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ABSTRACT

This resource guide is the first of three volumes of environmental education ideas and activities compiled by participants at the Tallahassee Junior Museum for the benefit of other environmental educators. This volume contains ten booklets produced by various community groups to educate their membership or target groups about the environment. The Leon County Schools prepared a booklet of activities for environmental sensitivity that are directed toward nature but which enhance sensitivity to personal feelings, values, and needs. The Nims Middle School activities feature ten-minute mini-walks for environmental sensitivity. Girl scout activities include service projects learning about pioneer life, exploring the waterfront, and investigating land plants and small animals. Activities are designed to sharpen the ecological awareness and sense of wonder of small children. The Big Bend Sierra Club makes suggestions for environmental education, environmental community service, and public affairs. Trees are the focus of activities prepared by the Developmental Research School of Florida State University. The Leon County Humane Society's film-related activities for all ages are incorporated. Study projects with ant colonies and ecological investigations for secondary students are also included.
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TO ENVIRONMENTAL EDUCATION AT THE TALLAHASSEE JUNIOR MUSEUM



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COMMUNITY LEADERS' TRAINING IN ENVIRONMENTAL STUDIES

July, 1974 - to June, 1975

A CO-OPERATIVE COMMUNITY PROJECT FUNDED UNDER TITLE I
OF THE HIGHER EDUCATION ACT OF 1965

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The instructional materials and activities printed in each of the thirty booklets in this series are the outgrowth of one-week workshops conducted at the Tallahassee Junior Museum. The suggested activities are those of the participants, the project staff, and occasional consultants. The activities are printed and distributed to help environmental educators in a wide variety of community settings and to foster others' creativity. The activities presented and the positions taken on environmental issues represent the views of the authors and not the agencies, groups, and institutions which they represent.

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WAYS TO ENVIRONMENTAL EDUCATION

Volume I

Edited by:

Joel Dawson
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Rodney Allen

December 1974
The Florida State University

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INTRODUCTION

Environmental education is largely recognized as existing in both formal and non-formal educational settings. Environmental educators have, for the most part, concentrated their efforts within formal education sectors-K through university-and have neglected the many opportunities for public educational adventures where community resources can provide tremendous "ways for environmental education" to happen.

In an effort to exploit this potential, the Environmental Education Project at Florida State University developed a proposal funded under Title I of the Higher Education Act of 1965 designed to glean ideas from active members of the community. The proposal "Adult Community Leaders Training in Environmental Studies" produced a series of booklets containing the ideas, activities and approaches these community groups took in educating their membership or target groups about the environment. This volume contains ten of these booklets produced by community groups. Current plans call for at least two more volumes to be produced.

Materials written by participating groups were distributed by those groups and by the project staff. This insured the "ways" reached the target audience as well as other interested and involved environmental educators. Many of the project materials have been reproduced by school districts and private organizations such as the Girl Scouts and the Audubon Society.

We began this project with a feeling that people were the most poorly utilized environmental education resource in Florida. This project has reinforced that feeling. The "ways" booklets provide the proof. People outside of the formal educational sector have ideas and good ideas.

If educators are willing to involve people, listen to their ideas and work with them to develop some structure, many more "ways" to environmental education can be discovered.

J. D.
D. L.
R. A.

Tallahassee, 1974

ENVIRONMENTAL SENSITIVITY:

ACTIVITIES FOR ALL PERSONS AT THE TALLAHASSEE JUNIOR MUSEUM

prepared by

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Recovery & Survival Program
Leon County Schools Alternative Learning Program

With the Project Staff

November, 1974

*There was a child who went forth every day,
And the first object he looked upon, that object
he became,
And that object became part of him for the day
or a certain part of the day,
Or for many years or stretching cycles of years.
The early lilacs became part of this child,
And grass, and red and white morning glories,
and white and red clover. . .
And all the changes of city and country wherever
he went. . .
They became part of that child who went forth every day,
And who now goes, and will always go forth every day.*

--Walt Whitman



The sensitivity activities included in this booklet emphasize unusual, surprising experiences. They are directed toward nature, but involve enhancing one's sensitivity to personal feelings and others' values and needs.

Each sensitivity activity is brief and self-contained, but when taken together, the activities build upon one another opening new patterns of natural, and human, relatedness. The emphasis in each activity is upon 1) experiencing, and 2) sharing.

1. Dance. Individually or in small groups, examine a flower silently. Then, when ready, "dance out" a flower trying to attract bees. How does it feel?

Once you have "warmed" to the idea of such a performance, act out the life cycle of several of the following: alligator, sea turtle, deer, jack rabbit, gopher, moss. Follow this with a decision of feeling and the significance of such life cycles to man.

2. Imagine. You are walking with friends and find a dead bird. How do you feel? What do you do? Is this action satisfying?
3. Living. Examine some moss collected from the woods. Look at it closely. How does moss live? Why does it live? Try this exercise for a spider, a crow, a leaf and/or some grass.
4. Sheet. Sit on the ground alone. Cover yourself with a sheet. What does it feel like to live in such little space? Examine your little universe—the little spaceship under the sheet. What do you think about? Try this outside in a wooded area. What/who shares your community under the sheet? Are your companions interesting? Why?
5. Yarn. Sit on the ground and circle yourself with a piece of yarn, six feet in diameter. What does life in this little space feel like? What can you do in this space which is important to you? Act out some of these things. Is it lonely?
6. Sounds. Sit in the dry sinkhole behind Bellevue House. Close your eyes and listen to all the sounds around you. Try to feel the sounds you are hearing. Listen as long as you like. After you are through, write a poem on what you heard and felt. It may be very short or long. If you are with a group of people, you may want to compare poems. For example:

REFLECTIONS

Flowing

*like birds through the air,
are the leaves.*

Delighting

*your face,
blows a gentle breeze.*

The sound

of a bird or a squirrel

in a tree.

A sound

more powerful than those

you could see.

To listen,

to learn,

To enlighten the soul.

The beauty

of sounds,

Is nature's

bell toll.

(A.J.)

7. The Eagle and the Hawk: An Exercise in Awareness. Welcome to the Junior Museum. Sit down and get comfortable. Let yourself relax. Look at the sky. Notice the trees and leaves around you. Feel the air on your face. Close your eyes to increase your awareness.
- a) Now look at the eagle. Observe him in silence for at least five full minutes.
 - b) Notice details about the bird and his environment. Try to feel his feathers with your eyes. Pretend that your eyes are like a zoom lense.
 - c) Notice the way the bird observes you, the way he turns his head, flexes his claws, the shades and colors of his feathers. Does the bird notice things outside the cage? Do you think he knows that he is caged? How does he react when he hears other birds or sounds outside the cage? Do you think he minds you looking at him? Do you think he would like to be out of the cage? Why? Why not? How would he behave if he were released?
 - d) Could he survive in a natural environment? Could he learn or be retrained to catch his own food, build his own nest? The eagle is a large bird, how much food would he need to survive? What other things do you notice about the eagle?
 - e) Now, get yourself together. Close your eyes and relax. Get in touch with your own breathing, feel your heart beat and relax. In your mind pretend that you are an eagle. Really try to feel yourself being an eagle. Stretch your arms out and pretend that they are the wings of an eagle. Pretend your nose and mouth are the eagle's beak. Feel the breeze against it, what can you smell? Pretend that your feet are the eagle's talons or claws. How does it feel to grasp the limbs and hold on with your claws? Now try to fly. Spread your wings and feel the air and wind as you move your wings up and down. Feel your body grow light and rise from your perch. You're picking up speed. You begin to soar. Smash. You hit the wire fence and grab it with your claws to keep from falling.
 - f) Pretend you are the eagle in the cage. How does it feel as compared to being an eagle in the wild? What things are different about being an eagle in the cage and an eagle in the wild?

- - - * - - -

To help you understand how it might feel to be an eagle in the wild, do the following:

- a) Have group(s) sit on the floor in a small circle of not more than 10-12 persons. Ask each person to share one feeling or experience they had while doing the "eagle in the cage" exercise.
- b) When this activity is complete suggest another experience. Ask everyone to remain in the group, get comfortable and relaxed, and listen to the John Denver record "Eagle and the Hawk". Suggest that each person

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pretend that he is now the eagle in the wild -- listen to the song twice. Really get into being an eagle in the wild, soaring high above the tree tops and mountains.

- c) Repeat the sharing of experience exercise. Share an experience or feeling you had as an eagle in the wild.
- d) Now as an open rap discussion bring the groups together and share comparisons of the eagle in the cage and eagle in the wild.

8. Communicating with Fish. People talk to each other with words either in person, with written material or even with mechanical helpers like telephones, television or radio. But how can you talk to fish?

One way of developing "lines" of communication involves using thread and macaroni! Tie a piece of elbow macaroni on a thread and gently lower it into the goldfish pond. Wait patiently until you get a nibble.

- a) How does it feel?
- b) How do you think the fish feels?
- c) Is the fish trying to tell you something? What?
- d) What else do you think the fish would like to tell you?
 - What would he tell you about the macaroni?
 - What would he tell you about the pond?
 - What would he tell you about his mother and father?
 - What would he tell you about his friends?
 - What would he tell you about the people who look into the pond?

9. Switching. Assume that one of the Keebler elves is on vacation from the cookie factory and is living in a tree at the Junior Museum. He has said that he has the power to allow you to switch places (roles and bodies) with any animal (plant, endangered species) you wish for a period of one year.

- a) Will you take him up on his offer? If so, who will you trade places with? If not, why not?
- b) Why did you select the animal (plant, endangered species) you did to switch places with?
- c) How do you think the other animal (plant, endangered species) will feel about being in your place?
- d) At the end of the year do you think you would want to switch back? Why or why not?

10. Becoming Part of a Tree (Relating to a Tree). Find a tree. Not just any tree but a special tree; a tree you and your team likes.

Lie down at the base of the tree and form a circle with your feet toward and on the tree trunk. Have the team lock arms or join together by holding hands.

- a) What part of the tree do you feel like?
 1. Bark. What is the function of bark? (protection, material transport)
 2. Roots. What are the functions of roots? (nutrient absorption and support)
 3. Leaves, Trunk, Branches. What are their functions?
- b) Why do you feel like that part of the tree?
- c) How does being part of the tree make you feel?
- d) How would you feel on a nice day, rainy day, stormy day, hurricane?
- e) What is your function in this biotic community? How do you feel about the animals that depend on you?
- f) How do you think you look? Describe yourself as you see yourself. Draw a picture if you wish. What part of the tree influences your idea most?

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- g) Would you look different at different times of the year? What would be different? Why? Would you have a favorite season? What is it about that season that makes you feel special?
- h) Suppose a squirrel built a nest in your trunk. How would you feel? How would you feel if someone built a tree house in your branches?
- i) Suppose you are a majestic, moss-draped oak tree. How do you feel? How would you feel if you were the only large tree in a school playground? How would you feel if the playground was being turned into a parking lot? How would you feel if you were one of several large trees along a road? How would you feel if the road was being widened?
- j) Suppose you are a mature shapely pine tree. How do you feel? How would you feel if you were growing in a slash pine forest; a forest that would be cut for pulp to make paper? How would you feel if you were growing in a Christmas tree plantation? Is there any difference in your feelings? Why?
- k) Role play what you would do if:
 - a dog watered your trunk.
 - a forester marked you for cutting.
 - a bulldozer started pushing you over.
 - a bunch of kids started climbing in your branches.
 - a beaver started to cut you down to build a beaver house.

11. Power. Obtain movie "Treehouse" (9 minutes, 16 mm., color, By King Film, 1971) from the Florida State University Media Center or the State Bureau of Environmental Education, Tallahassee.

- a) Describe on paper three incidents in your life when you didn't have any power to alter orders given to you.
- b) Watch film.
- c) How was Mike's situation similar to your own (that you described before you saw the film)?
- d) How did you think Mike's situation was going to end?
- e) Now, role play how you think the movie should end--for Mike and for the bulldozer operator.
- f) How do you think Mike can get power over his own situation?
- g) Do you think he can save the tree or other trees in the future?
- h) How do you think you could get power over your own situations you described before you watched the film?

12. The Trust Walk. Have you ever imagined what it is like to be blind? Are your senses sharper when you are blind? What are your five senses? A person without sight walking through the woods may feel, smell and hear things to a much larger degree than a person with sight. Name something you think a blind person would hear, feel, and smell that a sighted person could not hear while walking through the woods.

Now have someone help you put a blindfold on or either do it yourself. Find someone you can trust and have them lead you through the woods while you're walking. Just stop and listen to the rustle of the leaves, the wind in the tree tops, and the sound the birds make, feel it, smell it, hear it. Now switch with your partner and lead him through the woods. When you're finished think about what you felt and share it with your class.

--Did you like it?

--Do you think you were more aware of your surroundings?

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13. Looking at It in a New Way. Explore unusual ways of experiencing something (say, the sinkhole or a leaf):
- a) Explore it blindfolded.
 - b) Look at it through binoculars or a magnifying glass.
 - c) Look at it upside down (what changes? What looks different? What new things do you notice?)
 - d) Look through colored filters, like plastic sheets of green, red, yellow, etc.
 - e) Try crawling along a stretch of ground, to find out what new things you discover this way.
 - f) Find a higher vantage point and look at the same place (climb a tree, stand on a stump, etc.) What do you see now? (How do you suppose this area would look to a snake? To a hawk high overhead? To an earthworm? To a squirrel?)
 - g) If you can find them, look at the world through prismatic glasses that have many different facets.

To reflect on these activities, watch the film Power of Ten (16 mm., color, sound.)

Exhibits You Could Make

Find or take several photographs of the same scene, as, (1) Wide-angle shot, (2) close-up shot, (3) extreme close-up of a fragment of something, (4) the same scene using infrared film, (5) Find a book showing flowers photographed with ultraviolet-sensitive film which shows markings invisible to our eyesight.

Question: What's happening here that is beyond our ability to perceive? As: sounds below or above our hearing, infrared or ultraviolet light, radio and T.V. waves, nuclear radiation.

