Nature Study

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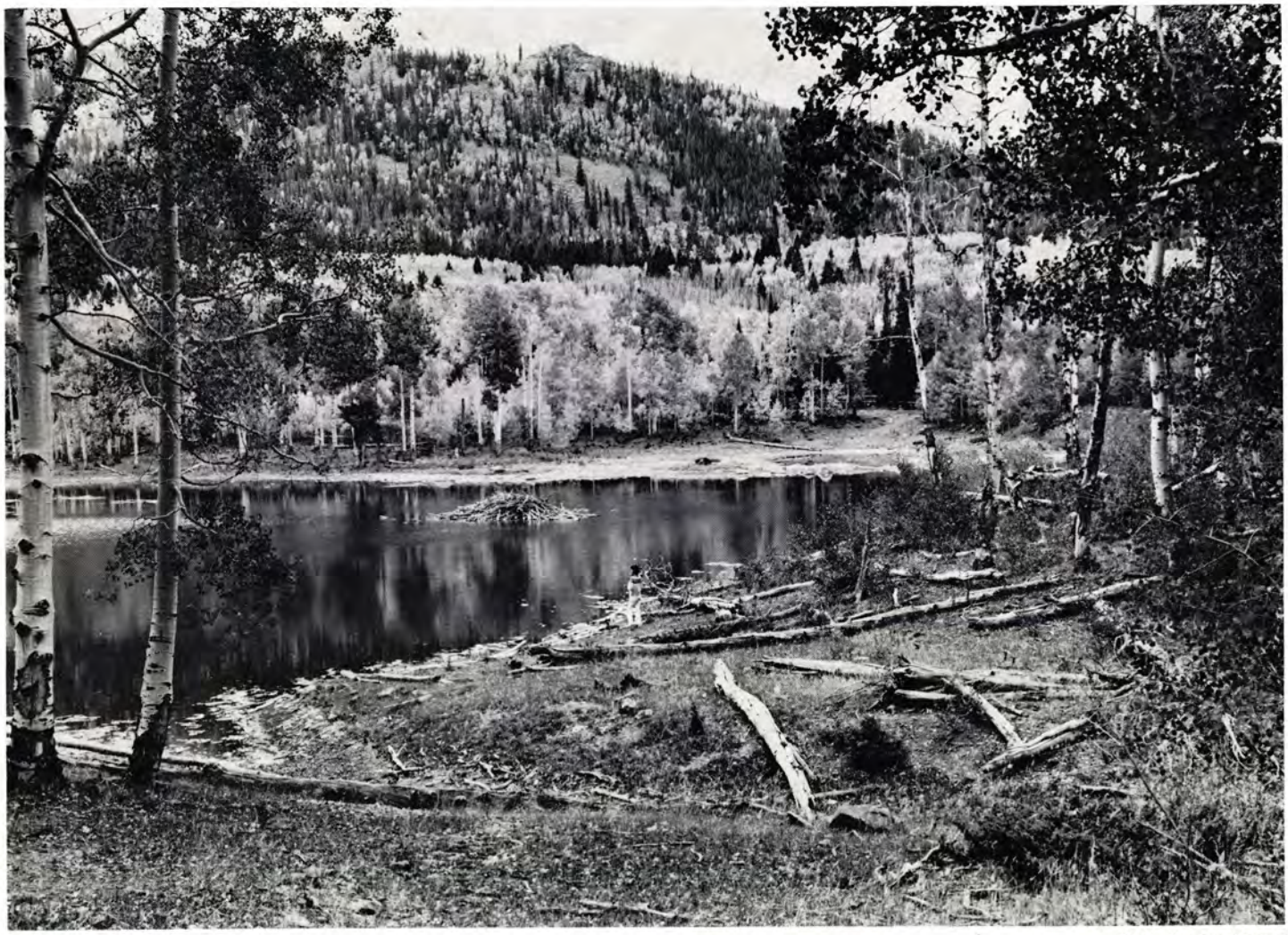

Photo by Joe Bauman

Man . . . IN Nature

The American Nature Study Society

RECYCLING

Some atoms of my body
Were once another man.
He may have been Cro-magnon
Or Sioux or from Japan.

Perhaps it was a lady
In Bombay or Cathay
Who was a prior user
Of what is me today.

It really doesn't matter
Who was the early one,
For there will be another
When my time is done.

Our God in all his wisdom
Throughout eternity
Will quietly continue
To thus recycle me.

— J. W. Scheel
August, 1971

COVER PHOTO: The theme of this issue is "MAN . . . *IN* NATURE." Did you see the person in the cover photo? We need to learn the art of being unobtrusive, since, as the poem above tells us, we are much more all-pervasive than we realize.
— J. A. G.

A Mountain, A Lake and A Marmot

LEAH T. FOERSTER

Born and shaped and shored in the Rocky Mountains, Puffer Lake shimmers under a sky almost turquoise at times. Winds that breathe down hard from the top of the high mountains tosses the lake into boat-slapping waves. Snow, sleet, hail and rain pelts the fir, spruce and aspen that engirdles its basin. To the west, the peaks of Mt. Baldy and Mt. Delano rise 12,230 and 12,150 feet.

On the south bank are massive tumbles of rock. A little Rocky Mountain pica carries a blue-sepaled columbine up and over and around the rocks in a swift appearing - disappearing act. He reappears on a favorite rock slab patterned with orange and rusty colored lichens, his fur blending with the color of his fortress, to nibble, stem first, the flower he had gathered from this rocky scree. His ventriloquail call intermingles with the chickaree's anxiety at the musical clink of a fisherman's footsteps on thin shale below.

A dirt road winds through the alpine meadows on the west side of the lake. The meadows are kept moist by springs from terraces above. In late spring, marshmarigolds in a profusion of white and gold, glisten on the lush green tangle of grasses. Golden buttercups, shooting stars and violets add their color and flagrance. Rosy finches, mountain bluebirds, Audubon's warblers, rufous-crowned sparrows and robins bathe in small pools formed by the springs. They fly to a favorite dead tree to preen. They space out their territory with songs as vibrant and varied as their plumage.

From the marshy end of the lake to the north, a great blue heron flaps across to a sandy strip of beach where he folds his long wings and remains in silent long-necked dignity. Above him, wooden steps climb up the bank to four fishermen's cabins waiting out the years.

Swimming near an inlet fed by a creek from the east end, their ear patches flashing red-gold, six eared-grebes turn in a body out into the lake. They are strangers here like the heron. Cullen Creek, almost hidden by tall stemmed bittercress white with fragrant blossoms, shares its cold waters with mountain bluebells and the fuschia-flowering Parry's primrose. The spotted sandpiper has a nest close by and his familar "peet-weet" is heard the entire length of the lake in his fluttering flight from rock to shore.

A rush of trills accompanies the water ouzel as he darts up and down Cullen Creek. There are times when I believe I can hear his sparkling song as he "wings" upstream under the surface of the creek in search of a water-bug.

On the lake, a trout "rainbows" for flies at dusk. In the clear water, one may occasionally see a rainbow-sided sucker near the bank. A man can walk roads and pathways here in brilliant starlight or watch a doe bring her fawns to drink.

Too small to be named in the Official Roster of Utah, Puffer Lake is the heart of this mountain. Three sink holes below Puffer Lake fluctuate with the beating of its great heart and have themselves been named lakes because of their way of life and the life they support (Mirror, Blaine's and Otter's, the latter the largest of the three). Water from Puffer Lake seeps down into these three channels of her bloodstream to gush forth through the side of a steep-walled ridge about a mile below. These falls are unofficially known as the "Red Falls" because of the red soil exposed behind the surge of water as it plummets to a stream below. This stream plunges on down through the steep-walled canyons it carved, splashing over boulders, shaking the limbs of over-hanging bushes and trees, and swirling around great fallen logs and debris.

Eventually this stream, gathering more water from springs and snow-fed outlets, becomes a part of the Beaver River that courses on down through fields and past cottonwood-lined banks to be captured in the Minersville Reservoir some 20 miles below. The Minersville Reservoir furnishes irrigation water for a semi-arid valley just around the next mountain. Beaver River is the bloodstream that began pure and clean at Puffer Lake and the only river that is the entire lifeline of Beaver County.

Beaver dams and lodges in the Beaver Mountains are found along the streams and in ponds. One of these beaver ponds was described by Joseph Bauman, Environmental Specialist for the *Deseret News,* as one of the most beautiful and aesthetic he had ever seen . . . "deer hoofprints sunk in the spongy banks, a still, wide pond, reflecting the streaked yellow of aspens, with a big beaver lodge right in the middle." In the spring, the beaver will escort her kits from this lodge before the snows have melted. (See cover photo.)

