gentle April shower with its special spring-like odor, and one we are delighted to be in. Growing things seem to literally shoot out from the ground; every single seed that has lain dormant during the winter now seems to germinate of one accord. There may be rains and rains which bring out the subtle fresh fragrance of the bursting sod, the mould of decaying leaves, and the perfume of flowers.

Even the colors of the birds seem much more brilliant at this season of the year. With boundless energy they begin rearing their families, and their song is never more beautiful.

Other creatures of nature become endowed with restless energy and inquisitiveness. Humans have the urge to get down on their knees to work the soil with their hands; to clear away the debris accumulated during the winter to discover what signs of life may be hidden beneath; to marvel at every new sign of what is hoped will be a flower or foliage of beauty.

Thus do my thoughts ramble on at this gladsome time of the year. Once again I wish I were a small boy climbing trees, wading streams, and dreaming of riding wind-borne clouds.

– Axel E. Janson

Dr. Helen Ross Russell served for a number of years as a board member and secretary of ANSS. For a number of years she taught school in Massachusetts and is now an Educational Associate at Wave Hill, an historic Hudson River estate occupying 28 acres in the Riverdale section of the Bronx.

This area was given to the Parks Department in 1960 for the people of New York City and is set aside as a nature area and a teaching center for environmental science. It includes some landscaped lawn, formal and informal plantings, a large open field, two sections of woodland and the river area.

Helen is enjoying her work in bringing about a better understanding of man's relation to his environment. There are several teacher training programs, and where possible, this is carried out with involvement of children from some of the area schools.

During July, Helen will train day camp counselors for nature work in New York City Parks. After that she and her husband will go to Peru for a while to look at Inca art.

A nation deprived of liberty may win it back, a nation divided may reunite, but a nation whose natural resources are destroyed must inevitably pay the penalty of poverty, degradation and decay. — Gifford Pinchot

AMERICA THE UGLY

by Brent Renfrow

Oh pitiful for smoggy skies
For jungles made of stone.
For blazing mountains tragedies,
Where bubbling brooks did roam.
America! America!
We shed our trash on thee,
And now regret the mess we made,
From sea to shining sea.

How terrible the picnic trash,
The beer cans by the road.
The sewage pipes that feed the streams,
Their deadly, smelly load.
America! America!
With lakes of glistening foam
And airplanes spraying poisons on
The dear land we call home.

Away, away, from men and towns,
To the wild wood and the downs —
To the silent wilderness
Where the soul need not repress
Its music lest it should not find
An echo in another's mind,
While the touch of Nature's art
Harmonizes heart to heart.

Percy Bysshe Shelley

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