14. Seasons. Select a spot at the Museum and visit it during several seasons. For each visit catalogue, describe, draw, photograph, and otherwise experience and record your experience. Before you go back, review your previous descriptions, so you will be ready to notice what has changed.
15. Describing and classifying. Choose several objects that are similar but different -- as, leaves from various plants, several different flowers of the same color, several birds or small mammals, acorns from different oaks, etc. Pick one. Write how it is similar to the others. Then write how it is different. You may also want to use drawings.

Swap descriptions with each other, and see if someone else can pick out the object you chose on the basis of your description. (You may want to do this with, say, the yellow wildflowers in a particular field--if there are many kinds of yellow flowers in bloom or several kinds of trees, shrubs, vines, etc.)

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16. Dance. Put together a dance or play on the falling of the leaves silently to the ground, or the blowing of the wind.
17. Viewing an Ant Hill.
a) View as a group an exhibit of an ant community.
b) Split up into smaller groups and watch an anthill in silence for an extended amount of time. View the working patterns of the ants in obtaining food and living.
c) Discuss as a group the cooperation that is required in living in a community and the meaning of it and apply that to a human situation. What are some differences in the American culture which would make it difficult? For example, the emphasis on individuality and a dominating nature. Also discuss the growing cooperative lifestyles and if in the future will that be the means of survival?
18. Viewing a Rotting Log
a) Watch the community within a rotting log and note all the activity.
b) Discuss how in reality the log is alive for it served a dual purpose: 1) shelter, 2) fertilizing the ground from which it absorbed its life force. How does this log show the interdependence of all things in nature?
19. Survival. Find a comfortable place and sit down quietly. Think about what skills you would need in order to survive--to live without the outside urban, industrial economy--at the Junior Museum farm. Then, think about these questions:
- Given your list of necessary skills, how many of those skills do you now have? Where did you learn them? Why don't you have more survival skills?
- Where can you get information or instruction to master those necessary skills which you do not have? Friends? Scouts? Community groups? Schools, colleges, and universities? Books and libraries?
- What does all of this tell you about the lifestyle you have learned and live at the present time? What does it tell you about learning and personal needs in our society? What changes are needed?
20. Prey. There are a lot of animals at the Tallahassee Junior Museum. Think about your definition of the word predator. Make a list of predators at the Museum, and write down their prey. Then, think about the place of human beings upon your list. Where do we fit in?
21. Leaves. Use all of your senses to explore leaves at the Junior Museum. Walk slowly among dry leaves and pine straw. How does it sound? How does it look? Pick up a leaf and sit down. Examine the leaf against the light, smell it, feel it, crumple it and mix it with soil. Imagine yourself as the leaf and go through its "lifecycle" from bud to compost.
22. Utopia. While you are comfortably seated in a quiet spot at the Junior Museum, think about the word utopia. Imagine what a utopia would be like and imagine what an anti-utopia would be like. What role does nature play in your utopia and your anti-utopia? Share your thoughts with some friends to see how nature fits into their utopian conceptions.

23. Different Ways of Responding. Choose a natural object, like a sunflower. In what different ways do people respond to it? Find as many ways as you can of responding to it. Measure and classify it; write a poem about it; list things it reminds you of; list its practical uses; paint or draw it; idealize it into geometrical shapes; dance to it; make up a song about it, etc.

Exhibit Idea for the Junior Museum:

"Sunflower" - showing a page from a botanical classification reference work on sunflowers; Blake's poem "Ah, Sunflowers;" Van Gogh's painting "Sunflowers," and so on - perhaps a nutritional analysis of sunflower seeds.

24. Rituals. Invent several different handshakes. Privately, teach each person in the group one of the handshakes. Instruct him to use only his handshake. Have everybody shake hands with everybody else, til you find the people who return your handshake. (A group of 16 might have 4 or 5 different handshakes.)

Discuss how various insects, birds, and mammals have elaborate instinctive rituals they go through in order to identify friends, relatives, and potential mates. This is one way very similar insects and birds do not mate - because they do not know the same mating ritual.

25. Given some origami paper, fold what you feel. Share your "feeling paper" with others.
26. Act out, or better, dance out, a tragedy - say, the death of a Brown Pelican.
27. Make a banner to show how you feel about _____, (i.e., redwood trees, snow-capped mountains, clear mountain streams, childrens' zoos, a pleasant urban park).
28. A redwood tree is 2,000 years old - and that's old! Write a story about what a redwood tree is feeling and thinking about.

Write another story about what a woodcutter is feeling and thinking about as he goes into the woods to cut down the redwood tree.

How do you feel now that you have written these stories?

29. Give each person a pear. Ask them to close their eyes and get to know that pear-to experience it. What's it like? Really like? How do you know? How did you get your information on what the pear is like? Remember that your eyes were closed?
30. Write a play or score a dance to celebrate a victory for the ecology campaign (i.e., a new law, a cleaner stream, a new park, an urban fix-up program). Perform your dance or play.
31. Try to mirror natural occurrences which happen around us. Lie on your back and be clouds, stand up straight and be trees, etc. Then, sit down together and talk about your thoughts as you did this.

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32. In the Museum or in the classroom, examine a flower for four minutes. What did you "see" when you examined the flower? Describe what you saw. Compare that to what you felt.

Now, think you are a bee. Look again at the flower silently. After a few minutes, describe how you "saw" that flower. Was it different from before? How? Why?

33. Lie on your back and imagine yourself floating down a gentle river. "See" birds, trees, and the sky passing overhead. What do you feel? Where are you going? If you have difficulty with this exercise, watch the following film: Sky. 10 minutes. color. 16mm. Contemporary Films, 828 Custer Avenue, Evanston, Illinois.
34. Create a new ritual to celebrate the birth of a bird. Perform this ritual with others.
35. Walk around outside without your shoes. Don't talk to your friends, but concentrate on what it feels like. Try a city street-the country grass-a sandy beach.
36. Get a painting of some natural scene, especially a Taoist or Zen painting. Look at it closely and fit yourself into that painting. Where do you fit? How? Why? How do you feel in that painting? Who are you?
37. Using natural materials, make a simple musical instrument. Perform a song which you composed about the sun shining. Then, teach a friend to play your instrument.
38. Turn off your air conditioner for two days in hot weather. Is it worthwhile to save electricity, and thus, curb air pollution?
39. Stretch out on the ground and close your eyes. Picture an animal. Do you see that animal as a friend? If he pictured you, would he see you as a friend? Are you sure about your answer?
40. Take a special field trip where you must communicate nonverbally with your fellows about some common experiences ... or experience some common events relative to the environment.

Visits to natural areas:

The Junior Museum
a State park's natural or wilderness area
a nature trail
a national forest or park
a city park
an outdoors center
a bird sanctuary or game preserve
a farmer's dove field, woodlot, or marsh
a seacoastal area, pond, or caverns

Visits to man-made environments:

a school building, a school yard
a main street or industrial park
a ghetto area
a financial district or shopping mart

If you have difficulty with this exercise, watch the following film: The Smile. 18 minutes. 16mm. color. Contemporary Films. The film portrays the awareness of a young Buddhist novice.

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41. Listen to a piece of music with your eyes closed. Imagine an environment to go with the music. Share this environment with your classmates by producing a collage, song, drama, painting, mural, myth or fable.
42. Going. In the United States over one-hundred species, including sub-species of wildlife, are now threatened with extinction. This extinction process must be controlled to conserve future generations of wildlife.

Choose a specie that is becoming endangered by extinction. Think about reasons for this.

Write poetry or do a make-believe story of an animal that is near extinction.

- Do you think the protection of an animal is justified?
- Is protecting animals at the same time protecting human-kind?
- What harmful practices are endangering wildlife?

Pictures removed to conform with copyright law.

Activities for Kindergarten and Elementary School Students

A. Litter Picture

1. As you walk through the Museum pick up any litter that you may see.
2. After your walk, take turns gluing your litter on a large sheet of paper.
3. Together you can make a picture of something in the Museum or you can just glue your litter anywhere and see what the picture looks like.
4. Discuss this question: Would you rather see the litter on the grounds of the Museum or made into a picture?

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B. Animal Improvization

1. After seeing the Museum, get into groups of four or five.
2. Each group will be given the name of an animal, which lives in the Museum.
3. Pretend that you are that animal.
4. Talk about how that animal lives. The sounds it makes. What it now eats and what eats it. How it walks, etc.
5. Now act out these movements and noises.
6. Share them with the rest of the class.

43. Complaint. Read the following letter to your group. Have them sit beneath a tree.

Mr. Carl Wood
President, Prevented Paper Products Company
Smellytown, U. S. A.

Dear Mr. Wood,

I would like to protest your company's policy of destroying the Earth's living life-support system. Included in this protest is the destruction of my family and friends.

Your company came into our beautiful, living community and totally destroyed it. I saw my brothers and sisters scattered away to become part of your empire. And I fear I'll be next. Can you help me?

The very life-blood of our community is gone. My family and I protected this community, we nourished it and provided homes for many of its residents. However, we were unable to stand against your bulldozers and chainsaws. And my turn is coming. PLEASE HELP.

Sincerely,
A Tree

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Questions for thought and discussion:

1. How would Mr. Cut Wood respond to this letter?

How would you respond?

Think about your answer and then share it with others.

2. Suppose you were a tree in another forest?

How would you feel after reading this letter?

What would you do?

3. How would you feel if you were the tree in the letter?

Can you think of another way to protest?

4. Maybe this tree is beyond help, but how can you help other trees?

5. Think of some of the ways trees are important to you and your community.

Share your ideas.

6. Do you think Mr. Cut Wood's policy of cutting down trees is right? Is it wrong? Can you suggest alternatives?

44. Advertisement.

Is your moss falling out? Are you shaking in your roots? Do you unconsciously hear the sounds of electric chain saws? Have you received threats on your life from the local lumber yard? Do the vibrations you receive from your human neighbors ruffle your bark?

Well my woodbearing friends, if you have constant fear of being destroyed worry no more. Come to Flowering Branch Acres, a restricted retirement community. A place where you can live out your natural life in peace and harmony, not as a coffee table or baseball bat. You will receive moisture, twice daily, from our underground artesian springs. We have an assortment of feathered friends to nestle in your branches. Meet the oak of your dreams in our numerous planned activities. So act now, spend your life swaying in the seasonal breezes at Flowering Branch Acres.

- a) If you were a tree in our local environment would you like to live at Flowering Branch Acres?
- b) What has man done to force trees to create tree retirement homes?
- c) 1) How would the Manager of a pulp yard respond to the ad?
2) A furniture maker?
3) A college student?
4) How would you respond to this ad?

45. Mapping. Take a look at the back of this booklet, you will see a detailed map of the Junior Museum.

Pair off-one student will be blind folded and will be led by the other student. Take a walk covering the entire Museum or sections of the Museum. Have the blind folded student map the area with other senses.

- a) Compose a map, not by sight, but by smell, feel, and sounds. How would your map change by the seasons?
- b) What was your favorite place? Write poem (or act out), song, or dance about your favorite place. Describe your favorite place by smell and by sound. Giving these clues (smell and sound) see if other members can find your favorite place.
46. Clues. You are a dove that lives in an oak at the Museum. You are sending an invitation to a sparrow friend of yours. This friend has never been to your pad. What clues would you give your friend in order to find your tree? Write down the message to be delivered to your friend.
47. Closing Activity. Make copies of the Bill of Rights in the U.S. Constitution and examine it carefully. Then, write a Bill of Rights which includes all the biotic communities in our land, as well as the community of human beings. Circulate copies of your new Bill of Rights to community leaders. Figure out ways to ACT on the concerns expressed in your Bill of Rights.

How amazing is this spirit of man! In spite of innumerable failings, man, throughout the ages, has sacrificed his life and all he held dear for an ideal, for truth, for faith, for country and honor. That ideal may change, but that capacity for self-sacrifice continues, and because of that, much may be forgiven to man, and it is impossible to lose hope for him. In the midst of disaster he has not lost his dignity or his faith in the values he cherished. Plaything of nature's mighty forces, less than the speck of dust in this vast universe, he has hurled defiance at the elemental powers, and with his mind, cradle of revolution, sought to master them. Whatever gods there be, there is something godlike in man, as there is also something of the devil in him.

--Jawaharlal Nehru, Independence and After (New Delhi: Government of India Printing Office, 1949).

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TEN-MINUTE MINI-WALKS FOR ENVIRONMENTAL SENSITIVITY:

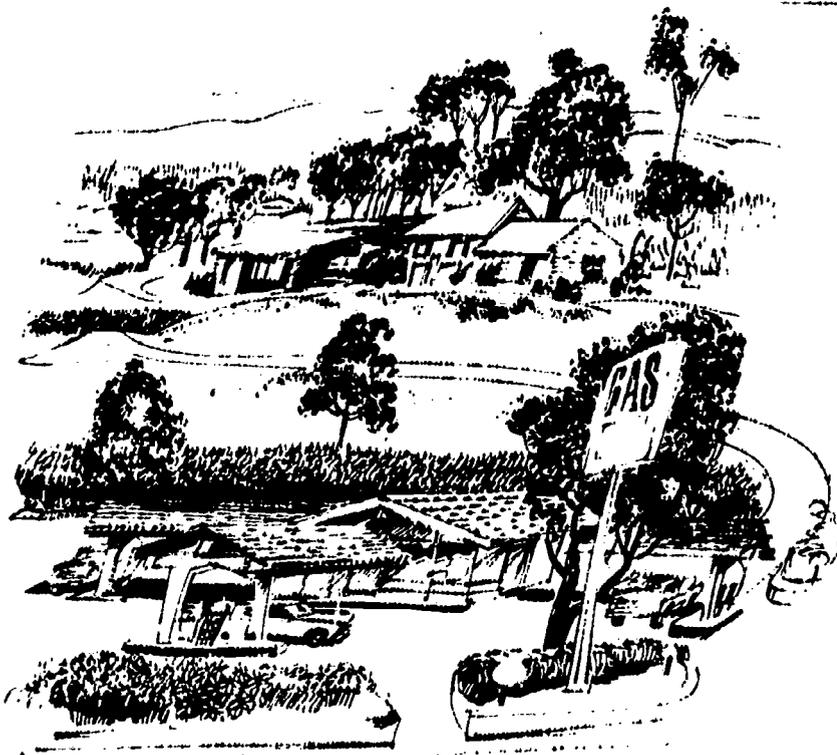
Prepared By:

Louise Veal
Rodney Falmlen
Bill Fuller
Mary Langford
David Giordano

Nims Middle School, Tallahassee

With the Project Staff

November, 1974



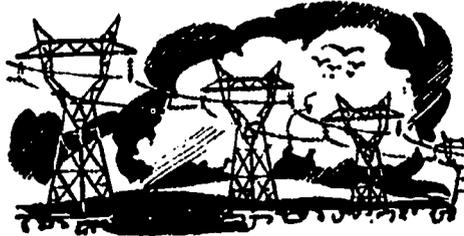
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HEADS UP

Take a ten-minute field trip out-of-doors. Stretch out on the ground under a tree and get comfortable. Look for the following:

- branch movements
- leaf rustling
- birds and animals moving
- clouds passing in the sky

Back in the room. Calmly list the ways in which human beings could destroy all of this if we are not careful.