It was here in the Beaver Mountains that a yellow-bellied marmot, whose life almost ended before his eyes had opened, was dug from his den by an exploring dog. He was rescued by children who took him to the proprietors (Bob and Marge Schramm) of the Puffer Lake Lodge. A wet, utterly bedraggled infant animal, the marmot was spirited enough to bite the hand of his benefactor as she dried him with a washcloth and warmed his shivering body in a doll's blanket.

With prior know-how of handling such emergencies, Mrs. Schramm warmed some milk and offered it to the sightless baby marmot in a two-ounce baby doll's bottle. He took the tiny nipple in his mouth and sucked on it until the bottle was empty. The delighted children named him "Woody" on the spot and the old lodge with soaring spruce behind it and Otter's Lake in front, became his new den.

"Woody" slept by the bedside of the Schramms that night. He awakened Mrs. Schramm about every four hours churring and chirping until his demand for milk was satisfied. By the time his eyes were open, he was agreeable to being handled and fed. Mrs. Schramm was most attentive to his progress and when he showed some distress with his diet, gave him condensed milk and started him on pablum. One day, he simply pushed aside the bottle (he was taking four to five ounces per feeding by now) and was given a cabbage leaf. He became a vegetarian until he discovered an opened box of "Friskies" and noisily devoured most of the contents. Since there were no side effects, the dog food became a part of his diet. About this time, he also gave up his blanket by the bedside of the Schramms and brought in grass, sticks and leaves from outside to build his own bed behind the old-fashioned wood-burning stove in the kitchen. When he moved his bed outside under the lodge, he cleaned up his old quarters from behind the stove leaving not a trace of debris.

"Woody" was allowed complete freedom of the lodge both inside and out. He was an endless source of amusement and wonder to the children and adults alike who stayed at the Puffer Lake Lodge cabins. They especially liked to watch Bob (Schramm) play "I'm going to get your tail" game with "Woody" and the playful response of this bright-eyed youngster. He was friendly and curious

about everything and everybody, especially the children. Marge and Bob had to keep a watchful eye on the dogs of their visiting clientele and orient the children in approaching and enjoying this unusual pet. The Schramms always found time to relate the story of "Woody's" rescue to the children who especially liked the part that they, the children, had played in this exciting drama.

A hunter who had always "shot the varmints" felt he could never again kill a marmot especially after this little creature had allowed him to pet it as it gently manicured his fingernails, one by one.

"Woody," now a handsome half-grown marmot, began to show the "Roman nose" characteristics, the white stripe between his eyes and deepening of the yellow-belly tinge. He led an idyllic life as he played and sparred with Bob. After a hard day of fighting blue jays, chipmunks and golden-mantled squirrels away from his front porch, he would come into the lodge for a graham cracker spread with peanut butter or a sip of milk. (He sipped liquids rather than lapped them up as do dogs and cats.)

"Woody" became a little fatter and more sleepy than usual near the end of August. One day in early September, he disappeared under the lodge and was not seen again.

Before leaving Puffer Lake Lodge in October for the winter season, the Schramms placed a bag of alfalfa pellets under the lodge. They were concerned that "Woody" might not have acquired a sufficient store of fat to see him safely through hibernation and he could awaken when the snow would be so deep around the lodge he couldn't get out right away.

It will be interesting to learn if the marmot will recognize or respond to the Schramms and resume his former relationship with them when he awakens from his nine months sleep-in.

The aesthetic as well as the ecological value of Puffer Lake has long been recognized by the Utah Power and Light Company who owns it. In cooperation with the Fishlake National Forest and Beaver County, the UP&L has not only designated this area for recreational purposes for the public but has provided services for the overnight camper or for individuals spending a pleasant day of hiking or fishing. Most of all, UP&L has made it possible for many people to enjoy the quiet yet vibrant beauty of Puffer Lake. And to experience such unexpected events as the rearing of a baby marmot.

Four Needs: An Introduction

Richard F. Fleck

Spring has come and gone over one hundred times since the death of Henry David Thoreau, and with each new year he seems younger and more alive as his humble thoughts prove more meaningful to us in an age of automation. Each year more people realize that what he wrote is no more an arrogant command than are the paintings of Monet paradigms for all painters. What he suggests is not the "Why women should vote" of the college debate, but merely philosophical commentary on his observations of society and nature.

The problem of the vanishing wilderness faced Thoreau, as it faces us. "Kataadn," written over one hundred years ago, is remarkably similar to today's pleas for saving the Allagash country of Maine. Whether we read about the need of saving Dinosaur National Monument or read Thoreau's "Chesuncook," the basic expression is the same. Indeed, "In Wildness is the Preservation of the World," Thoreau states it well; we have need of space and wilderness, but to explain why to the indifferent may cause us to seem mawkish and unrealistic.

Thoreau can hardly be thought of as a logician. Instead, the writings of this New England mystic are an amalgamation from a vast ocean of thought. From his voluminous works I have pieced together his "four needs" for the wilderness: practical, therapeutic, spiritual, and literary.

In "The Succession of Forest Trees," Thoreau concerns himself with the fundamentals of forestry and the necessity of proper forest growth for future use. Conservation practices of raising pine forests as nurses for oak forests and the transplanting of saplings for the amelioration of soil are discussed at length. He realizes the necessity of protecting animal life, the squirrel and the jay, in order that the natural dissemination of seeds be continued. Woodland preserves with their natural ecological relationships must be understood and maintained. This appreciation of wilderness as a conservatory for food, fuel, and shelter is easily understood, except by those to whom spruce or maple trees appear as dollar bills. The three other needs for the wilderness that Thoreau presents are far more subtle.

Where there is continual tension and ultra-mechanization some catharsis is needed. Thoreau found what many seek today – the inner retreat where the mind can relax and divert to the esthetically pleasing. The town and city dweller can be revived in the wilderness. As Thoreau puts it, "There is no scent . . . so wholesome as that of the pines, nor any fragrance so penetrating and restorative as the life-everlasting in high pastures."[1] This statement rings true as shown by the continually increasing flow of people to our National Parks. Since we are natural creatures ourselves, we have a continuing need to be reminded that the artificial world of man is only part of life. Thoreau, in *A Week on the Concord and Merrimac Rivers*, states, "There is something indescribably inspiring and beautiful in the aspect of the forest skirting and occasionally jutting into the midst of new towns, which, like the sandheaps of fresh fox-burrows, have sprung up in their midst. The very uprightness of the pines and maples asserts the ancient rectitude and vigor of nature. Our lives need the relief of such a background, where the pine flourishes and the jay still screams."[2]

A balance of natural with artificial is essential for the mind as well as the spirit. When one roves the woods, climbs mountains, or walks along the seashore, his soul gains a proper perspective of the world and human experience. "In passing over these heights of land, through their thin atmosphere, the follies of the plain are refined and purified. . . . ."[3] The very hills act as a catalyst. Thoreau feels that colleges should be near nature and mountains. "Some will remember, no doubt, not only that they went to college, but that they went to the mountain. Every visit to its summit would, as it were, generalize the particular information gained below, and subject it to more catholic tests."[4] Does the wilderness, then, not only relax us, but also broaden us? Anyone who has stood on the rim of the Grand Canyon, a mountain summit, a cliff of the Maine coast, knows that something happens to thought. Is it a "refining"?

Both the form and content of literature are affected by the wild. Thoreau writes, "In literature it is only the wild that attracts us. Dullness is only another name for tameness. It is the untamed, uncivilized, free, and wild thing in Hamlet, in the Iliad, and in all the scriptures and mythologies that delights us – not learned in the schools, not refined and polished by art. A truly good book is something as wildly natural and primitive, mysterious and marvelous, ambrosial and fertile, as a fungus or lichen."[5] The wild sea coasts, mountain forests, and choppy rivers are for the writer as

well as the painter. As the cosmic Yankee states, "It is remarkable that the autumnal change of our woods has left no deeper impression on our literature yet."[6] His works as well as those of such greats as John Muir, John Burroughs and Stewart Edward White reflect it well.

Thoreau is no sentimentalist. He writes, "The surliness with which the woodchopper speaks of his woods, handling them as indifferently as his axe, is better than the mealy-mouthed enthusiasm of the lover of nature."[7] One extreme is as bad as the other. He realizes that what the wilderness stands for is what man should stand for. It is upon this strength that our nation depends.