TRACKING

A day or two after a rain, take a ten-minute field trip looking for animal tracks in the mud. Make a list of the tracks you find and write down where you found them. (Don't forget that human beings are animals, too.)

Back in the room. Your teacher will give you a copy of the Florida Game and Fresh Water Fish Commission's leaflet entitled Florida Animal Tracks.

Do one of the following activities:

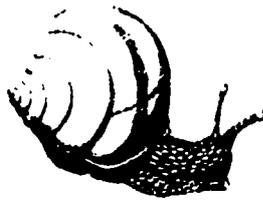
1. Get some heavy paper. Cut out the picture of each animal. On one side of a piece of heavy paper, paste an animal's picture. On the other side, paste the drawing of its tracks. Play a "flash card" game. Show another person the animal's tracks. Ask that person to name the animal. Learn to identify each animal by its picture and by its tracks. Learn to pronounce and to spell each animal's name.
2. Get some heavy paper. Make a deck of animal cards. Cut out the picture and the tracks of each animal. Paste each animal picture and track picture on a separate piece of paper. Teach your classmates to match an animal picture card with the correct track card.

MINI-WORLD

Take a ten-minute field trip out-of-doors. Find a comfortable spot and sit down on the earth, right in the middle of a five-foot circle. You may outline the circle with a piece of string or by scratching the earth with a stick. (Do it gently!)

- What does life in this little space feel like?
- What can you do in your circle?
- How long would you like to live in this space?
- Closely examine your space and list the living creatures who share your space.
- Invite two human being friends over. How does your space feel now? Invite two more.

Back in the room. Write a song, poem, or story about your mini-world and those who share it with you.



NATURE STINKS

Take a ten-minute field trip out-of-doors, using your nose. As you find things in nature with an odor, make a list and ask yourself:

- Is this odor one that () I like or () I dislike
- This odor makes me feel () good or () bad
- () happy or () sad
- () healthy or () sick
- () relaxed or () up-tight

- Is this odor a natural odor or an unnatural (man-made) one?
- Why do I feel this way about such odors?

Back in the room. Do one of the following activities:

1. Think back in your life. What was the best odor you ever experienced?
2. What was the worst odor? Write a little story about the time when you experienced the best odor.
2. Think about these smells: a woodsy smell, a field house smell, a sea-shore smell, a bus smell, and a leather smell. Draw a picture to show how you feel about one of these smells.
3. Some smells in nature are natural and some are man-made. Go to the media center and learn more about "air pollution." Find a way to share what you learned with others.

ARCHEOLOGY

Take a ten-minute field trip out-of-doors and pick up as much litter as you can in that time. Take the litter back to your classroom.

Back in the room. Pretend that you are an archeologist. You dig to discover bits of bones, pottery, and other objects so that you can tell something about the people who lived there long ago. Instead of finding pottery and bones, you have found this litter. What does each piece of litter tell you about the persons who live in your area? About their way of life, and their attitude toward nature?



ARE FOLKS ALWAYS PICKIN' UP AFTER YOU ?

BIG AND LITTLE, BLUE AND BLEW

Take a ten-minute field trip out-of-doors. On a piece of paper, write down descriptive words for the things you observe in nature. For example, dark, rough, pale, large, etc.

Back in the room. For each descriptive word on your list think of other words:

- Synonyms: words with the same meaning
- Antonyms: words with the opposite meaning
- Homonyms: words with the same sound.

For example:

BIG

Synonyms: large, huge
Antonyms: small, little
Homonyms: - - - -

PALE

Synonyms: light, faint
Antonyms: dark, bright
Homonyms: pail

WASTING AWAY

Take a ten-minute field trip to the dumpster, where your school's garbage is deposited. Make a list of the kinds of things which are thrown away.

Back in the room. Do the following:

1. Discuss what happens to the trash in the dumpster.
2. For each kind of trash you found, imagine a better use for it (for example, food waste might go for hog food, or go into a compost pile.)
3. Write a "Telegram" about wasted paper to the teachers, administrators, and students in your school. Suggest ways to save paper--and ways to reuse old paper.
4. Try out some of your own suggestions in your own classroom.

SCENT SENSE

Take a ten-minute field trip out-of-doors. Try to find some odors which are:

Pleasant

Soothing

Sweet

Fresh

Spicy

Strong

Bitter

Unpleasant

Foul

Back in the room. Think about why an odor is good or bad, to you. How did you learn this?

Try one of the following activities:

1. Make a list of ways we use to get rid of some odors at home and in schools. Make a list of ways we use to cover over an odor or get a pleasant odor. (for example, perfume, incense, body deodorants, room spray)
2. Make a list of the ways odors ("good" and "bad") are used in nature. (for example, flower's sent to attract bees)
3. Do some library research on how and why people use "incense."

A TOUCHING SCENE

Take a ten-minute field trip out-of-doors. Make a list of all the natural things which have different textures and thus feel different when you touch them. For example, oak tree bark. . . rough; Spanish moss. . . wooly; oak leaf. . . silky.

Back in the room. Talk about the words we use to describe the way things feel. See how others described how things felt in ways different than yours. On the chalkboard make a list of words which you used to describe feelings (rough, wooly, silky, etc.)

Use the words in sentences or in short stories.



MAP AND MEASURE

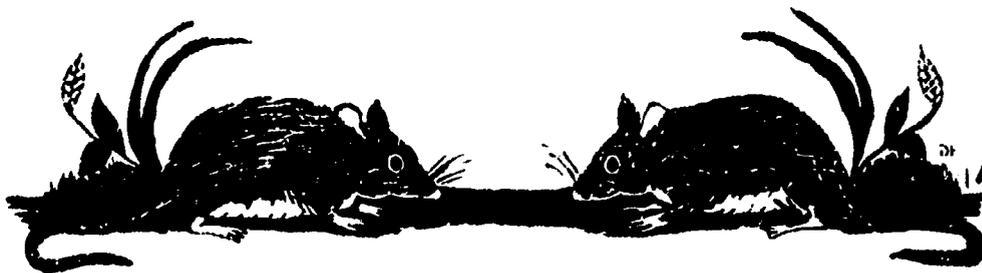
Take a ten-minute field trip. Draw a map of your place (part of the school yard or Junior Museum). Measure the distances between major features on your map, and write down the distances on your map in yards.

Back in class. Discuss how you measured the distances. Get your teacher or a fellow student to explain pacing as a way to measure distances.

IMAGES

Take a ten-minute field trip out-of-doors. On a piece of paper, write down the names of ten natural objects.

Back in the room. In groups of three, share the words on your list. As you say the name of a natural object, ask the other two people in your group to tell what picture comes to mind. For example, if you say "tree," they should describe the tree that they see and how they feel about that tree.



YOU ARE A NATIVE AMERICAN

Take a ten-minute field trip pretending that you are an American Indian. Examine the place around you as if you were going to establish a campsite here.

1. What do you need to survive?
2. What does this place offer you? Take inventory.
3. Can you survive here? How?

Back in the room. Draw a map of your campsite. Talk about what you would have to do in order to survive in this place.

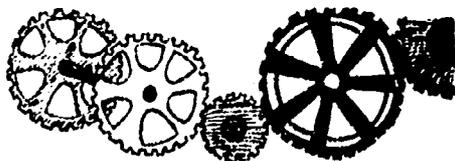
COUNTING UPON NATURE

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Take a ten-minute field trip out-of-doors with a pad of paper. Do the following:

1. Find two of something. Write down what they are and where you found them.
2. Find a million of something. How do you know that you have found a million?
3. Find something that multiplies. Write down what it is and where you found it.

Back in the room. Discuss what you found and where you found it. Then, send your teacher a telegram (written on a piece of paper) on what you learned and enjoyed while doing this ten-minute field trip.



TAKE TIME

Take a ten-minute field trip and make two lists. Label one list OLD, writing down things which you see in nature that are old. Label the other list NEW and write down things which you see in nature that are new.

Back in the room. Answer the following questions in a class discussion:

1. When is something called old? Let's say the following have been around 15 years. Which would you call old?
a car a dog a shirt a hamburger
a person a school an oak tree soil
a bird a rock a house a star
2. What do you like that's old? What do you like that's new?
3. What are best when they are new? What are best when they are old?
4. Write a personal statement on your favorite old or new thing?

LEAF WALK

Take a ten-minute field trip in a wooded area. Walk among the dry leaves and pine straw. How does it sound? What would you hear if the leaves were wet?

Look closely at some leaves and some pine straw. Hold them up to the light. Smell them. Crumple them near your ear. Feel them with your finger tips.

Back in the room. Do one of the following activities:

1. Draw or paint a picture of some leaves.
2. Mount some leaves on colored paper, labelling each leaf.
3. Do a Bulletin Board with all the different leaves found on your school yard or at the Junior Museum.
4. Write a fantasy story involving leaves and you.

COLORING

Take a ten-minute field trip out-of-doors. Make a list of natural objects that you see. Beside each object on your list, write down its color.

Back in the room. Answer the following questions:

1. What is your favorite color? Why is it your favorite? What objects in nature are your favorite color?
2. How do colors affect your feelings? For example, how would you feel in an all-black room? How would you feel upon seeing a pink elephant or a purple tree?
3. Think about the colors of the natural objects on your list. Why are these natural objects colored the way they are? How might the colors help the objects live?

PREDICTION

Take a ten-minute field trip out-of-doors on your school yard or at the Junior Museum. Look around closely. Think about how this place must have looked 100 years ago. What do you think it will look like in another 100 years?

Back in the room. Pretend that you are Rip Van Winkle, who fell asleep and woke up years later. You are going to wake up 100 years later! Draw a picture of what you expect to see when you wake up (at the Junior Museum or on your school yard).

Explain your picture to several classmates.

LITTER BIT

Take a ten-minute field trip out-of-doors. Pick up the litter on one portion of your school yard or of the Junior Museum.

Back in the room. Do several of the following activities:

1. Weigh the litter you picked up. How much does it weigh? If you had picked up the litter for the total school yard or all of the Junior Museum, how much would all of that weigh? Talk to your teacher about making a more accurate guess.
2. Use the litter to make some eco-jewelry or some art work.
3. It costs a community about 30 cents to pick up each piece of litter. If city workers had picked up the litter you collected today, how much would it have cost the taxpayers? (number of pieces of litter you collected x 30¢ =).
4. Weigh the amount of paper thrown into your class waste basket for a week. What is the total weight for the week? How much would this be for a year? (32 weeks in school year x weight of waste paper for a week =). It takes seventeen trees to produce a ton of paper. How many trees will you throw away this year in your classroom?

PERFECT SPOT

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Take a ten-minute field trip out-of-doors on your school yard or at the Junior Museum. Select a spot out-of-doors. What would have to be done to make it a perfect place?

Back in the room. Use a variety of magazine pictures, photographs, bits of paper and your drawings to show what you think a perfect place is. Explain your design of a perfect place to the class.

Think about the imperfect places that you have known.



SOILED

Take a ten-minute field trip out-of-doors. Look closely at the soils outside. Use a small stick to scratch up hand-fulls of different soils and feel them. Fill three cups with soils: 1) darker soil that seems rich, 2) sandy soil, and 3) reddish clay soil.

Back in the room. Do several of the following activities:

1. Look at each type of soil under a magnifying glass. Describe the differences that you see.
2. Pour water into each cup of soil. Describe the differences that you see when the water is added.
3. Plant some corn or bean seeds in each soil and observe for a month or so. Talk about the differences in plant growth.

ADAPTING

Take a ten-minute field trip out-of-doors. Look for ways that we change our ways of doing things as conditions in nature change. For example, when the air turns cool, we put on a coat. When the sun is bright, we put on sunglasses.

Back in the room. List the ways that we and plants and animals adapt.

Condition:	The Ways We, Plants, and Animals Adapt:
colder air	put on coat
sun glare	wear sunglasses

FOR THE BIRDS

Take a ten-minute field trip out-of-doors. Look for birds wherever you can find them. Write down the names for the birds you see. You might also write down where you saw it and what it was doing.

Back in the room. Do the following activities:

1. Share the names on your list with classmates. Describe each bird as you mention its name.
2. List the kinds of shelter birds use. What kinds of bird shelters did you see on your field trip?
3. Where are places where birds usually get water? Did you see any such places on your field trip?
4. What kinds of food do birds eat? Did you see any food sources for birds when you were on your field trip?
5. What can you do to help birds have proper shelter? Pure water? Ample food?

CATCHING POLLUTION

Take a ten-minute out-of-doors. Take some pieces of cardboard with you. Spread a thin layer of vaseline on one side of the pieces of cardboard. Put each piece (vaseline side up) in different places: on a window sill, fastened to a tree, in a ditch near a busy street corner, in an open field, etc.

Next day. Check your cardboard to see what is sticking on the vaseline. Whatever is sticking is one day's record of air pollution in that place.

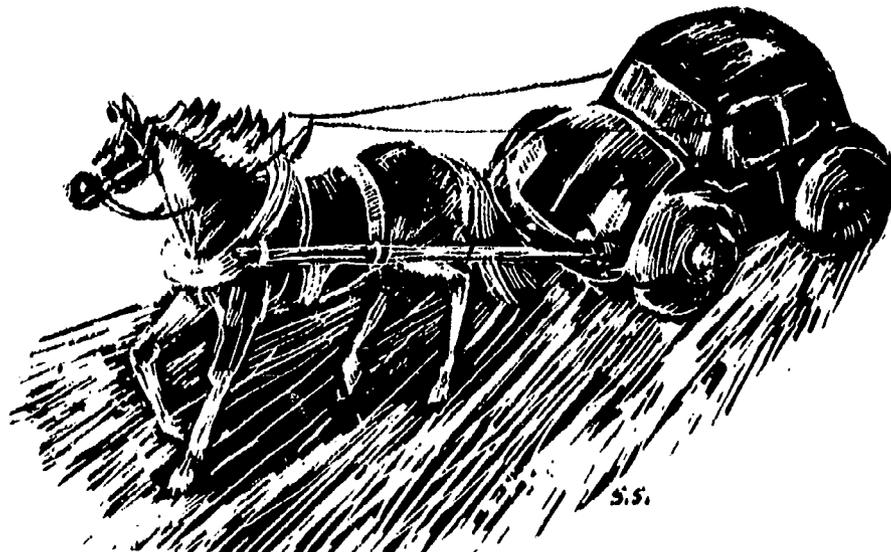
Back in the room. List the things sticking on the vaseline cards. Discuss the following:

1. What different things did you find on the cards from different locations? How can you explain the differences?
2. Compare the "natural" pollution from the unnatural (Man-made) pollution. How can you help to cut down the man-made pollution?

DIRTY SOCKS

Take a ten-minute field trip out-of-doors with a pair of clean, white socks. Put a sock on the exhaust pipe of a car that has been parked for awhile (so the pipe is cool!). Step back. Ask the driver to turn on the engine, run it for a minute, and turn it off. Carefully, pull the sock off the exhaust pipe and look inside the sock. What do you see? Try this on several cars.

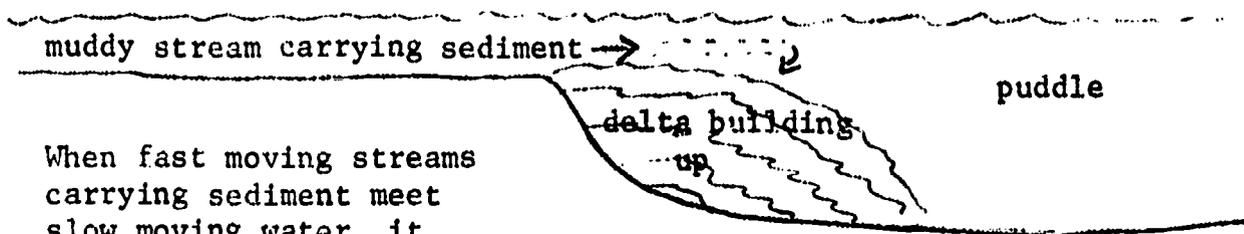
Back in the room. Talk with your classmates about the conclusions you can draw about cars and air pollution. Remember that many pollutants you cannot see. What can you do about cars and pollution? Remember that you breathe the stuff in those socks!!!



Ask your teacher to explain what a delta is. Then, take a ten-minute field trip out-of-doors, after a rainfall. Find a stream of water entering a puddle. Observe what is happening. Next, find several other streams or trickles of water entering puddles. Observe what is happening there.

Back in the room. Discuss the following questions:

1. Where did you find deltas? Why do you think it was found there?
2. Did you see any difference in fast-moving streams and slow streams?
3. Does the following diagram help you understand what happened?



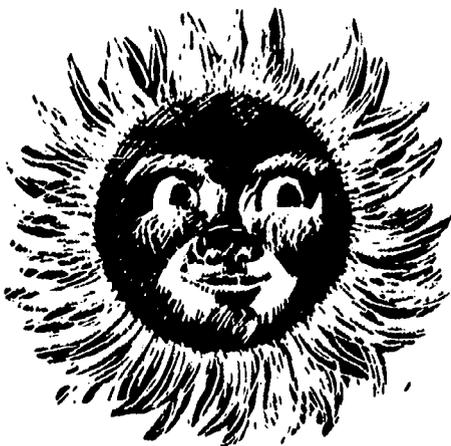
When fast moving streams carrying sediment meet slow moving water, it stops causing gravity to pull sediment to the bottom.

CHANGE

Take a ten-minute field trip out-of-doors. Make a list of at least five things that change as the seasons change.

Back in the room. Share your answers and thoughts on these questions:

1. What changed with the seasons? How did each thing change? What caused the changes?
2. Imagine the same setting where you walked one year ago. Ten years ago. One hundred years ago. How do you think it has changed in that time?
3. List as many causes for change in our environment as you can in twenty minutes. Don't forget man, animals, weather, etc.



Take a ten-minute field trip on your school grounds (or at the Junior Museum) and look for things that cause your air to be dirty.

Back in the room. List the things you found that cause our air to be dirty.

I. Do the following activities:

- A. Spread vaseline over a piece of cardboard. Place the cardboard on an outside windowsill of your school. Watch the cardboard to see how fast dirt particles collect on it.
- B. See if you can identify any of the following dirt particles on the cardboard: paper ash, insects, dust, dirt, soot, seeds or others. If so, label the dirt particles.
- C. By correctly following the directions to the activity below, you will write a rhyme about the air you breathe. This worksheet contains only numbered lines with spaces following each number. In the designated spaces, you are to print the letters given in the directions below. The first one is done for you.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1.	s	—	—	—	—	—	—	S	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2.	—	—	—	—	—	—	—	—	,	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4.	—	—	—	—	,	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

1. On the first line, print S in the first and eighth spaces.
2. " " second " , " S " " second, eleventh and thirteenth spaces.
3. " " third " , " S " " seventh and twenty-first spaces.
4. " " fourth " , " S " " sixth space.
5. " " first " , " Y " " sixth and tenth spaces.
6. " " second " , " Y " " ninth space.
7. " " third " , " Y " " ninth " .
8. " " fourth " , " Y " " fourth " .
9. " " first " , " N " " thirteenth, twenty-second and twenty-fourth spaces.
10. " " second " , " N " " twenty-first and twenty-third spaces.
11. " " third " , " N " " fifth and fourteenth spaces.
12. " " first " , " G " " fourth, fifth and twenty-fifth spaces.
13. " " second " , " G " " twenty-fourth space.
14. " " third " , " G " " sixteenth space.
15. " " fourth " , " G " " twelfth space.
16. " " first " , " K " " ninth space.
17. " " third " , " K " " eighth space.
18. " " second " , " C " " sixth space.
19. " " third " , " C " " first space.
20. " " fourth " , " C " " first space.
21. " " first " , " I " " twelfth and twenty-third spaces.
22. " " second " , " I " " first, eleventh and twenty-second spaces.
23. " " third " , " I " " fifteenth and twentieth spaces.
24. " " fourth " , " I " " second and eleventh spaces.
25. " " first " , " T " " fifteenth space.
26. " " second " , " T " " eighth space.
27. " " third " , " T " " twelfth and eighteenth spaces.
28. " " fourth " , " T " " third and fourteenth spaces.

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29. On the second line, print A in the fourth and nineteenth spaces.
30. " " third " , " A " " fourth, eleventh and twenty-third spaces.
31. " " first " , " E " " seventeenth space.
32. " " second " , " E " " sixteenth space.
33. " " third " , " E " " third space.
34. " " fourth " , " E " " ninth space.
35. " " first " , " M " " second and nineteenth spaces.
36. " " first " , " R " " twenty-first space.
37. " " second " , " R " " fifteenth and twentieth spaces.
38. " " first " , " O " " third and twentieth spaces.
39. " " first " , " H " " sixteenth space.
40. " " third " , " H " " seventeenth space.
41. " " fourth " , " H " " thirteenth space.
42. " " second " , " U " " fourteenth space.
43. " " third " , " L " " second space.
44. " " fourth " , " L " " tenth space.
45. " " fourth " , " D " " eighth space.
46. " " second " , " W " " eighteenth space.

D. Read the rhyme that you were able to write by following the above directions carefully.

E. Write other rhymes about the air you breathe.

F. Classify the following "pollutians" by placing them in the appropriate category(s) listed below:

slime	bottles	papers	sludge
fumes	cans	sewage	smog
garbage	oil	gasoline	litter
toxic chemicals	smoke	pesticides	herbicides

AIR

LAND

WATER

CREATURES FROM POLLUTO

Take a ten-minute field trip on your school grounds (or at the Junior Museum) and look for things that cause the water to be dirty.

Back in the room. List the things you found that cause our water to be dirty. Add other ways you can think of that cause water to be dirty. Next, classify each pollutant on your list by putting it in the appropriate category below:

Industrial

Agricultural

Natural

Individual

Do the following activities:

A. Follow Directions activity

1. If chemicals pollute drinking water, underline the word water.
2. If oil pollutes our drinking water, circle the word water.
3. If fertilizers can pollute our drinking water, write your age at the end of this sentence. _____
4. If toxic metal, such as lead, can poison our drinking water, underline all the words in this sentence that have the letter "t" in them.
5. If wastes discharged by factories pollute our drinking water, work the following math problem: $2 \times 63 =$
6. If floods can pollute our drinking water, draw a picture of a water fall.

B. Unscramble the following letters to complete this message: _____
_____ has become one of our country's major problems.

RTWEA OLUONITLP

- C. Put out a pan of water at your school or at home and leave it for several days. Boil off the water and see how much dirt is left on the bottom of the pan.

1. Take a ten-minute field trip. Find a piece of litter. Discover a new use for it in its present form.
2. Take a ten-minute field trip. Observe the bark on a tree. How many layers do you see? Why does a tree have bark anyway????
3. Take a ten-minute field trip. Choose four different types of leaves. Bring them to class and make a pencil picture of each. Find out the name of each leaf by referring to books in the library or talking to your friends.

Read the following poem on leaves:

NOVEMBER NIGHT

Listen. . .
With faint dry sound,
Like steps of passing ghosts,
The leaves, frost-crisp'd, break from the trees
And fall.

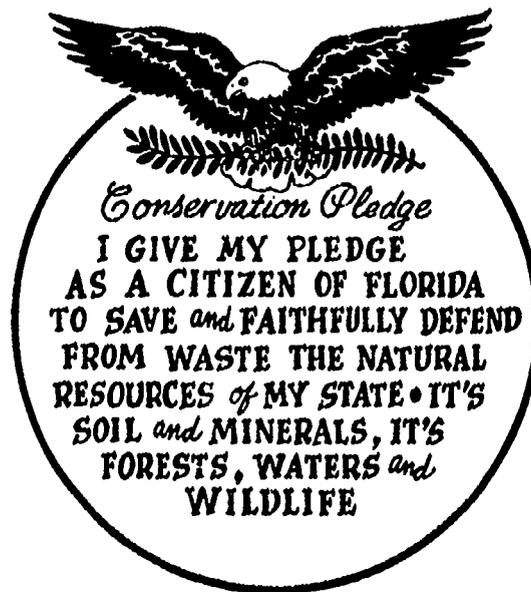
--Adelaide Crapsey

Reprinted from English is Our Language, Book Six
(Boston: D.C. Heath. 1966), p.221.

Teachers might order:

The Ten Minute Field Trip. A filmstrip and twelve lessons. Bureau of Audio-Visual Instruction, Sales Unit, 131 Livingston Street, Brooklyn, New York 11201. \$7.50.

Teachers' Manual for 'The Ten Minute Field Trip.' Wave Hill Center for Environmental Studies, 475 West 252nd Street, Bronx, New York 10471.



Florida Game and Fresh Water Fish Commission

Tallahassee, Florida 32304

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ACTIVITIES FOR GIRL SCOUTS AT THE
TALLAHASSEE JUNIOR MUSEUM

Developed by:

Annette Stoker
Kathy McWilliams
Peggy Lowe
Linda Frazer

August, 1974

and the Project Staff

SERVICE PROJECTS FOR TROOPS

The Museum always welcomes scout troops that would like to become involved in service projects. The projects listed here represent only a small sample of a very wide range of "things" individual scouts or troops can do to help the museum. Always check with a member of the museum staff before you get too far along with your project -- a phone call will do!

Wild Flowers: Collect seeds from a variety of wild flowers and create small wildflower gardens along the trails. Seeds can be collected from flowers that bloom at different times of the year and mixed together so that something is always blooming in your troop's garden. Remember to plant in the same habitat along the trails as you originally found the flower.

Aluminum Recycling: Help the museum pay for its fox and racoon habitat. Collect aluminum cans and other recyclable aluminum products from school, family and neighborhood. Find sources of aluminum other than cans and bring big piles to the Museum. Your troop will find a place to put the aluminum just inside the gates.

Volunteer Yourself: Some weekends are very busy times for the Museum and interested persons are invited to serve as guides and hostesses. Many visitors to the Tallahassee Junior Museum need help in locating the exhibits, nature trails, Murat House and other places on the Museum grounds. Perhaps your troop could help guide visitors around.

Demonstration Bee Hive: A troop with a beekeeper is needed to research, plan, design and build a demonstration bee hive. You know, the kind with the glass sides so folks can look in and watch the critters without getting stung. This is an excellent project for a troop with know-how and ability.

Gardening: The pioneer farm's garden has attracted lot's of attention and needs a great deal of care. It certainly would help to have a troop or two adopt parts of the garden to help with the weeding and other chores around the farm's garden. The pioneers had large families to help with the chores; why doesn't your troop join the museum family and pitch in?

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Help Wildlife: Certainly the wild animals can use your help! Constructing and erecting nesting boxes is one way you can increase the number of birds and squirrels at the museum. Nesting boxes can be built with recycled materials -- even old tires. Food is another thing all wild critters need so your troop might want to construct some wildlife food plots. Food plots not only make life a little easier for many animals, they also make the animals easier to see. And guests at the Museum sure like to see the wildlife we have.

People Too: Some of the most heard questions concern edible wild plants. A very helpful project would be to compile a list of such plants that are commonly found around the museum. Such a list could even be printed in booklet form. Or maybe samples of the plants could be mounted into a display. What do you think would be best?

Ants Alive: A simple, working ant farm would be an enjoyable and fascinating addition to the Museum. Would your troop set one up?

Plant Dyes: Many plants in the museum area were not only used for food but were also used to dye the wool and cotton used to make clothing. A display showing the plants, the process for extracting the dye and samples of the dyed materials would make a useful addition to the museum's teaching collection. Why not try it?