In his essay "Walking" he speaks of America and her wilderness when he says: "If the moon looks larger here than in Europe, probably the sun looks larger also. If the heavens of America appear infinitely higher, and the stars brighter, I trust that these facts are symbolical of the height to which the philosophy and poetry and religion of her inhabitants may one day soar."[8] One hundred years separating Thoreau from today has had no effect upon the meaning of what he has to say to us and to those who come after us.

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1. Henry David Thoreau, **Excursions,** (Boston: Houghton Mifflin and Company, 1888), p. 39.
2. H. D. Thoreau, **A Week on the Concord and Merrimac Rivers,** (Boston: Houghton Mifflin and Company, 1893), p. 223.
3. Thoreau, **Excursions, op. cit.,** p. 92.
4. Thoreau, **A Week . . ., op. cit.,** p. 244.
5. Henry David Thoreau, **The Heart of Thoreau's Journals,** Odell Shepard, ed., (Boston: Houghton, Mifflin Company, 1927), p. 58.
6. **Ibid.,** p. 308.
7. Thoreau, **A Week . . . op. cit.,** p. 139.
8. Thoreau, **Excursions, op. cit.,** p. 182.

EPA To Create Land Use Unit

Russell E. Train, Administrator of EPA, announced plans for the formation of a new unit within EPA designed to deal with all aspects of land use problems.

The Administrator stressed that, rather than broadening the scope of EPA's activities, the new office will pull together work now being done in scattered offices throughout the Agency.

Calling land use planning "the Nation's No. 1 environmental problem," Train admitted that it has so far received little attention. He said that the new office does not represent the exercise of new authority, but rather, "a new approach to the responsibilities we already have."

A Letter from "Redwood" Briggs

in the Canadian arctic . . .

(EDITOR'S NOTE: *The following letter has been received from John "Redwood" Briggs, who presented his effective slide show "Simply Seeing" at the annual meeting in San Francisco earlier this year. ANSS gave official endorsement to the field expedition which Redwood describes, helping him gain permission from Canadian authorities for this exciting adventure.*)

With a lack of postal services along our canoe route these past few months, I must apologize for not having thanked you sooner than this for your endorsement of our expedition. So at this time, *thank you!*

My partner and I have thus far completed 1800 miles of our trip with less than 100 remaining before our arrival at the eskimo village of Baker Lake. Traveling a route no others have completed, with the exception of Tyrell in 1893, we've been fortunate enough to gain what I believe to be a true 'feel' for the tundra and its way of life.

Six weeks had passed before we met with other people, heard the roar of an engine or eaten a meal with *real* meat in it. An archaeological expedition had flown in to one of our lakes along this route. They were in the process of recovering tools believed to be 6,000 years old, used by the Plains Indians traveling north in search of caribou. Which brings me to my next point: Wildlife has been as diverse as one might care to dream. Arctic wolf, fox, weasel, snowy owl, lemmings, hare, caribou, all have added to the excitement we have in meeting each day. As a fellow birder, I'll be sending a complete list of the birds we've noted – including the peregrine falcons that "shared" their nest with this photographer.

Sad to say that our voyage is nearing its end, yet paddling a 350-mile long lake – surfing with it at times; a thousand mile river through lakes jammed with ice, pushing and pulling the canoe over it; running rapids that swallowed us only once; portaging around gorges reminiscent of scenes from the Grand Canyon, I am nearing that point which says to return

The native people, the Innuit eskimo, are becoming more indoctrinated to "white man's way," leaving their love for the land–their living with the land–to history books and grandfather's memory. Satiated with Coca Cola and candy bars sold by the whites (Kabloona), the Innuit have lost their pride in hunting caribou and now boast the existence of snowmobiles and radio (television has not reached here, yet). Fly-by-night flying services, fishing camps and mining explorations litter the tundra with that flood of civilization called "garbage" and 45 gallon oil drums. It was fortunate for my eyes to have seen the tundra least exploited and the least accessible along our route as I was beginning to believe that there was no place on earth untouched by the exploitation of modern man. Had I waited a year or two – my fear would have been confirmed.

Though this land is called the Barrenland – perhaps so named for its lack of human habitation – it by no means should imply a lack of life, for the tundra is truly alive. If one could ignore the fact that the air around him is *filled*, like a black smoke, with mosquitoes and black flies, he could walk endlessly through this land to the Northern Lights.

A fascinating thought just occurred to me: in the 70 days of our voyage, we have watched the Spring – with its melting ice and new leaves, Summer – with its thunderstorms that make you appreciate the fact that you survived and a fine show of flowers, and Autumn – where spagnum moss turns a crimson gold-red and summer flowers are now berries of every shape, size and colour, geese are regaining their composure after another molt and now seem anxious to return Southward. Nights are frosting, days are shorter; like many animals of the tundra – we, too, must turn South, for this is no place to Winter!

Many thanks, again.

Sincerely,

John "Redwood" Briggs

Modern Camper Code of Conduct

1. Avoid loud noise in camp, particularly when others may be sleeping.
2. Don't litter.
3. Respect the privacy of others.
4. Never deface trees or camp property.
5. Leave a campsite cleaner, if possible, than you found it.
6. Build fires only in established pits.
7. Instruct children about camp rules and the rights of others.
8. Control your pets – never allow them to be a nuisance to others.
9. Obey posted speed limits – drive very slowly in camp.
10. Observe fire precautions.
11. Never let smoke from your fire be a nuisance to others.
12. Never molest wildlife.

TIPS *for Environmental Education and Interpretation . . .*

Stone Walls *"Just Another Kind of Outdoor Game"*

ROBERT E. RUTKOWSKI

"What's this old stone wall doing here?" This is a question frequently asked as I lead groups through the woods in eastern New York. Most of the time I'm the one who asks the question, hoping for a bubbly answer from a bright-eyed youngster. Sometimes, however, it is a student who blurts out the mysterious question. When this happens it immediately causes me to flashback to moments in my own youth and my experiences with stone walls. Often I would wander through the woods and come upon an old crumbling wall, scramble atop it and wonder who was dumb enough to build a wall in the middle of the forest. This question would turn in my mind until I lost balance and fell off.

It wasn't until I took a course in Botany and learned about ecological succession that I reflected back and thought about the all-encroaching forest, and realized that the wall was actually there first and the forest grew around it.

I have found stone walls to be a most valuable and effective teaching tool in the outdoors. Since walls are so common in the Northeast even near schools, parks, and in backyards, I think they deserve an especially high place in an outdoor education program.

Before and/or after a session on stone walls is done it might be very beneficial to read Robert Frost's poem "Mending Wall." I had the joy of finding this poem after writing the major portion of this article, and have decided to add excerpts in appropriate places.

Probably the most obvious study into which to incorporate stone walls (if for no other reason than what they are made of) is *Geology*.

A. Examine the different rocks that make up the wall
   1. What minerals do the rocks contain?
   2. Simple tests for cleavage, luster, hardness, etc. can be done in the field.
   3. Are the rocks fitted together by their natural fractures?
   4. Are the rocks in the wall indigenous to the local bedrock? If not, where are they from?

B. The last topic is a great lead into the study and discussion of glacial geology. Where I live in Rockland County we can even say that the glacier gave the county its name.

C. Weathering
   1. How and why are some or all of the rocks in the wall deteriorating?
   2. Is the soil adjacent to the wall affected by the weathering process? Is it different from the soil a few feet away in pH, mineral content, porosity, etc.

MICROCLIMATIC INVESTIGATION

"Something there is that doesn't love a wall,
That sends the frozen-ground-swell under it,
And spills the upper boulders in the sun;"

A. Frost and Snow
   1. Frost heaves (what Mr. Frost was referring to) are fairly common in the Northeastern states. Many wall builders compensated for this by putting the first two layers underground. Dig at various sites along a wall to see if this is true.
   2. Measure snow depths on different sides of the wall.
   3. Place a ruler on or at different locations along the wall to see if snow depth recedes at a faster rate in any particular place.
   4. Does heat conducted away from the rocks have anything to do with the rate of melt near a wall as opposed to three feet away.
   5. Can you find evidence of frost cracks?

Photo by Rutkowski

B. Temperature
   1. Check temperatures at the top, sides and base of wall—compare.
   2. Put a thermometer in the openings and cracks in the wall. Is there a difference between higher and lower openings, large and small ones?
   3. See how long an opening in the wall retains its minimum night temperature and its maximum day temperature. (Use a maximum-minimum thermometer.)

C. Moisture
   1. Which side of the wall is drier?
   2. Which side has more vegetation growing on it or near it?
   3. What is collecting in or causing cracks?
   4. Are there worn spots on the rocks where water runs off them with a great amount of velocity? Are there drip holes next to the walls?
   5. Check pH of water in collecting spots in the rocks or at a run-off point.