Other Suggestions:

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LEARNING ABOUT PIONEER LIFE

The pioneer farm can be used to compare earlier life styles with today's life styles. Many interesting environmental concepts and implications can be discovered by comparing what was yesterday and what is today. Pioneer man lived close to nature in what essentially was a closed system -- what he got from the earth he eventually returned to the earth. Modern man lives in an open system -- he takes and doesn't return or replace.

Activities for Brownies:

Compare equipment pioneers used with their modern counter parts. For example:

Wash tubs and scrubbing boards -- automatic washers
Clothes line or fence rail -- clothes drier
Cake safe -- refrigerator
Sickle -- power mower
Horse and plow -- tractor

Ask: Where did the energy come from to run this farm? Where does the energy come from to run your home? If you lived on this farm would the energy shortage bother you? Could you go to the shopping center to buy groceries? Where would your groceries come from?

Plan a breakfast menu for this pioneer family. For example:

Eggs from the chickens
Milk from the cow
Bread from the grain
Butter from the milk from the cow

Ask: Where does your breakfast food come from now?

Eggs from an egg farm
Milk from a dairy
Bread from a wheat farm
Butter from a dairy

How have modern life styles increased your dependency on other people in different parts of the country?

How were the pioneer children, the farm animals and the plants dependent on each other? For example, how were the people, chickens, soil and plants interdependent? Is this relationship still true today? Which system has the least waste?

Clothing is always lots of fun to think about and to compare with what we have today.

Ask: If you were living here, what kinds of fibers would be in your clothes? What would the style be? How would you make and care for your clothes? If you have wool clothes, ex-

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plain the relationship between man, sheep, plants, soil and sun. Does this relationship exist for "man-made" fibers?

Early settlers and pioneers were very aware of their dependency on the natural environment. They used, restored and conserved the earth and the life they found on it. If you were a girl your age living on this farm, name some of the things you would do to help maintain a healthy environment. How many of these things can you do at home, today?

Let's do some things that you do as a Brownie Scout that a girl who lived here would have done.

Be a discoverer:

Make a bandana to carry things in and to use as a hat on a dusty road
Learn how to tie knots
Learn how to use a knife
Play games of touch and tell, smells and sounds
Identify the source of sounds in the woods
Look for many kinds of life in a patch of ground
Jump rope
Make a corn husk doll
Watch a spider
Make a musical instrument to imitate a natural sound

Be a helper:

Keep clothes put away
Feed pets
Work in the garden
Help with the meals

Be a friend maker:

Be friendly
Be kind
Be helpful
SHARE

Think about how other people feel. A Brownie thinks of the things around her. She sees, hears and learns about herself, her home and nature. This is her environment.

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Activities for Junior Scouts:

Discuss the activities that would take place at each of the buildings at the pioneer farm. What natural resources would be critically important to that building's function? For example, the proper fuel was critical to the use of the smoke house. What did the early north Florida settlers use to make smoke for their meats? Are these things still critical today? Why or why not?

What would the social life be like here? Who would your friends be? Who would you play with? What about dating and boy friends? You would not have a telephone so how would you contact your friends?

What would school be like? What would you learn about? Where would you go to learn more about early Florida schools?

Make a list of the 10 things that are most important to you today. How many of them would this family have? Suppose you lived here in 1890; make another list of the 10 most important things. Compare the two lists.

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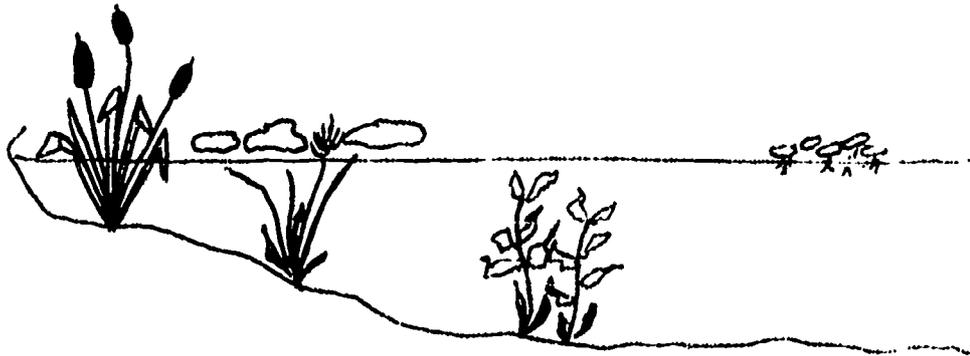
THE WATERFRONT

WHAT LIVES IN AND NEAR THE WATER

What to do: Find types of water plants
Note the plant succession from water plants to
dry land trees
Look at life in the water

Materials Needed: Sieve, magnifier, jars and lids, shallow
pan, plastic spoon, notebook, pencil

Types of water plants:
Emergent plants, Floating, Rooted plants, Submerged
plants, Floating non-rooted plants

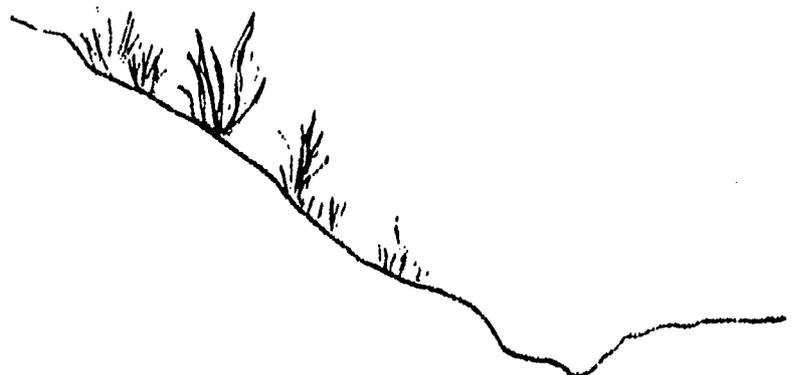


Make a sketch or point out examples of different types
of plantlife from the water to the trees on the land.

Scoop through the muck as debris on the bottom of the water.
With the sieve edge above water level, wash out the fine silt.
Transfer the animal and plant life to the clear water in the
pan. Observe one type of animal life. Note their movements and
mode of locomotion. Are they hunters or prey? Try to construct
a food chain. Look with a magnifier to find the smallest links
in the food chain.

Using a water scope is a good way to observe faster moving
animals and submerged plant life.

Make a cross section map of the water's edge.



Point out the 5
areas: Water's edge
Bottom
Open Water
Surface
Area where plants live

00043

Have the children show where they found their plant or animal life and put in on the chart. Include those you saw but could not collect.

Things to think about:

Are there any plants or animals found in only one area?
Are there any plants or animals found in more than one area?

INSECTS AND OTHER SMALL INVERTEBRATE

What to do: Make a survey of animal life on the plants, in the air, on the ground and in the ground. Look at animal life in a rotting log.

Materials needed: Magnifier, Newspaper, Shovel, Jars, Hand Cultivator, Insect Sweepnet, Plastic bags.

Form groups of 2 or 3. Have them select different kinds of places to study: By the water, in the woods, in fields, in sunny and shaded places. Have each group look in an area of the same size. Look for plant eaters and sapsuckers on leaves and stems. Look for galls on stems and leaves. Look in the soil for root feeders and soil makers.

Record findings on a chart:

SITE WHERE ANIMALS WERE FOUND

Description	On Plant	In Plant	On Ground	In Ground
(name or description and number)				

Summarize information: Try to make some generalizations which kinds of places had the most and least kinds and numbers of animals. Try to identify your animals found in the soil with a key.*

Dig up some of the soil and spread it on the newspaper to be able to separate dirt and animals.

Tear the rotten log apart with the hand cultivator. Put your animal finds in small jars. Discuss what helps to rot the log.

In the more open area use a sweepnet to collect additional insects.

Things to think about:

What interaction between two animals or animal and plant did you see?

What was the largest or smallest animal you found?

What colors and shapes? How does it help?

* See Card 34 -- Investigations in Ecology.

ACTIVITIES WITH WOODY PLANTS

Trees and Woody Plants

Choose three areas of the Museum for activities.

Identify 8-10 trees or woody plants.

Deciduous trees -- shed leaves in winter

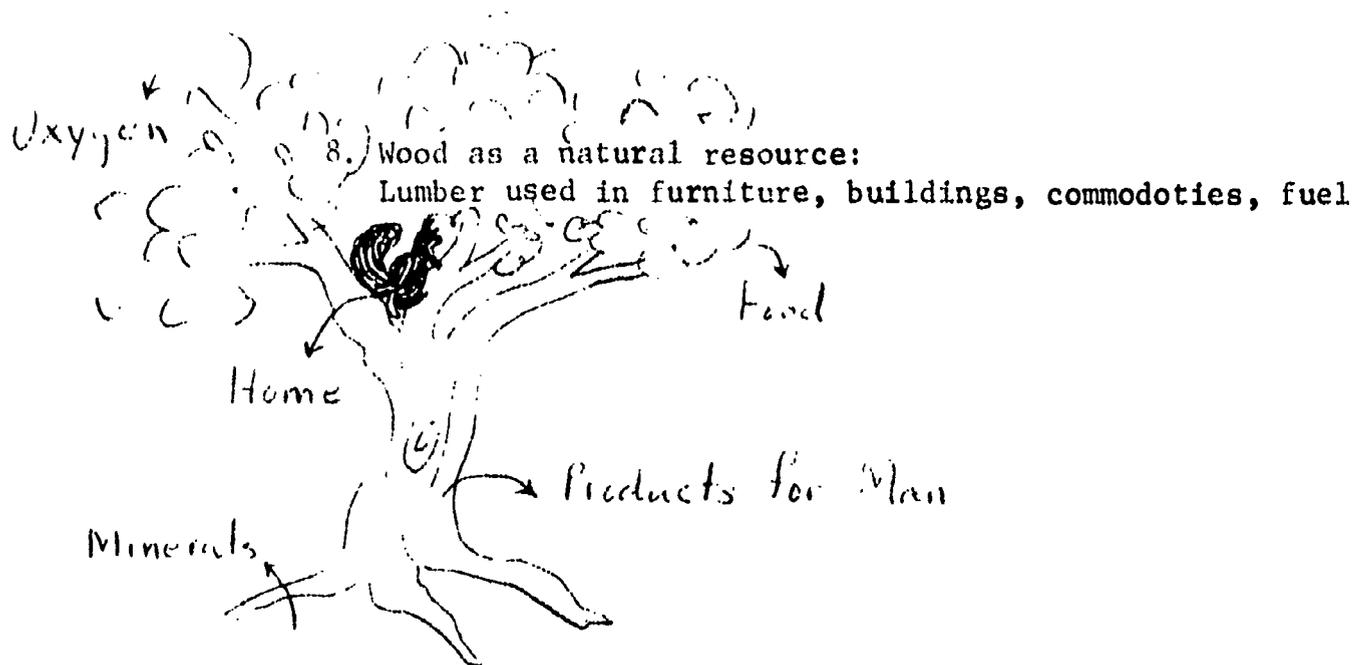
Evergreen trees -- Green year around.

Compare:

1. Leaf and/or needle structure -- as to shape, vein structure, base of leaves, tips of leaves, size
2. Bark patterns
3. Young vs. old
4. Quality of wood -- hard, soft, brittle, resilient. Find out what makes them so.
5. Burning quality -- fast, slow, clean, smoky.
6. Root support system -- surface feeder, tap root system

Activities to accomplish above

1. Tree treasure hunt: Define 2 - 3 areas of museum. Send teams of 3 - 5 Scouts to different areas to find a leaf of several different kinds of trees. On return discuss properties of trees identified.
2. Tree scavenger hunt: Find parts of trees --
 - a. leaves of specific trees, different leaves that have similar tips, bases, vein structures, etc.
 - b. pieces of bark -- or bark rubbings
 - c. nuts, berries or blossoms.
 - d. twigs from branches of different trees
3. Study of Tree Communities versus Human Communities as to need for water, air, space, food, etc. How does each requirement affect growth?
4. Twig matching -- give players a twig. Send players out to find trees with matching twigs. Pick a leaf from the tree. Return and identify the tree by comparing leaves with leaves picked and identified by the leader beforehand.
5. Tree story. Pretend you are a particular tree. Write a story about your life as a tree would tell it.
6. Identify and locate the largest tree of a species (largest oak, pine, dogwood, etc.) in a certain area. Measure, and record height, trunk size (diameter and circumference) spread of branches, etc. What is the tree's age?
7. Make leaf collages, bark rubbings, leaf rubbings, etc.



Americans use an average of 500 lbs. of paper per year. The demands for wood, paper and various products of the forest are enormous. Just to be able to print one edition of the Sunday New York Times for just 1 million people, 140 acres of timber (pulpwood) are needed.

- For 1 million people, how many acres of timber must be cut for a year or Sunday papers? For a paper each day? (Multiplying that amount for the millions of U.S. citizens makes one realize that it is a staggering amount of pulpwood that is used each year.)
- As our population grows, how will this affect our resources?
- Discuss space for homes and how this might affect the acres set aside for timber farms and our agricultural needs.
- What other wood products do we use? (Look around the room and see how many wood products you can name.)
- What about our homes? Do we use wood in their construction? Public buildings, etc.?
- How is wood used for fuel? (To make charcoal, alcohol, etc.)
- What other by-products do we get from trees? (Fruit, nuts, syrup, rubber, etc.)
- What kinds of trees are grown in Florida? How are they used? (Slash pine for pulp; citrus for fruit, Many ornamentals for decoration, etc.) Paper projects, wood products, paint products from wood.

9. In each study area, consider sounds, how trees are growing, animals that might live in the area, effect of humans on the area.
10. Build two fires -- use soft wood for one, hard wood for another. Observe the burning qualities of each. Which would make a better cooking fire, heating fire?

11. On going project -- Make a display of wood, Get rough wood from lumber company (small pieces), leave one piece rough; plane and sand another piece; plane, sand and finish with varnish a 3rd piece; locate a 2" section or original tree. Cut 1' length, cut one end diagonally,



. Slice one side as follows:



12. Which trees and shrubs growing in natural settings? Which are desirable for planting around homes in the city? Consider raking leaves, dropping fruits, shade producing and other qualities for landscaping. Why would plants that occur in an area naturally be more suitable for landscaping than introduced ornamentals?

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ACTIVITIES FOR LITTLE FOLKS AT THE
TALLAHASSEE JUNIOR MUSEUM

September 1974

Developed By:

Judy Girvin

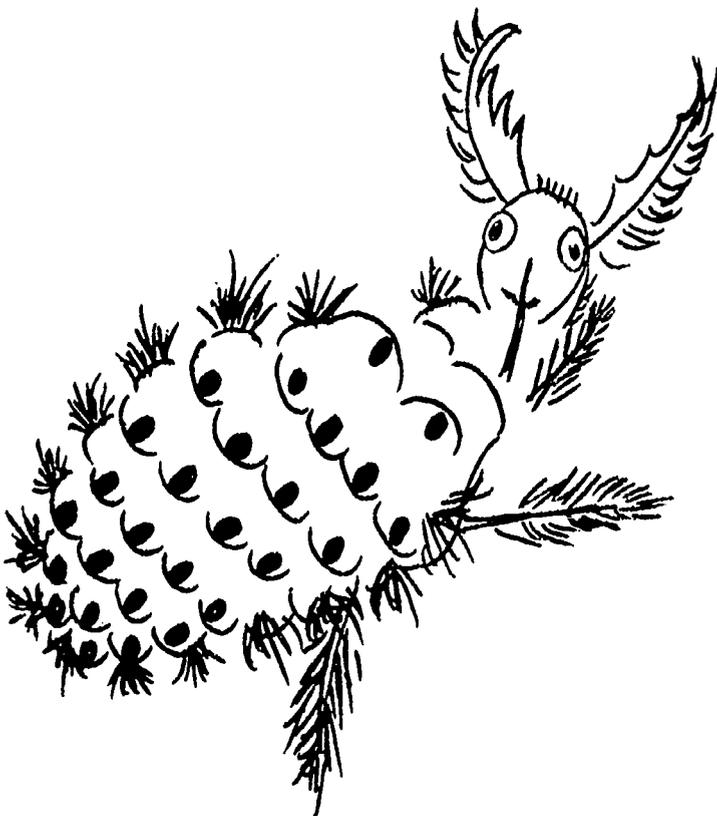
Ann Mathews

Debbie Kimball

Helen Brissett

Shirley Eikeland

and the Project Staff



"Doodle bug, doodle bug, fly away home."

Purpose: To further the following:

Concept: There are so many strange and wonderful things around us.

Aim: To give an experience which will sharpen the awareness and stimulate the sense of wonder.

Location: All areas

Activity: Look in the sand under the buggies at the Buggy House, under the caboose, under the shelter west of the main buildings, or in the deserted sandy roads near the Murat Home. Find those little funnel-shaped pits which look much like where rain has dropped from the roof's edge. See if you can capture an ant lion and look him in the eye!

To capture him you may do one of two things: Take a slender twig and stir gently round and round, watching for a soft-bodied, grey little insect to "surface." Or, gently scoop up in the palm as much sand as you can from the area of the "dimple." Sift through this for the animal.

Why does this insect choose this habitat? What does it eat? How often does it have to eat? How is its home adapted to its survival? What is its future?

Carry a magnifying glass--or better yet, a magna-vial--to inspect him more closely. Isn't he a magnificent beast, worthy of the name "Lion"? Put him back into the sand and watch his movements.

For Your Information

The ant lion is an insect with his six legs fastened to his plump and hairy body close behind the head. A wicked looking pair of sword-shaped jaws stick out front as though they mean business. Ferocious as he looks, he can only walk backwards. He uses his tail as a shovel, piling sand up on his body as he backs 'round and round.' Ever so often, with a jerk of his head, he lays the sand to one side.

The pit which he makes in this manner is his home as well as a trap for an unsuspecting ant to slide down the slope to Mr. Ant Lion waiting in the center. When this happens he grabs his prey, sucking out the juices after killing it with those long, sharp jaws.

The ant lion is the larval (young) stage of a flying insect which looks like a dragonfly.

Follow Up: Select a place at your home suitable for the introduction of this pet, and start your own "Doodlebug Farm."

There are hundreds of specimens of this insect. Find out more about them at your local library.

Togetherness

Purpose: To further the following:

Concept: Plants and animals are interdependent within an environment.

Aim: To sharpen children's awareness of plant-animal relationships.

Location: Nature Trail

Activity: Look for "humps" or odd-looking swellings on the leaves of plants, along stems, on buds, flowers, under the bark, or even on roots. These are galls, Pick some of them.

Describe the gall which you have selected. Do you think the insect is still there? Open it. Is he still present? What does the inside look like?

What use was this home to the creature? After the owner has flown, does it have any further use? Can man use this gall -- or any other gall -- in any way? How?

Does the gall hurt or injure the host plant? Does it help the host? Speculate on how the gall contributes to the balance of nature.

For Your Information:

A gall develops when an insect lays her eggs on a chosen plant and at the same time injects an irritant. The plant can't scratch that irritation, as we could, but it does swell up.

There are about 2,000 different kinds of gall makers in America alone--insects, mites, fungi, bacteria, nematodes. Each likes a special plant and even a special part of that plant.

The gall makes an almost ideal dwelling place. The insect is not only partly protected from predators, but he is less affected by the weather, has less chances of drying out, and is surrounded by his food supply which is high in protein.

Follow Up: Select several different kinds of galls which have insects still inside. Break a portion of the twig and place each in a separate jar with damp soil and holes punched in the lid. Now watch to see what kind of insect hatches from each gall.

Learn something about symbiosis. Is this a symbiotic relationship? Who profits from this partnership?

"Togetherness" or

Symbiosis

Purpose: To further the following:

Concept: Two forms of plant life can be interdependent within an environment.

Aim: To sharpen children's awareness of plant relationships.

Location: Nature Trail

Activity: Let's go looking for lichens (lie' kuhns)! In fact, let's see how many different ones we can find. Look on the fence rails, tree trunks and limbs, and in waste places. Back of the Murat Home you will find the red-tipped lichen (scarlet-crested cladonia) which we call British Soldier. Reindeer moss carpets sunlit, open areas there, and it is NOT a moss. What is a lichen? What is its range? What are some of the uses for lichens?

For Your Information:

Let's learn a big word which means "living together." The word is symbiosis (sim - bi - o' - sis). These two plants we are talking about which are living together are alga and fungus. (Plural is algae and fungi.) The fungus has no roots, stems, or leaves and has no chlorophyl or green coloring matter. Therefore, it cannot make its own food. The fungus has the equipment for taking food, so the alga spores grow in this food-taking network. Together they make a new plant -- lichen -- with each of the two original plants helping the other. The fungus gets its food from the alga; the alga gets protection from the fungus. Many lichens serve as food for man and animals. Certain alga are used to make dyes. And they are all interesting in patterns and form!

Follow Up: Gather some of the sponge-shaped lichens and make your own Ming Tree. When the lichen gets brittle and dry, spray it with a fine mist, and it will become soft again. In the woods off Springhill Road, around Dog Pond etc. you will find it growing in quantities.

Place some lichens in your garden and see if they will grow. Try to match the habitat with the one it grew up in.

Learn something about the three kinds of symbiotic relationships:

1. When both partners receive benefits.
2. When one benefits but the other pays the bill (parasitism).
3. When one is sheltered by the other and takes what "crumbs" are left over as food, doing no harm to the host.

Remember this kind of "togetherness" on symbiosis can be a plant-to-plant relationship or a plant-to-animal partnership.

Dragonfly

Purpose: To further the following:

Concept: There are many strange and wonderful things around us.

Aim: To give an experience which will sharpen the awareness and stimulate the sense of wonder.

Location: Nature Trail

Activity: Anywhere on the grounds -- but especially near the water -- look for the dragonfly with his 3-inch-long slender body of green, blue, red, yellow or brown and his four iridescent wings which never fold up for rest. If one flies over, hold your arm high with finger extended. Remain perfectly still. A dragonfly may decide to pause in flight--right on your finger tip! With his three pairs of legs he may "feel" your finger--but bite? Never!

Do all dragonflies look alike? Can you guess at his age-- or how long it has been since he was an egg? What do you know about his eyes? His vision? Where does he fit in the food chain?

Pretend you are walking with your mother and it is 500 million years ago. That's too much time to even try to think about, isn't it? But if it was that long ago, a dragonfly with a wingspread of $2\frac{1}{2}$ feet -- almost as long as a yard stick -- just might fly right over your head! Seeing the smaller ones today is like seeing living fossils.

For Your Information:

Dragonflies are really a kind of super insect. They can spot a moving object 18 feet away and locate a motionless one at six feet. They can fly up to 60 miles per hour and can turn instantly. This helps them get away from things which want to eat them. They eat in flight. They mate in flight, and you might spot a female dipping down to the water's surface to deposit her eggs. The nymph (young) which hatches in 5 to 15 days is ugly and hungry! As the numph grows he has to shed his old skin 12 or more times. This could take from 1 to 5 years. Then he leaves the water, loses his gills, breathes air and flies.

Follow Up: Get some books from your library and read about the dragonfly. Get one with pictures of the stages of development. The numph deserves the name of DRAGON fly. Learn to distinguish the dragonfly from the damsel fly and the mayfly.

Figure out how big your eyeballs would be if they were as large as the dragonfly's in proportion to his body.

Draw the insect stages of the dragonfly.

An Insect Hunt

Purpose: To further the following:

Concept: There is so much in the world which is wonderful!

Aim: To sharpen the awareness of the vastness of nature and to stimulate the sense of wonder.

Location: Nature Trail

Activity: Armed with a pad and pencil start out on an insect inventory. All you have to do is polish up your knowledge of what an insect is, open your eyes and get your memory going so you will count each kind only once.

Does the same insect look the same in all of its stages? Do you know some in one stage and fail to recognize them in another? Insects have scientific names. Do you have to know these names to enjoy knowing the insect? Do you know some by nick names? Are you seeing any insects today which you have never seen before? If your answer is "yes" can you figure out why this is so?

For Your Information:

Insects make up the biggest form of animal life. In fact, if you started studying insects the day you were born, and if you studied a new one each and every day of your life, guess how old you would be when you finished your study? You would have to be more than 2000 years old!

Insects NEVER have more than three pairs of legs. In addition, most adult insects possess one or more pairs of wings. These six legs and the wings are ALWAYS attached to the middle or chest section. The adult insect's body is divided into three distinct parts. They are the head, the chest, and the hind-body.

Follow Up: Pack a magnifying glass when you make any trips to the Museum, to the city parks, or just along the roadside or into your own yard. It opens up a whole new world of discovery.

If you are really serious in your interest, you might start an insect collection. If you do, go to your library to learn how to trap and how to mount your specimen.

HOLES

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Purpose: To stimulate the child's thinking and observing of likenesses and differences

Location: Any area

Activity: Sing- Oh no, don't let the rain fall down.
Oh no, don't let the rain fall down.
Oh no, don't let the rain fall down,
My roof's got a hole in it and I might drown!!

Holes, holes, holes -- they are all around you! Let's take a walk in any one of the areas and look for them.
How can you see something when it isn't there?
That's what a hole is...a piece of air!

Note: You can change this activity by going in different areas. The following are some questions you might use to start your child thinking about what he sees:

- How many different kinds of holes can you find? Keep a tally or list.
- How are they alike? Different? How are they used? Who or what made the holes? Why? How are they used?
- Do you have holes in your head? How many? What are they used for?
- What are some bad things about holes? What are some good things about holes?

Some possible holes:

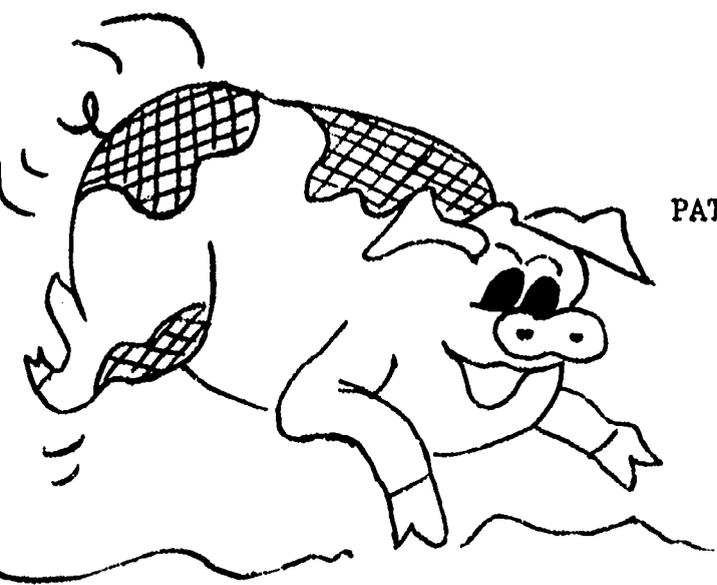
Animal homes -- bird's nest, snake hole, ant hill
Holes as a result of decomposing, wind damage, erosion
Results of animals searching for food -- Woodpecker, Bugs
Peep holes -- key holes - electrical outlets - beehive - straws-
bottles - cans - wheels - inner tubes - doughnuts - tele-
phone dial - etc.

Follow Up: Look for holes around the home.

Check out from the library:

The Hole in the Tree by Jean George to find out if you missed any!

The Tale of Peter Rabbit by Beatrix Potter to find out how many holes this mischievous little rabbit got into and through!



PAT THE PATTERN PIG

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Pat, Pat the Pattern Pig
Sees a pattern
And dances a jig.

Pat, Pat the Pattern Pig
Flip my wig
I see _____.

Purpose: To increase the child's awareness of how shapes/designs repeat to make larger patterns and the likenesses and differences in his environment.

Location: Pioneer Farm Area

Activity: Let's go to the Farm Area and play Pat the Pattern Pig's Game. Patterns are the way we see things arranged. If you look closely, you will probably see one small part of a shape repeated over and over again -- sometimes the same size, sometimes smaller or larger.

Say the jingle and fill in the last line with a pattern you see, then let your partner find another. Your turn again! Keep going until someone can't find a pattern. The last one to be able to find a pattern is the winner!!