Stone walls are keys to the past and if used wisely can unlock many secrets. They can lead us to new discoveries such as old wells, foundations and even an abandoned but relatively intact building. The walls themselves can be dated by artifacts found in or around a dwelling or by dating the dwelling itself. Locally and regionally walls may change in

size, shape, construction technique and even purpose for its existence.

Some of the *Historical* and *Social* themes and ideas that can be related through the use of stone walls are as follows.

A. Age determination of a wall
   1. Compare wall designs.
   2. Compare building material in walls and style with known structures.
   3. Research old land titles and maps.

B. On what was the economy of the area based at certain time periods and does this reflect in the construction of the wall?
   1. Was the wall built in a hurry or slowly?
   2. Do the walls follow any old road beds and if so to where?
   3. Was the area a dairy farm?
   4. Was the land strictly for crops?
   5. Was the land multiple use?

C. How did stone walls contribute to America's success in the Revolutionary War? Remember that this war was partly a guerrilla conflict.

OBSERVATION AND IMAGINATION

A. What might the walls look like from a plane? What might the areas enclosed look like?

B. What do the shapes of the stones and between the stones look like?

"And some are loaves and some so nearly balls . . ."

C. Have the walls been fitted together naturally or have they been mortared?

D. Study the textures and patterns of the wall, highlights and shadows. This is especially effective at different times of day. Try it in moonlight.

E. Were the walls built to keep something in or out?

"Before I built a wall I'd ask to know
What I was walling in or walling out,
And to whom I was like to give offense."

F. Is there any other kind of barricade apparent? (Wooden fence, barbed wire, etc.)

G. Are there any breaks in the wall where there once might have been a gate? If so, what was it made of? (Close examination may sometimes reveal hinges and latches, or even old iron gates and posts.)

"The gaps I mean,
No one has seen them made or heard them made,
But at spring mending-time we find them there."

MATH AND MEASUREMENT

A. What are the dimensions of the wall?
   1. How high?
   2. How long?
   3. How wide?

B. How much does the average stone weigh? (Use a student as the known weight and put him on one end of a 2"x4" and use that as a balance scale.)

C. Do some rocks have a greater density?

D. Are the walls level or do they tilt? Which way? How does the angle of a hill change the way they are built?

E. Do the walls taper from top to bottom?

F. Figure how much land is enclosed by the perimeter of a wall. This could be done in rods, square feet and acres. Pacing or precise measure can be used.

G. Try to figure how many cubic feet of rocks are in a particular wall. (L x W x D) How would that compare in modern building materials?

H. Take a compass bearing and follow the wall in that direction until it changes (measure that length). Follow the new bearing and repeat until the perimeter is established. Try to map a graphic aerial depiction. See F above.

PLANT AND ANIMAL STUDY

Many stories can be told about stone walls while sitting on the walls or leaning against them.

A. Tracks in snow may lead from forest or field to an opening in the wall. Follow these tracks backwards and possibly unravel an adventure of escape . . .

"But they would have the rabbit out of hiding,
To please the yelping dogs."

B. Nut shells, husks and seedpods on top of a wall are a good indication that it is being used as a forest dining table. For whom? What was eaten? (These bits of evidence are easily lost on the forest floor but not on the rocks.)

C. Different types of plants may grow on the wall from side to top to bottom. Why?

D. A miniature forest of pioneer plants (mosses, lichens, algae, grasses) might be growing atop a wall or on a protruding segment. Use a handlens to explore this future forest. How much might those "table scraps" (see B) have contributed?

E. Find a tree that is growing out of the middle of a wall and determine which was there first. How did each help or hurt the other? (Relate to grass through a sidewalk.)

F. Study the age of a forest, or field, on opposite sides of the wall. Is one younger than the other? Why? (Fire, harvesting, grazing) Discuss the edge effect and ecological succession.

"He is all pine and I am apple orchard.
My apple trees will never get across
And eat the cones under his pines . . ."

Photo by Rutkowski

When all these activities are finished I'm sure more can be devised. How about building or reconstructing a miniature stone wall on a table top . . . or better still, actually reconstructing a full size wall right on your school site? This would give the people involved the best understanding of the time, effort and patience needed by our early settlers to construct these keys to the past and most valuable teaching tools.

"We have to use a spell to make them balance:
Stay where you are until our backs are turned!
We wear our fingers rough with handling them.
Oh, just another kind of outdoor game."

Environmental Education, Lee County, Florida

– A *School and Community Program*

Conceptual Scheme

The Conceptual Scheme for the Lee County Environmental Education Title III Project centers on the three basic theme words prevailing in Environmental Education today . . . these being:

Change
Interrelationship
Interdependence

From these central conceptual or theme words we have chosen to pursue six underlying ideas that are closely associated with the central concept words – these being:

1. All living things including man are interrelated and, therefore, are also interdependent.
2. Heredity and environment interact to determine the characteristics of an organism and, therefore, a population.
3. Living things and environments are in a continuous state of change.
4. As a population increases, its effects on the environment become more pronounced.
5. We live in a world of finite resources and almost infinite demands on those resources.
6. Each individual has a role as an agent for change in the environment and therefore has a responsibility to the environment.

These concepts are designed for implementation at any level in a spiral curriculum format. As the student progresses through the grades, he may encounter any one concept several times, but each time at a higher level of sophistacation appropriate to his greater mental and emotional maturity.

The conceptual ideas are obviously interdisciplinary in nature. Most of them have aspects that overlap into several other disciplines. Concept number 5, for instance, has basic relationships to social studies, sciences, math and many other areas.

These concepts are broad in scope and can be divided and sub-divided into many smaller but related ideas. They are useful in organizing field trips as well as classoom activities, and they will guide students' thinking toward specific and productive goals.

Model Strategy For An Effective Environmental Education Program

The overall project program is designed to implement an effective Environmental Education Program grades K through Adult. Essential elements to the attainment of this goal are the creation of a practical interdisciplinary activity-centered curriculum, an innovative field studies program that allows a teacher to function effectively in the field with large groups of students, a comprehensive teacher training program, a unique evaluation system with innovative attitudinal evaluation instruments, a comprehensive community involvement and action educational program, a local, state and national dissemination program, as well as a management, evaluation and audit system.

Special Project Components

ADMINISTRATION: Provides a sound management design which designates staff and participant roles and functions. In addition, educational program and fiscal procedures are defined and their operations and personnel roles explained.

INSTRUCTIONAL PROGRAM: is the focal component in the project which centers on a K-12 Scope and Sequence which includes grade level activities of an interdisciplinary format. The unique and innovative field teaching modules (utilizing a semi-programmed format) are a vital part of the curriculum program.

In addition, significant pilot programs that have a major impact on the four major County High Schools are the four week interdisciplinary 9th Grade Unit, "Values in Conflict," and the Pilot Environmental Seminar Program that draws 11th and 12th grade students from five High Schools. The participating students have carried out significant local environmental action programs that range from carrying out water quality surveys to planning a city park. The designation, development and utilization of more than five public natural habitat off-campus community teaching centers have provided a valuable link in the instructional program.

STAFF DEVELOPMENT: This component encompasses the vital in-service training program for students, teachers and adults. More than 150 in-service workshops will be held in order to implement the instructional program. Teacher self-training modules are being developed as part of the field program and evaluation program. Local teachers and students are sharing a key portion of the curriculum writing tasks with the project staff.

INSTRUCTIONAL MATERIALS DEVELOPMENT: A printed Scope and Sequence with grade level activities, twelve semi-programmed Field Teaching modules, a Student Affective and Cognitive Testing Design Module for teachers, five local Natural History Keys, twenty-five Site Plans and Activities (for on and off-campus centers), a Materials and Reference Resource Guide, six local audio-visual programs, Interdisciplinary Teaching Modules, an interdisciplinary four week 9th grade unit entitled, "Values in Conflict," six Student Learning Activity Modules, written strategy suggestions for implementing critical program activities with students, teachers and the community, a project newsletter, community pamphlets, and regular reviews of audio-visual materials, simulation games, and printed commercial publications represent a summary list of the major materials produced by the project.

DISSEMINATION: A comprehensive local, state and national dissemination program has been a significant part of the project activities. Through the assistance of many local, state and national organizations, such as the Audubon Societies, National Wildlife Federation, State Universities, State Department of Education, and U.S. Bureau of Sport Fisheries and Wildlife, significant project activities have been transferred and incorporated into programs in other geographic areas.

The "Environmental Alert" publication has had over 1500 requests from all over the state and nation in addition to the local dissemination effort.

COMMUNITY INVOLVEMENT: This component focuses on community education through illustrated talks, production of popular publications, and a community environmental information center.

Community members are encouraged to participate in environmental action projects. Opportunities for educating community leaders are offered to the community through the project. The project has organized a regional citizen's and governmental Environmental Inventory involving five counties and over 100 agencies and organizations.

In addition, efforts to obtain financial, in kind and volunteer service for project activities are carried out with a summary of specific successful strategies applicable to other programs published.

At least three environmental and ecologically oriented adult courses are offered through the project and County Adult Education Program.

EVALUATION AND AUDIT: An ongoing evaluation program is an essential component in identifying project and program successes and failures, upon which decisions for establishing new program directions can be based. In addition to providing a criteria for change, innovative attitudinal evaluation instruments and programs are being developed and evaluated.

It is through the comprehensive scope of this program that an effective Environmental Education Program can be instituted into the total school and adult community simultaneously.

For further information, write:

William Hammond
2266 Second St., Fort Myers, Fla. 33901.

Public Opinion and the Environment

In response to recent inquiries, the staff of the President's Council on Environmental Quality has compiled the latest available information on public opinion and the environment. While not every one of the surveys and polls reported on below can be considered individually representative of nationwide trends, together they give a reasonably thorough summary of environmental opinion in most regions of the country. The overall impression is that environmental issues remain very important in the minds of the public, especially as state and local issues. The energy crisis and aftermath appears to have affected this relatively little. The summary of results given below is organized into a series of topics for presentation purposes.

1. Issues of environmental quality continue to be of paramount importance:

– In a poll by Congressman Mallory (Vermont) in March of this year, 80 percent of respondents believed that environmental issues demanded urgent attention.

– A state-wide poll in Florida prepared by Cambridge Research Survey and released in April of this year showed that 59 percent considered environmental issues the state's most important problem, up from 10 percent in 1970.

2. Many people feel strongly that insufficient progress is being made in environmental efforts:

– In the Florida survey mentioned above, 30 percent believed that environmental quality had not improved over the past five years, while 40 percent believed it had actually declined.

– A December 1973 nation-wide survey by EPA showed that there are more people who believe that the environment is getting worse than that it is getting better.

– One question in a recent poll of Alabama citizens gave repondents a choice among three characterizations of the current state of the environment. 42 percent believed that "it is time to sacrifice everything to finding solutions" to environmental problems; 57 percent believed the situation was "serious but resolvable with only minimal changes to lifestyle and the economy." Only .009 percent felt the environment was "a fad and there is no reason for concern."

3. There is general citizen support for spending more money to improve the environment:

– A poll by Congressman Beister (Pa., suburban) shows that 69 percent favor more to be spent on environmental cleanup.

– Another poll by Congressman Mezvinsky of Iowa found 61 percent in favor of increased spending and 28 percent more favoring the current level of spending; only 11 percent favored a reduction.

4. There is considerable evidence that citizens are willing to support the added cost of environmental cleanup through higher prices and taxes:

– The EPA study found, among other things, that
a) a majority of car owners would pay increases of $150 for anti-pollution devices on new cars;
b) homeowners are willing to bear an average increase of 22 percent in their monthly electric bills to pay for pollution abatement at powerplants; and
c) people will pay on the average of 15 percent more in solid waste handling costs to have it recycled.

– A poll by Congressman Conlan (Ariz., urban) found 59 percent willing to pay more for products that would do less damage to the environment.

– In a poll last August, Congressman Taylor of North Carolina found 72 percent willing to pay higher taxes to support environmental protection. This high level of support comes from a constituency that can by no means be characterized as heavily pro-environment; on another question in the same poll, 88 percent favored construction of the Alaska pipeline.

5. Beyond support for environmental programs and willingness to pay, many citizens believe that activism on environmental issues is important:

– The EPA study found that 28 percent of those surveyed had personally engaged in some activity which they felt had improved the environment.

– Two questions on the Alabama poll asked what would be the most effective role for environmental organizations at the state and local levels respectively. In both cases, working directly with public officials on the enactment and execution of environmental legislation and decisions ranked highest, ahead of education, information gathering, community projects, providing speakers and forums, and numerous other activities.

6. This increasing desire for activism by citizens on environmental issues is borne out by the latest figures from nationally recognized environmental organizations:

– 1974 income for the National Wildlife Federation (600,000 members) is at an all-time high.

– The Audubon Society experienced the greatest growth in membership in history during the energy crisis of last winter and spring.

7. Considerable progress continues to be made at the local level to create new environmental institutions and new ways to bring environmental factors into decision-making. A recent survey by the International City Managers's Association showed:

– 30 percent of cities and 35 percent of counties responding require environmental impact statements on at least some classes of projects.

– 40 percent of cities and 48 percent of counties have a senior official with primary responsibility for environmental affairs.

– 25 percent of cities have enacted an environmental component for their master plans, and 33 percent more have it under consideration.

8. Public support for environmental improvement has weathered the energy crisis well; few see any connection between the environment and the cause of energy shortages, and few support measures to relax pollution regulations.

– A national Gallup poll in January 1974 asked who was responsible for the energy crisis. The results:

Oil Companies	25%
Federal Government	23%
Nixon Administration/Nixon	19%
U.S. Consumers	16%
Arabs	7%
Big Business	6%
Leaders playing politics	4%
U.S. Exporting too much	3%
There is No Shortage	6%
Ecologists	2%

(multiple answers)

Continued on page 12

GOOD READING *for Environmental Education and Interpretation*

by Ben Hall

Secrets of Redding Glen by Jo Polseno. Ill. in full color by the author. Golden Press (Western Publishing Company), New York. 1973. 64 pp. $3.95. Ages 10 and up.

This book, subtitled *The Natural History of a Wooded Valley*, is a beautifully written and illustrated account of the drama of the changing seasons, as manifested mainly by birds and mammals.

Most of us are glad to have even one medium of communication to convey our feelings and thoughts about nature. Mr. Polseno has two, painting and prose (which sometimes verges on poetry), in both of which he is extraordinarily proficient. For the most part each page of the text faces a full-page illustration, so that both words and complementary pictures are presented to the reader at the same time. Each page of the text deals mainly with a single bird or animal species; the book does not attempt to catalogue all the wild organisms living in the glen. This selectivity is quite appropriate for a book of this kind.

The blurb on the jacket of the book quotes what it says is the opening paragraph of the book. This is not quite accurate, for this passage is preceded by an italicized paragraph that is a prose poem setting the stage for what follows. To quote only its first sentence (see the book for the rest),

"In Redding there is a glen where the wild geese fly and the salamanders live . . . where the owl hoots in the moonlight and the woodthrush sings in the day. . . ."

There are two avenues by which most of us are in our early years attracted into an abiding and rewarding contact with the natural world. One of these is intellectual: the impulse to ask questions as to What? How? Why? The other is our aesthetic response to the multifarious forms and colors of plants and animals. In the case of most of us the aesthetic appreciation comes first and motivates the intellectual. I can recall how as a boy I spent hours in the high school library poring over the paintings of Fuertes in Eaton's *Birds of New York*, with the result that I often knew a bird from these pictures before I encountered it in the field, and thus was able to recognize it without further aids. I am sure the artistic quality of these paintings had much to do with preparing my way for a scientific interest in biology. This book of Polseno's is well fitted to serve the same function of helping form the minds of young naturalists.

This book represents the debut of Mr. Polseno as both writer and illustrator of a book. He has already established his distinction as a wildlife painter and illustrator. I look forward to other books from his brush and pen.

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Working with Nature: A Practical Guide by John Brainerd. Ill. with photographs and drawings. Oxford University Press, New York. 1973. 517 pp. $15.00.

"I wrote this book," writes Brainerd, "because I had some developing ideas of right and wrong about man's use of natural resources. . . . I believe it is right for man to coinhabit with nature on this planet, accepting the serious responsibilities entailed." Modification of the land we use is inevitable; but it must be controlled and based on sound principles and understanding.

This, the author says, "is not a read-it-through book but a reference book." The twin, interrelated themes of the book are Ecology and Conservation. The arrangement of the book is well suited to its purpose. The chapters are grouped into two main sections, dealing respectively with Environments and Environmental Components. The conventional table of contents gives only the titles of the chapters. In addition, at the beginning of each chapter there is a sort of secondary table of contents in the form of a detailed outline of the chapter's contents. In the body of the chapter the items of this outline appear in bold-face type as paragraph headings. The convenience of this feature will be appreciated by users of the book.