Hints: wagon spokes, butterflies, fences (wooden, wire, etc), siding on a building, plants, leaves, flowers, garden rows, markings on the animals, reflections in glass/water/mirrors, vegetables, fruit, spider webs, etc.

Variations: Change the location -- go to the other areas -- buildings, Nature Trail, Caboose, etc.

Follow Up: Make a collage from different pieces of cloth -- checks, dots, plaids.
Check out from the library:
Toucans Two and Other Poems by Jack Prelutsky and/or
Bruno Munari's Zoo

*Both books are excellent for patterns in the illustrations and the poetry gives the patterns of sound.

WATER, WATER EVERYWHERE!!!

Where does it come from? Where does it go?

Purpose: To help the child become more aware of water and to realize that it has many different sources, and comes in many different types, and serves a variety of purposes.

LOCATIONS: Nature trails

ACTIVITY #1: Super Spy!

While walking along, have the child see how many different places he can find water. Have him tell whether he thinks that water was there yesterday or if it will be there tomorrow.

Examples: On leaves, in puddles, lakes, the swamp, and streams.

ACTIVITY #2: Private Eye!

What color is water? Blue? Clear? Some people can only find one color but the clever ones can find four or five!! Use Your Eyes!!! How many can you see?

Mystery Bonus! Can you solve the mystery of all the different colors?

(HINT) Think back...some water was moving and some water was still. Was moving water a different color from still?

(HINT) Some water you can see through and some water you can't. What were the colors of the water you could see through? If you couldn't see through it, what was hiding the bottom? (mud, plants??)

ACTIVITY #3: How Did It Get In?

Pretend Time!! You are to pretend that you are hired to get rid of all the water you can find along the trail!! Before you can get rid of it you must find out how it got there. For each place you find water, tell how you think it got there.

Possible Ways: From rain, a stream, an underground spring, man made.

FINDING A FROGHOPPER

Purpose: To further the following:

Concept: There are many strange and wonderful things around about us.

Aim: To provide an experience which can sharpen the awareness and heighten the sense of wonder.

Location: Nature Trail

ACTIVITY: Hoppers, hoppers, -- all kinds of hoppers! There's the grasshopper, the leafhopper, the frog hopper, the treehopper -- to mention just a few. But it's the frog hopper we want to look for today. You'll find him -- or at least you can see where he's hiding on grass blades or the stems of bushes and plants, usually where the leaf joins the stem. Look for a mass of foam. It looks like beaten egg white.
Why has the frog hopper chosen a "house of foam"?
In what ways does it protect him?

For Your Information:

The nymph (young) of the frog hopper has many enemies. During his early life he can't fly -- he has yet to grow wings. He can't hop until he gets his jumping legs. So he pulls a sneaky-beaky trick by building a home like none other in the insect world. He lives on the sap of plants. Shortly after birth he starts secreting a liquid. He beats this liquid with his tail until it foams all over him in a mass of bubbles. There he is safe, just like in a castle.

The white froth is sometimes called "cuckoo spit". Make up your reason for this name.

Follow Up: Look within the "cuckoo spit" and find the insect.

In the library find pictures of this spittle insect. Read about his habits and how he looks.

DOES LOOKING MEAN SEEING? OR: IS LOOKING SEEING?
IS SEEING OBSERVING?

Purpose: To further the following:

Concept: There are different degrees of observation?

Aim: To sharpen the ability to look at things -- to really see.

Location: Nature Trail

ACTIVITY: Armed with a magnifying glass, two to three yards of cord, and a three by five card go into the nature area. Tie the cord to form a circle on any chosen area where it looks like things are happening. Down on your belly with the magnifying glass examine the life going on.

Is there visible plant and animal life in your area?
If so, are they interdependent in any way? Are the animals "passing through" or do they live here?

And/Or

Find a comfortable place on the Nature Trail to relax. Punch a little hole (a tiny one) in your card. Hold this close to your eye to frame something of interest. Really look at your subject.

Think of at least a half dozen words to describe the shape, colors, texture of your framed subject. Think of words you could use in telling someone about how you feel when you observe something you like. Observe the colors. Are there greyed areas? Are there shadows? Experiment with smaller and with larger peep-holes. Which sharpens your observations most?

Follow Up: See if you can get a magna-vial to do some really close-up observations of plants and animals. Keep it with you to observe the minute and the unexpected.

Look for life on an old tree stump. This miniature world could be called a microcosm (my' crow Kaz' um). Aren't big words fun! Observe your miniature world for the plant and animal life there. Think how you would describe your microcosm to someone who had never stopped to look.

INSIDE, OUTSIDE, UPSIDE DOWN LAND

Purpose: To increase the child's ways of looking at things.

Location: Nature Trail

ACTIVITY: This activity takes place in another land -- Inside, Outside, Upside Down Land. Oh, how do you get there, you ask? It's easy -- everyone gets there in his own way -- a cock of the head, a wink of the eye, a twist of his body and here we are. It's all in the way one looks at it!

Try to think of as many DIFFERENT NEW ways to see things.
On your mark, get, set, LOOK!!!

(HINT) Keep encouraging and praising your child for each DIFFERENT way. Some possibilities: alternate eyes, look through a hole made with your fingers, upside down, between your legs, far away, close up, through some moss, from behind a tree, etc. Possibly you might have a magnifying glass. Place your hands on the sides of your eyes to make you look forward only. Change what you're looking at -- for example; leaf or moss -- fold, crumple.

Thinking time: How did things seem to change when you changed the way you looked at them?

Why do things look so differently when you change your way of looking?

Imagine what it would be like if you walked on your hands -- how would you change? Eat? Play? What are things you couldn't do? What are things you could do?

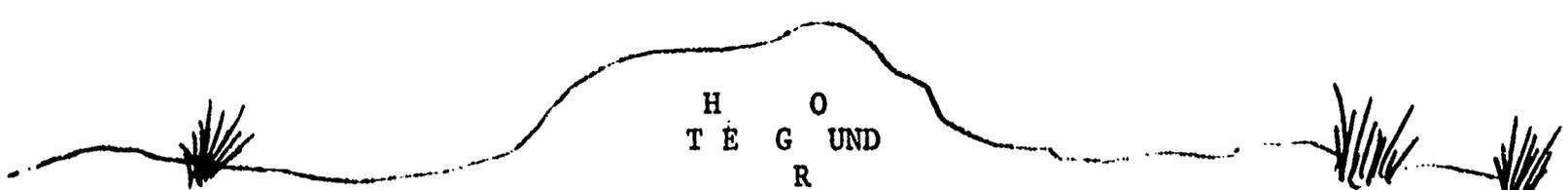
How do animals see their surroundings? Fish? Opossum? Ant?

Follow Up: Enjoy the following books:

Inside, Outside, Upside Down by Stan and Jan Berenstain
and/or

The Blind Men and the Elephant written by Lillian Quigley

Are there other ways to "see" things? Through your senses -- touch, smell, taste, hearing?



H O
T E G U N D
R

Purpose: To increase the child's awareness that living things are dependent with each other and their environemnt.

Location: Any area

ACTIVITY: OUCH!! Watch out where you're stepping! I'm getting tired of being walked on all the time. That's right - YOU - kicking me around. You just USE me but you don't care. When was the last time you looked, I mean really looked at me? As long as I am sandy when you are at the beach and squishy when you make mud pies -- but what do you care? What! You say you do care and you're going to look at me right now. Oh boy!!!

Take a walk looking at the differences and likenesses in soil. Let the child trace around his foot and focus on that small area. Some questions to start some thinking might be:

Do you see any leaves? Sticks? Stones? How did they get there?

What color is the soil?

Is the ground soft, hard, damp, wet? Describe.

Are there signs of any animals? What are they?

How is the soil from different places alike? Different?

Is anything growing in your soil sample?

What is beneath?

Compare the ground of at least three different places.

Some suggestions:

near the water

on the trails

off the trail

open spot

spot with a lot of shrubbery around

different areas of the farm

Follow Up: Draw or paint pictures of three different places you like to be that have different kinds of soil.

-- Plant a simple garden -- prepare the soil.

YOU AND YOUR FAMILY!

Purpose: To help the child become more aware of each individual's role in the family and the fact that everyone's family is unique and different.

Location: All animal habitats and exhibits.

ACTIVITY #1: While walking around through the different areas, have the child:

1. find as many animal families as he can.
2. tell you some things that the mother animal does for the baby animals -- for the family.
3. tell some things that the father animal does.
4. tell what the baby animals do for the family -- for each other.

Now have the child tell you how these things are like or not like what goes on in his family.

(HINT) In 2-4, ask questions that encourage the child to use his imagination!

ACTIVITY #2: SEEING ALL AROUND THE WORLD!!

Now bring out the child's thoughts!

Do all the mothers and fathers of all the animal families do the same things? What do they do alike? Differently?

Does everyone in your family do what everyone in your best friend's family does? What is different?

Do you think people in families long ago did what mothers and fathers do now? What different?

Do you think people in other families in other countries do the same things as people in yours?

Follow Up: ART, ART, ART!!!

Give the child crayons or paints: Tell him that he is to pretend that he is a camera and to make pictures of everyone in the family doing the things which they do to help other people in the family!!

Have him tell you a story about what is going on in each picture!

(BIG HINT) Praise all the drawings! It's not how the child draws -- it's what he draws that matters!!!

IMAGI - NATURE

Purpose: To increase the child's awareness that living things are dependent with each other and their environment.

Location: Nature Trail

ACTIVITY: Just imagine - what would happen if all the trees suddenly turned to stone?!

Take a walk on the Nature Trail - observing the different trees. Also look and think about all the living things on, in, and around the trees. Notice the various stages of tree life - young saplings, grown trees, and dead, decaying trees. Can you find any tree products? (fences, signs, bridges)

Now, what would happen if the trees turned into stone?

What would the animals that make their homes in the tall trees do? Birds? Raccoons? Insects? Animals that climb trees -- bears?

Would the trees continue to grow?

How would someone cut down a tree? Would the leaves fall?

What would happen if a leaf fell? What would happen to the air that the nice green leaves now help keep clean for us?



Would the leaves change color in the Fall? Would the wind blow through the leaves -- bending and swaying the trees? What would we do without the things which are made from trees -- paper, pencils, buildings, furniture, baseball bats? Could this ever happen? Why or why not?

Follow Up:

Draw a picture of this imaginary stone forest.

Look up in a dictionary -- petrified.

Collect different kinds of wood.

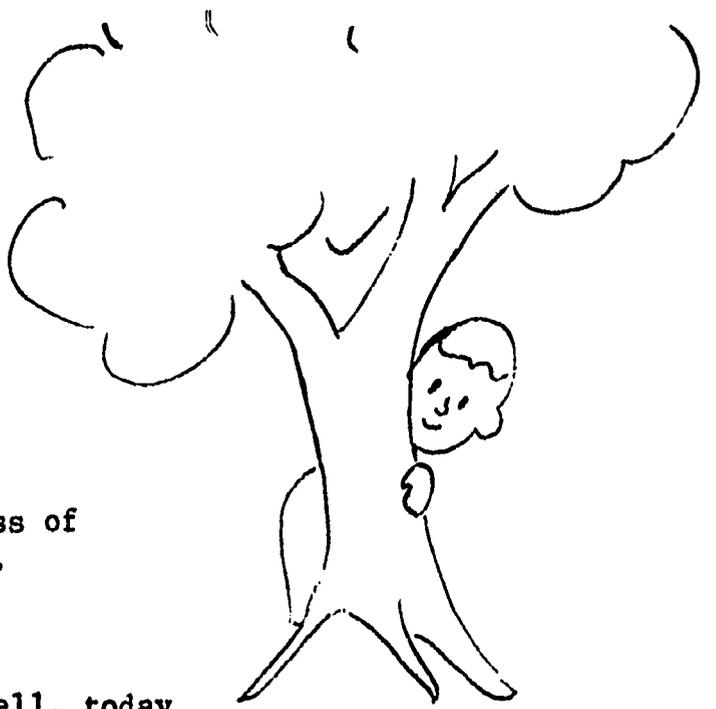
Draw a picture of all the things in your home made from wood.

Check out from the library:

The True Book of Trees written by Illa Podendorf
and/or

Sylvester Jones and the Voice in the Forest by
Patricia Martin

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SIGNS OF MAN

Purpose: To increase the child's awareness of how Man changes the environment.

Location: Nature Trail

ACTIVITY: Have you ever been hunting? Well, today we're going on a hunt for signs of man...that strange creature that changes his surroundings. He isn't very careful about covering his trail, so-o-o it should be easy. Find 3 in each row.

M

Messy
litter/trash/etc.

A

Acts of Work
construction

N

Noises
voices/planes/etc.

1.		
2.		
3.		

Did you discover more? GREAT!

Could someone follow your trail? Which category would help them?
Noise?

Does Man help or hurt where he goes? How?

What are some ways you can think of for Man to help more?

Follow Up:

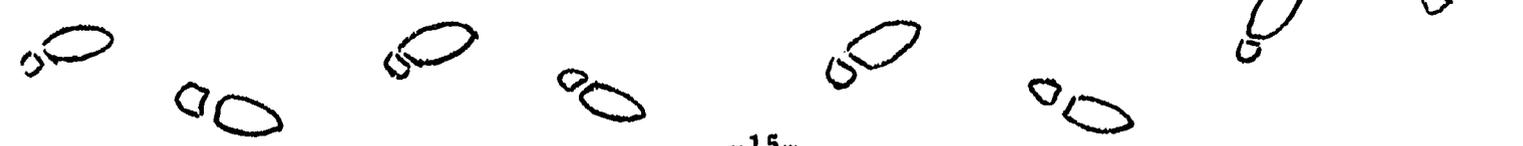
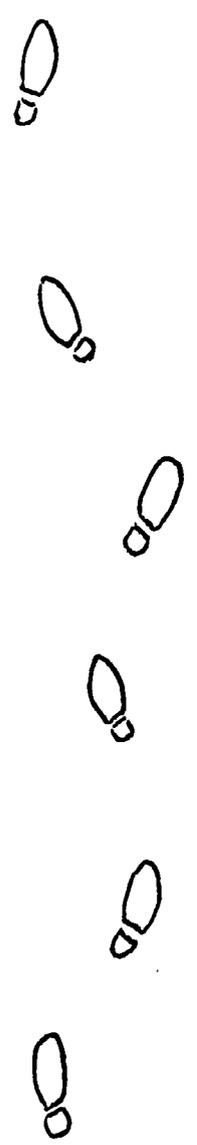
Make a poster or model of pollution.