The Introductory chapter deals, among other things, with "Using This Book." "You can find sections appropriate to your conservation site," writes Brainerd, "by browsing, using the table of contents, or looking for clues in the index." He goes on to discuss the use of a notebook to record one's observations. Its first use will be to list facts about the site; later one will become conscious of processes. Brainerd also discusses the use of card files and maps. This section contains much good advice, although some readers might think it is too explicit, not relying enough on the reader's own ingenuity.

The book is well illustrated with black-and-white photographs and simple, diagrammatic line drawings, well suited to convey information vividly. They tell how, for example, to lift heavy stones and how to transplant trees and shrubs. There is no indication of who made the drawings. The author?

The Index is comprehensive, filling 21 pages. There is a copious Bibliography of 589 items. There is no Glossary; but the terms are explained clearly as they appear in the text. Cross-references are furnished by page numbers in parentheses in the text. Italicized numbers in parentheses refer to items in the Bibliography. The reader will be grateful to the author for having taken such pains with these features.

Brainerd's style of writing is well suited to attracting and holding the reader's attention. I like the way he makes pithy statements that reveal something of his philosophy. Such as "Many will be glad to help you work with nature. It is their planet, too." Or one of his Guidelines for Working with Nature: ". . . be big enough to see your own mistakes as well as those of others, and modify your plans."

The chapter on Air Management especially interested me, perhaps because I would have thought that this environmental component would be practically impossible to manage. I had grown up with the faith that the supply of clean, wholesome air was inexhaustible. But Brainerd gives information on how to slow down or speed up the wind; to heat, cool, moisten, or dry the air; to add oxygen and remove carbon dioxide and dust from the air; reduce noise; and finally, even to make the air fragrant.

Teachers of nature study, ecology and conservation (as well as solitary persons engaged in the important task of educating themselves) will welcome this addition to their libraries, and keep it within easy reach on their desks for continuing reference.

(Editor's note: Dr. Brainerd's book was briefly noted in a previous issue, but deserves the more extensive review here provided by Dr. Ben Hall.)

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The Life of the Hummingbird by Alexander F. Skutch. Ill. in full color by Arthur B. Singer. Crown Publishers, New York. 1973. 95 pp. $9.95.

When a skillful writer, an eminently capable illustrator, and as attractive a bird family as the hummingbirds converge in a single book, the result cannot but be beautiful and interesting. Thus it is in the present case. Skutch has spent a lifetime studying these birds in the field in Central America, chiefly in Costa Rica, and he gives a lucid and interesting account of them. As to the quality of the illustrations, look at the book and see for yourself. Many of the illustrations reappear without captions as headpieces

of the chapters and as decorations of the title pages and the jacket. This adds much to the attractiveness of the book.

Hummingbirds are found only in the Western Hemisphere, in which they are the second largest family, comprising 320 species in 123 genera. They are second in this regard only to the American flycatchers, of which there are 367 species. They represent a wide range of sizes: the bee hummingbird of Cuba is only two and a half inches long, including bill and tail. This species has the distinction of being not only the smallest bird, but also the smallest warm-blooded animal in the world. From this extreme hummingbirds range in size up to the giant hummingbird of the Andes, which is eight and a half inches long. In brilliant plumage hummingbirds are unsurpassed, with iridescent colors that change with the angle from which they are viewed. The flight of hummingbirds is another claim to distinction: they not only can hover in one position but actually fly backwards or even upside-down. The relation of hummingbirds to flowers is another thing that adds to the pleasure of watching them.

One of the most interesting aspects of the behavior of hummingbirds is what Skutch calls "noctivation." The birds have a high rate of metabolism, and the loss of energy derived from their food is a critical problem. This loss is moderated by the bird's adjustment of its high body temperature when sleeping to that of the surrounding air. This lowered temperature puts the bird into a torpid condition, in which it can be touched or even handled by the observer. "In normal sleep," writes Skutch, "a hummingbird's temperature may drop four or even eight degrees. In nocturnal torpor its temperature falls much lower than this, almost to that of the surrounding air. Hummingbirds . . . noctivate . . . only when the air is more than about twelve degrees cooler than their normal daytime temperature. . . ."

That the namers of the hummingbird species were influenced by the charm of the birds is evident from such names as "adorable coquette," "fork-tailed woodnymph," "shining sunbeam," and "purple-throated mountain gem."

I find a few minor faults in this lovely book. The index is limited to the names of the birds, in the alphabetical order of the common names and with the scientific names following the common names in parentheses. In this manner the 106 species dealt with in the book are indexed; but no other terms, such as for example *interference color* or *noctivation*, are indexed. Another shortcoming is that text and captions do not give a clear idea of what the colors on the distribution maps mean. Also, mentioning the names of the flowers shown in the illustrations would be desirable.

But these minor criticisms do not prevent me from saying that this is a beautiful book; one that bird-lovers will be glad to have on their shelves.

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The Tropical Forest: Ants, Ants, Animals and Plants by Mary Batten. Ill. by Betty Fraser. Thomas Y. Crowell Company, New York. 1973. 131 pp. $4.95.

In the first paragraph of this book, Ms. Batten strikes a telling blow at the naive ideas young persons get about tropical forests, from movies, television and comic books. "Tropical forests," she writes, "are not what many of us think they are. They are not the jungles of Tarzan movies and comic books where half-naked people swing through the trees and boil visiting professors for dinner. They are not impenetrable Green Hells filled with terrifying creatures and poison vines waiting to strangle a human victim. . . . But real tropical forests are more surprising than any story. Wondrously old and rich with life, they are not like any other forests on earth." This admirably sets the tone for the rest of the book.

The author gives a good account of the Smithsonian Tropical Research Institute, on Barro Colorado Island. She has consulted an impressive list of competent biologists, and this shows in the scientific accuracy of the book.

The contents of the book describe the plants and animals of the tropical forest and the ways in which they interact. The account of Natural Selection is simple but clear and accurate. The last chapter deals with the relationships of people to the tropical forests, and the threat to them of our expanding technology.

I like the way the research of certain biologists is described. The work, for example, of Michael Robinson on spiders; or that of Oniki and Willis on ant-following birds; or that of Rand on arboreal iguanas. This illuminates biological discovery as an ongoing process, engaging the efforts and talents of many biologists, and Ms. Batten points out how the knowledge gained may prove important.

The style of the text is well suited to young readers, without any straining toward juvenility, although in my opinion the alliteration and rhythm of the subtitle give a flippant tone that is not at all suited to the nature of the book. The line drawings by Betty Fraser are excellent, both artistically and scientifically. The only fault I can find with them is that there aren't more of them: there is plenty of space available on the wide page margins to accommodate many more. There are two colored drawings on the book's jacket, which I would have liked to have found in the book itself.

There is a brief but well-chosen bibliography and an adequate index. Altogether, this is a well-designed and attractive book, as well as an interesting one.

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The Changing World of Living Things by Frances L. Behnke. Ill. with photographs in black-and-white. Holt, Rinehart and Winston, New York. 1972. 170 pp. $5.95. Ages 10 and up.

This is one of the publishers' *Changing World Books*. It is the first volume of the series. I have already reviewed the second volume, *The Changing World of Birds*, in the Summer 1973 issue of NATURE STUDY. If both books are to be read, the present volume should come first. It deals with the Ecology of a rapidly changing world with reference to living organisms in general, whereas the volume reviewed last summer deals at a higher level with birds only.

The present book could serve well as a textbook of Ecology for young readers. The first chapter discusses some of the changes the world is undergoing. It uses as examples the filling in of a lake with silt, and the recent earthquakes in Los Angeles and Peru. It also discusses the rationale of Ecology: the sort of problems the ecologist concerns himself with. It explains the meanings of the main terms of the subject, such as Population, Ecosystem and Community, and effectively uses the animals living in a large cave as an example. Other chapters deal, respectively, with Balances and Cycles; Habitats and Communities; Predators and Parasites; Pollution and Extinction; Noise Pollution; and Living Things in Changing Cities. A useful Outline of Ecological Relationships concludes the text. There is a suitable Glossary, with brief but clear definitions of the terms, as well as a Bibliography and Index.

I would recommend this book highly as an interesting and readable introduction to the main principles and concepts of Ecology.

The publishers have announced two additional volumes in this series: *The Changing World of Weather* by John Oliver and *The Changing World of Decomposers* by William D. Gray.

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My Orphans of the Wild: Rescue and Home Care of Native Wildlife by Rosemary K. Collett with Charlie Griggs. Ill. with black-and-white photographs. J. B. Lippincott Company, Philadelphia and New York. 1974. 288 pp. $8.95.

This is a unique book devoted to the "Rescue and Home Care of Native Wildlife." For ten years Mr. and Mrs. Collett have maintained in their residence a

sanitarium for injured wild animals, and have established a non-profit foundation to enable them to meet the expenses of this work.

All but two of the chapters are based each on an animal species or group of species. The chapters give directions for the care of the animals dealt with, including suitable diets. More of such veterinary advice is given in the four appendices. Many chapters begin with information on the biology of the animal in question. Also prominent is the author's narrative of her experiences with the animals.

Ms. Charlie Briggs's contribution includes the chapter on Otters, and the drawings of Figures 1 through 4 in Appendix I.

This is a handbook admirably suited for use by anyone inclined to follow the Colletts' lead in caring for hurt animals.

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Minerals of the World

According to its author, illustrator, and editor the new Golden Press field identification guide *Minerals of the World* (March, 1974, $3.95) was written to fill the gap between available popular books and typical college textbooks. By so doing, a great service has been rendered the amateur and professional rock collector alike by providing them with a reference catalog (a feature not available in any other book) which simply and comprehensively identifies each mineral and emphasizes the chemical relationships and crystal structures of minerals. Included is an introduction to rocks and their geologic relationship to major rock types.

Of all the objects of nature, minerals are among the most readily available for study, and because of their immense variety and intrinsic beauty, they have always been of interest and curiosity.

The author, Dr. Charles A. Sorrell, Professor of Ceramic Engineering, School of Mines and Metallurgy, University of Missouri, has been active in research and teaching throughout his career, and has published over twenty-five scientific papers.

George F. Sandstrom, the illustrator of *Minerals of the World,* is a well-known and prolific artist in the field of natural history and has gained eminence in the fields of science and art because of his faithful renditions of living animals and plants. His other Golden Press works include *Seashells of the World* and *Seashells of North America.*

4½" x 7½" / 280 Pages / Price: Hardcover $5.95 / Paperback $3.95 Goldencraft edition: $7.33. 1974.

NEWS and NOTES for Environmental Education

EPA Opens Exhibit Center

The Environmental Protection Agency has opened its new Visitors Center in the building at 401 M Street, S.W., Washington, D.C. Exhibits describing the causes of pollution, the growth of pollution in the United States and in the world, the major problems confronting us today, the technology available for pollution control, and the actions under way to abate and reduce pollution are on display. Tours are available for student or adult groups on request. Occasionally there are special programs with speakers and films. Publications, posters, bumper stickers and decals are available free to visitors.

Funds for Preservation of Wildlife and Natural Areas

In 1962, the Boston Safe Deposit and Trust Company set up the Fund for Preservation of Wildlife and Natural Areas. Since that time, grants for specific conservation projects have been made to a wide variety of organizations and purposes. Although not a large fund, the money is used as seed money to get many important wildlife improvement projects started. A recent report on the fund indicated that "the environmental bandwagon continues to roll. Like all other efforts in the field of natural resources and their preservation, wheels of that wagon need grease – and the grease in this case is money. The Wildlife Fund provides a source and assures that the grease is applied when and where it is immediately required."

Assets are increasing steadily through direct donations, bequests, and endowments. Persons in the financial world who have charitable money to manage and who are seeking ways in which donors to environmental projects may follow their desires, are urged to found similar foundations. Along with such groups as The Nature Conservancy and the Izaak Walton League Endowment Fund, these projects produce concrete results and provide opportunities for persons to put their financial resources to the task of improving our environment.

Tent Camping in the West Indies

A unique opportunity to study the wildlife and nature of the West Indies at reasonable cost is now available through a camping and cottage resort in Robins Bay, Jamaica, West Indies. Known as Strawberry Fields by the Sea, this is probably the first Caribbean resort to actively seek the type of person that is willing to rough it a bit and be able to study at close hand the natural environment. ANSS members who are interested, either for themselves or for groups, should write to Caribbean Campgrounds, Inc., 54 West 56th Street, New York, N.Y. 10019.

Prairie Curriculum Being Developed

Dwight Platt from Newton, Kansas reports that the Southcentral Kansas Environmental Education Center has received a grant from the U.S. Office of Environmental Education to develop modular curriculum materials focused on the prairie. These will be for use in the public schools and with community groups. The curriculum is to be multidisciplinary with an artist and social scientist as well as a biologist working on it.

Those interested in assisting in this project should contact Dwight Platt at the Southcentral Kansas Environmental Education Center, R. D. 2, Newton, Kansas 67114.

New International Journal is Published

In collaboration with the IUCN and other international organizations, the Foundation for Environmental Conservation has commenced the publication of a quarterly journal entitled ENVIRONMENTAL CONSERVATION. The international journal will be devoted to maintaining global viability through exposing and countering environmental deterioration. The editor is Nicholas Polunin.

The journal will cover topics ranging from pertinent case histories of the past and present to rational use of resources. Environmental education and environmental law will also be dealt with. Items will be published in English, and will be global in their concern.

Subscriptions at $41 per year may be requested from Elsevier Sequoia S.A., P.O. Box 851, 1001 Lausanne 1, Switzerland.

Baldauf Announces Program

Richard J. Baldauf, First Vice President of ANSS and program arranger for the 1975 annual meeting, has announced plans for a half-day symposium in conjunction with the meetings of the AAAS, to be held in New York, January 29, 1975. The symposium is entitled "A Higher Quality of Life Through Environmental Education: An Overview of State Plans." Participants in the sympo-

sium are Richard Rocchio, who will speak on "The Nation's Experience in State Plans for Environmental Education"; Martha McInnis, whose topic is "Regional Environmental Quality Councils"; Charles E. Roth, talking on "The Approach in Massachusetts for Continuous Planning for Environmental Education"; and B. Ray Horn, who will speak on the topic "The Role of Business, Labor and Industry, and the Mass Media in Environmental Education in Michigan."

Dr. Baldauf issued the following synopsis of the symposium:

"The nation's environmental problems received their proper attention on Earth Day, 1970. Since then the momentum toward Environmental Education has been increasing. The need for EE for all age groups – young and old – is recognized. The multidisciplinary nature of environmental education is recognized. The need for an organized effort toward a national program in EE is recognized. The latter is being quietly accomplished, particularly through state plans. State plans for Environmental Education are, in most cases, the result of citizen action encouraged and often requested by a governor's office. Many plans are in printed form, others are being written, and still others are in action. This symposium is designed to give the story on the development of state EE plans in the United States, but with emphasis on unique features of a few of the plans. The symposium will include the most up-to-date information available on state-wide plans and programs in Environmental Education."

Copies of many state plans for Environmental Education will be available for examination at the meeting. Interested persons may request copies of any plan which they desire.

In addition to this symposium, ANSS will also hold two business meetings and the popular Lenses on Nature program during the period January 28-30. There will also be field trips scheduled to several places in the New York area. Members are urged to plan now to attend these meetings, and to disseminate information about the program to their friends.

Board of Directors Meets

President Helen Russell convened a special mid-year meeting of the Board of Directors in conjunction with the CEA Convention in Syracuse. Meeting on August 2, the Board took a number of important actions.

Treasurer John Gustafson reported that the special fund drive had brought in almost $900, with more coming in week by week. This has permitted the reissuing of many of the Tips for Environmental Education, which are being distributed either through sale or single copies throughout the country.

The Board voted to grant Dr. Stanley B. Mulaik, retiring editor of the journal, an honorary life membership. Stan retires after nineteen years as editor, first of the old Newsletter, and more recently, of the journal NATURE STUDY. Associate Editor John Gustafson has been appointed as the new Editor, and Marshal Case of Connecticut will assume duties as Associate Editor. Dr. Gustafson intends to transfer his duties as treasurer as soon as the necessary arrangements can be made.

President Russell reported that the request for funding of an urban environmental education workshop was not approved, but plans were made to proceed with a modified workshop for the summer of 1975, to be held in Bridgeport, Connecticut. It is hoped that this will be a prototype for many similar workshops around the country in urban centers.

It was also voted to raise the dues for membership beginning in January, 1975. Dues for individual members will go from $5 to $8, with corresponding increases in the other categories of membership.

President Russell also reported that her attempts to identify persons to be state or regional leaders has gone very well. Quite a number of persons are interested in serving this way, and plans are being made for several regional meetings in the near future. Douglas E. Wade in Illinois has started planning for a regional meeting in the Chicago area, and others are in the planning stage.

Progress was reported on the re-publication by the Society of Dr. Russell's book "City Critters," which she has made available to ANSS. The book is presently out of print.

"Eco-News" Spreads the Word

The informative environmental newsletter, *Eco-News*, published for young people in grades 4-6 by the Environmental Action Coalition, continues to fill an important role in environmental education. It is an 8-page monthly newsletter oriented to urban children and their problems in the environment. Teachers' guides are also available. Each issue has a section where young people can publish their contributions to the solution of pollution problems, and report on their school's activities. Back issues, to the first volume in January 1971, are available at 10 cents each. Persons interested in subscribing, or in getting a list of available back issues, should write to Environmental Action Coalition, Inc., 235 East 49th Street, New York, N.Y. 10017.

The Coalition recently published a teaching packet entitled "Less Power to the People: Environmental Energy Use." Written for fourth, fifth, and sixth grade classes, the packet includes lesson plans, background information for the teacher, bibliographies, and two classroom sets of *Eco-News* issues on energy. Cost to EAC members is $2.50, to non-members $5.00.

"Thank You"

The Board of Directors and officers of ANSS wish to express their heartfelt gratitude to all the many members of the Society who have responded so generously to the appeal for special funds. By the time this issue goes to press, it is hoped that a thousand dollars will have been received. This money has been most helpful in carrying out a number of important projects during the current year, and has helped to close the gap in this inflationary period between expenses and income.

Those persons who intend to contribute, but have not as yet done so, are urged to send their contribution whenever it is convenient, hopefully by the end of the year.

Endangered Species of Wildlife

Unthinking folks question the need or desirability of preserving wild species of animal life. As Congressman John Dingell says "The simple answer is the correct answer – the loss of endangered species is a loss to mankind. . . ." There is a world wide clamor to "Save The Whales," hoping to compel co-operation from Russia and Japan, neither nation co-operating. The U.S. is foremost, and in 1972 enacted The Marine Mammal Protection Act to protect whales, seals, dolphins, walrus, manetees and others. The Act, however, is under attack. The law refers to U.S. citizens and aims to prevent the killing, capture and wounding of ocean mammals, and prohibits the import of furs or other products of such animals. The Christian Science Monitor wrote, "There is no longer romance of pitting man against whales as in Melville's *Moby Dick*." Killing today operates on a mass scientific basis with military explosives. More than a dozen humane and environmental organizations have joined in asking for a boycott of Soviet and Japanese goods of all sorts, and seeks a moratorium when the International Whaling Commission meets soon.

Insects represent the largest number of species of any animal group with over a million described.

 Cont. from page 7

– A poll conducted by Congressman Beister (Pa., surburban) in June 1974 found 80% believing that only limited changes in the Clean Air Act are necessary to attain energy self-sufficiency.

– A poll early this year by Congressman Ford of Detroit (one of the areas hardest hit by the energy crisis) reported that while 34 percent thought pollution standards should be lowered "while the energy crisis lasts," the other two-thirds wanted them retained at present levels or strengthened.

9. Land use and growth issues are becoming increasingly important to the public, and assumptions about the inherent value of growth and change are being discarded in even the more conservative regions:

– In the International City Managers Association poll, land use and urban growth were considered to be the most pressing environmental problems by city officials.

– A poll of Minneapolis-St. Paul residents in January, 1974, found 68 percent believing that urban sprawl exists as a problem in the Twin Cities area, and fully 50 percent of the opinion that all new construction should be limited to already developed areas.

– In the Florida poll, 72 percent statewide supported strong land use controls to prevent uncontrolled growth. 80 percent of east coast and Dade County (Miami) residents believed there should be severe limits on further development. Two-thirds of respondents statewide were willing to use the state eminent domain power to protect environmentally endangered lands.

– In Idaho, a poll by the State Water Resources Board found 64% in favor of state control of flood plain development; only 10 percent opposed. On another question, 40 percent believed that the state water plan should discourage growth, 30 percent believed it should promote growth, and 20 percent felt it should be neutral. 10 percent had no opinion.

– In Delaware a coordinated attempt by the DuPont Company, the State Chamber of Commerce, the AFL-CIO, a consortium of oil companies, and many small developers to repeal the State Coastal Zone Law failed when strong citizen action convinced the sponsors in both houses of the Legislature to withdraw their repeal bills.

10. Recent election results show the continuing power of environmental issues at the polls:

– In the 16th California Congressional District, the Democratic nomination in the June 1974 primary was won by the candidate with the support of environmental groups. His opponent attributed his loss to this endorsement.

– In recent California elections, three propositions of environmental importance were on the ballot. All won. They included a $250 million bond issue for park acquisition; another $250 million bond issue for sewage treatment facilities; and the authority to divert up to 25% of state gas tax revenues to mass transit. The latter proposition carried in 1974 after losing in 1972.

– The Florida poll mentioned above asked respondents to indicate their likelihood of voting for candidates proposing a number of stands on environmental issues. The highest negative voter reaction was to proposals 1) to relax regulations to allow more land development and 2) to cut back the funding of state environmental protection agencies.

INTERLAKEN AND THE THUNER SEE

Sitting on the shores of the Thuner See
Watching black waves lap up to me,
I became accustomed to the dark
Seeing village lights form an arc.
Nighttime swans slowly drifted
On waves where the starlight sifted
Under mountains looming high
Glowing white in a starlit sky.
Lake reeds swayed and bent
With each small gust the mountains sent.
I, like the reeds, swayed and flowed
To the pulse of the Alps that glowed,
Sitting on the shores of the Thuner See
Watching black waves lap up to me.

– Richard F. Fleck

CHRISTMAS FERN

When frost has clad the dripping cliffs
With fluted columns, crystal clear,
And million-flaked the feathery snow
Has shrouded close the dying year;
Beside the rock, where'er we turn,
Behold, there waves the Christmas fern.

No shivering frond that shuns the blast
Sways on its slender chaffy stem;
Full-veined and lusty green it stands,
Of all the wintry woods the gem.
Our spirits rise when we discern
The pennons of the Christmas fern.

With holly and the running pine
Then let its fronds in wreaths appear,
Tis summer's fairest tribute given,
To grace our merry Yuletide cheer.
Ah, who can fear the winter stern
While still there grows the Christmas fern.

– Anonymous

TIPS *Available*

To meet the heavy demand for back issues of the TIPS which are featured in each issue of Nature Study, a large number have been reprinted. Individual TIPS may be obtained at 10 cents each by writing to the secretary:

DR. BETTY J. McKNIGHT
11 Stone Hedge
New Platz, N. Y. 12561

Dr. McKnight will send upon request a list of all TIPS that are available.

Editorial

A Nature Study Viewpoint

ANSS certainly believes that the generations which follow should be able to have experiences for physical and spiritual refreshment in areas where nature has been little disturbed by man. ANSS therefore should take a strong stand to protect areas such as parks, refuges and wilderness as resources which, when once destroyed, cannot be renewed.

In this stand for protection, the program should not alone deal with the areas under consideration as geographic units, but should deal vigorously with the spcific type of activities by highway builders, land speculators, billboard interests and industries which seek to despoil the areas.

There is no great value in nature education which ignores the environmental destructive activities we daily see in operation. America generally has become aware of the need to have sane use of our lands not alone for economic gain and a swelling gross national product, but for their intangible aesthetic and spiritual values.

Since Earth Day 1970, hundreds of thousands have joined such organizations as the Wilderness Society, National Wildlife Federation, National Audubon Society, Sierra Club and the hundreds of local and state groups working on specific natural area issues. Those organizations which are bogged down in the swamps of educationese, choosing to avoid facing nature realities, with concern only for the pretty butterflies, the colorful flowers and singing birds, usually from textbooks, are languishing with paltry numbers and with hopes for a return to the good old days of nature study.

Nature Study today must be a study of the realities of nature. Most obvious reality is the rapid degradation of the natural world and the artificializing of the environment for which man is not fit psychologically. There is a challenge to people to do something about environmental degradation. Many have found organizations mentioned above which give unity of purpose in facing the factors about nature.

While some ANSS members are doing much on an individual basis which they would do even without ANSS membership, ANSS as an organization must do something. Pointing to an illustrious past and to famed past presidents, holding an annual meeting, and publishing a quarterly is not enough.

When Liberty Hyde Bailey started the ANSS the population of America was about 80% rural and numbered not much over eighty million. A rural population needed to know about its world and that is what L.H.B. tried to do through ANSS. Today, with an urban population and a runaway technology, there is a different approach to the environment, but this approach must not be side-tracked or detoured. Will anything of significance be done, or will we cover ourselves only with our past glory, which has a dubious relation to today's conditions? S. B. M.

AMERICAN NATURE STUDY SOCIETY
Betty J. McKnight
11 Stone Hedge
New Paltz, New York 12561

John J. Padalino
Mill Road
Dingman's Ferry, Pa. 18328

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