Draw or paint a picture of a beautiful place Man has helped.

Check out the book -- Who, What, and When by Illa Podendorf --
from your library.

Collect bottles/cans/newspapers for recycling.

Clean up your yard.



SEQUENCE OF EVENTS AND CHRONOLOGICAL ORDER

Purpose: To increase the child's awareness of time and order

Locations: Farm and Nature Trails

ACTIVITY #1: OLDER AND YOUNGER GAME!

Starting with "Who is older? You or I?" continue with a running list, having the child tell whether things are older or younger than the last thing mentioned!!

Example: Now..what's older than me?
What's younger than that?
What's younger still?
Now tell me something older than that!

ACTIVITY #2: PRETENDING TIME!!

Find something you like outside (bird, tree, leaf, bug) and pretend you are one. Now pretend you can talk and tell someone all about your life. Start when you are very young and tell how you grew and some things that happened to you. Try to keep them in the order in which they happened.

ACTIVITY #3: FIRST AND LAST

Give the child three things! Have him tell you which came first and which came last!

Example: LOG, SEED, TREE
SUNSET, SUNRISE, LUNCHTIME
NEST, EGG, BIRD
PLANT, FLOWER, BUD
RAINBOW, RAIN, CLOUD
MOSQUITO, ITCH, BITE

(BIG HINT) Accept any answer or order that the child can justify!

Follow Up: Pick a place on the way home or at home or that you pass and let the child tell you what happens there at different times of the day (morning, evening or late at night) or different times in history, (a field, a building, rubble, etc.)

TEXTURE

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Purpose: The child will become aware that many different objects have different TEXTURES, and develop and use different vocabulary words to describe the various textures (Rough, Smooth, Hard, Soft, Cold, Warm, Round, Flat, etc.)

Location: Entire Museum

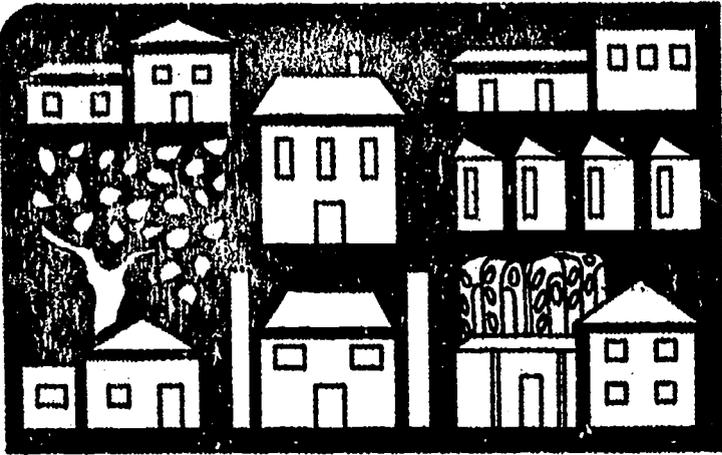
ACTIVITIES: 1. While exploring the different areas of the museum, have the child feel the texture of varied things.
Examples: different kinds of bark, Spanish moss and deer moss (one is soft, the other quite hard and brittle), the sheep's wool, berries, rocks, sand, dirt, different leaves. These are only suggestions, there are many, many things to feel at the Museum.

2. Collect some of these things that the child has found that have different textures (example: deer moss and Spanish moss, bark, sand, leaves, etc.) Pick only what you need, and let the child take these items home to explore further.

Follow Up: Have the child make a collage of the items that he brought home. He may glue them on paper to do this.

Put several items found around the home (example: pennies, velvet, stain, burlap, eraser, marshmallow, different fruits, etc.) in a paper bag. Have the child close his eyes, pick out one of the objects and try to guess what it is. Try to have the child describe the objects with as many words as he can; don't be satisfied with only one or two adjectives.

Start with two of the above items and ask for adjectives describing the ways the objects are alike and the ways they are different. Increase the number of objects. Don't be satisfied with one and two-word descriptors!



ENVIRONMENTAL ACTION PROJECTS

Prepared by

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Tom Morrill
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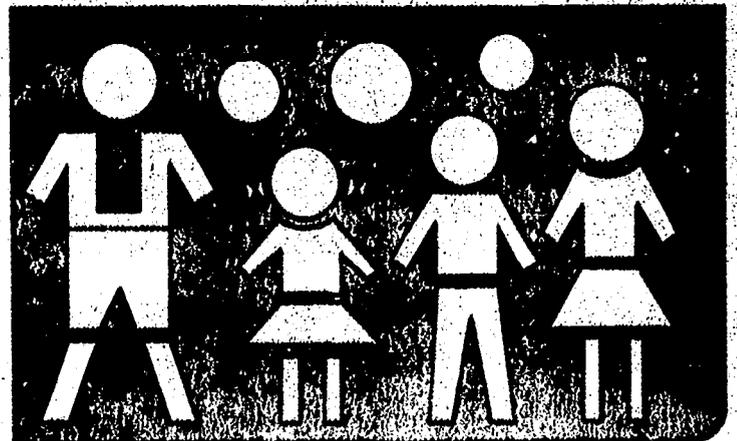
Big Bend Sierra Club

Judy Girvin
Sam W. Kates

Tallahassee Junior Museum

With the Project Staff

November, 1974



00067

Students should not play life, or study it merely, while the community supports them at this expensive game, but earnestly live it from the beginning to the end. How could youths better learn to live than by. . . . trying the experiment of living?

--Thoreau

Reknowned as one of America's first environmentally concerned citizens, Thoreau challenged teachers and parents to get students out of the classroom and permit them to learn where it really counts--it their communities, working with others on real problems. This insures that education will be more meaningful and relevant to students and to their communities. It enhances the probability that environmental quality can be improved or sustained.

The following activities are provided as suggestions. . . suggestions to spark the creativity of students and teachers, adult community leaders and youth, who will know the environmental problems in their own communities and will need to design an action program to fit their situation. We have listed them in three categories: Environmental Education, Environmental Community Service and Public Affairs. As you read over the following suggestions, think about your local eco-problems and what you can do.

A. ENVIRONMENTAL EDUCATION

Educational projects involve teaching one's self as well as teaching others. For students in school, it is easy to see how science classes, geography classes, economics and government classes, and social studies classes might work on significant educational projects.

1. Write a series of stories on environmental events. Tape record them and let the public library loan the cassettes to parents for their children. Conduct a campaign to inform parents about the tapes.
2. Conduct a series of poetry readings or storytelling sessions for younger children. Go to elementary schools or day-care centers -- or arrange sessions at the public library on Saturday mornings. Use environmental stories and poems so that children can think and chat about nature.
3. Prepare a series of quotation books or photobooks using old magazines. Call them "The Reflection Series" and donate the bound copies to the public library.

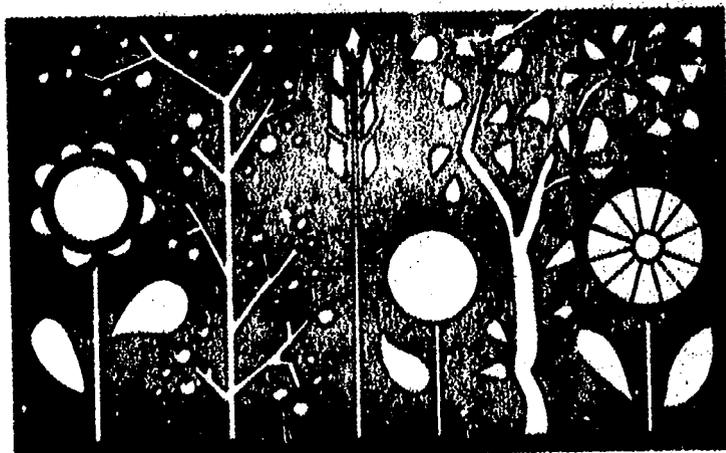
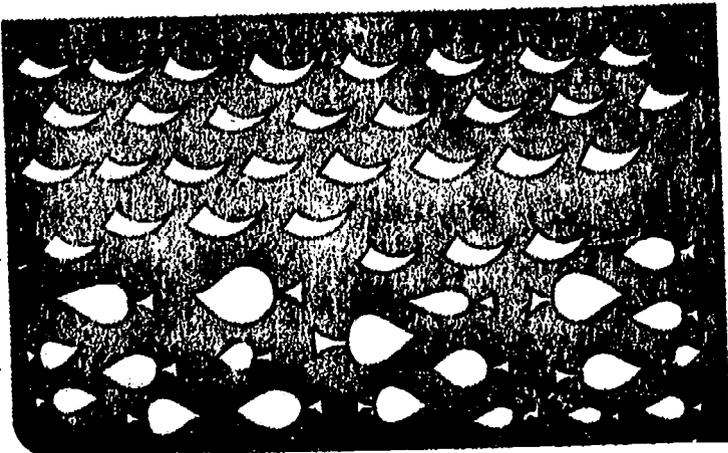
4. Set up an Environmental Study Area for your school or club -- or for elementary school students. Write to the National Park Service about its S.T.E.P. program.
5. Write a series of haiku (short poems) on natural beauty in your area. Arrange for the local ETV station to broadcast your poetry reading. Or print up little booklets and distribute them in the community -- especially to senior citizens.
6. Hold an Environmental Festival to celebrate natural beauty. Invite and arrange transportation for senior citizens and then, spend a sunny afternoon singing and talking with the elderly on the joys of a clean environment. Share and learn from one another.
7. Make a set or two of shadow puppets. Write some environmental stories (romances and mysteries). Put on shows at the public library, in elementary schools, and in shopping centers.
8. Write up dilemma situations dealing with the environment. Present the case studies to others and discuss their decisions on those cases. Try to involve groups with young persons and older people.
9. Design and teach a mini-course on bike repair for persons of all age groups. Repeat the mini-course each time you can get an audience together. Encourage more bike riding and less automobile use.
10. Help some younger students write a newsletter or write a booklet on an environmental issue. See that the book gets to a library, or that the newsletter gets printed and distributed.
11. Using a book by Roger Tory Peterson, prepare a big set of bird study cards. Work with teachers and camp counselors in using the cards in bird study situations.
12. Design environmental playgrounds for children. Share your plans with others. Get their reactions and help. Find an open space or an old playground and see what can be done to improve it.
13. Get information on the S.T.E.P. Program on the National Park Service, Washington, D.C. Put on STEP programs for children in your community.
14. Hold an environmental art class and festival in a city park. Display art made of junk. Teach people how to use trash and junk to produce useful of beautiful things.
15. Make a slide set or picture card set of contrasting natural scenes. Interview people to find out where they would like to live -- choosing one of the two pictures in each comparison. After going through several choices, ask them to summarize their "place to live" preferences. As they leave the interview, ask them to think about their town in the next twenty years -- will it meet their preference as a "place to live?"
16. Plan a bicycle round-up for persons in your community. Arrange bike tours around your city. Plan plenty of stops to explore and to experience.

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17. Conduct a community canoe trip or rubber-tube float down a river. Build in many stops to explore and to reflect.
18. Plan and teach a mini-course on alternative lifestyles and their environmental impact.
19. Conduct a poster contest dealing with Urban Design. Award prizes for various age and interest groups. Involve the whole community. Hold an open-air showing in a park.
20. Work with your history class to do a study of the growth of your city and the environmental impact. Get data from older persons who have experienced your city for a long time.
21. Hold a town-wide environmental fair. Close off streets. Arrange for booths selling "junk art," white elephants, handicrafts. Have plenty of natural foods. Have booth which provide mini-courses on natural dyes, baking natural bread, bike repair, art forms, etc. Have information booths run by wildlife and environmentalist groups.
22. Design and conduct a variety of environmental experiences for others, i.e., nature walks, aesthetic walks, bird study, and clean-up hikes.
23. Do an 8mm film or a video-tape for an ecology class or an environmental club. Focus on a key natural process or a problems.
24. Set up a bee colony or an ant colony for elementary school students. Write a little guide book to help them to observe and to learn.
25. Arrange for a group survival campout. Take along a leader who knows natural foods in your area and camp for a weekend -- living off the land and learning.
26. Do a Foxfire book on handicrafts which save energy and revive pride in craftsmanship. Distribute your book to public libraries.
27. Serve as an assistant to church or school teachers and prepare teaching ideas and exhilarating environmental experiences for children.
28. Contact State, local, and federal agencies to get brochures and flyers. Put together and distribute "Environmental Information Kits" for schools and civic groups. Do a follow-up study to see if schools and civic groups used the kits and assess the impact of that use.
29. Keep a chart of things that change as the seasons change. Do a mural for your school or a bank lobby depicting these changes over a year's span.
30. Build a balanced aquarium or terrarium. Place it in a public place with posters to show how living things depend upon each other -- "The Web of Life."
31. Do a drainage study of a place in your community. Compare asphalted areas, grassy spots, and land cleared for construction. What happens to water run-off? Report to the public and to governmental agencies.

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32. On weekends in your community set up SOIL MAKING booths in local shopping centers. Get people to stop by and explain to them how soil is made, how precious it is, and how we are adversely affecting soils and soil quality. Use charts, posters, and demonstrations (rub stones together, samples of humus, etc).
33. Find a place in the school grounds or in the community where the land is bare and the soil is washing away. Conduct a demonstration project on ways to hold the soil. Attract visitors to this place and distribute Soil Conservation Service (UD Department of Agriculture) literature on soil conservation.
34. Help your school and/or neighborhood librarian set up a special section or display of environmental books.
35. Convince a local book store to donate a series of environmental paperback books for the hospital library.
36. Teach children younger than you to identify five kinds of trees. If you don't know five kinds, get some one to teach them to you.
37. Make a display showing the similarities and differences between five neighborhood trees.
38. Make a display with pictures or drawings dramatizing the food web in your neighborhood. Be sure to include yourself. Get a grocery store to hang your display.
39. Get a copy of David LaHart's article, "Florida's Endangered Dozen," Florida Wildlife, and inform persons about the problem as it relates to your area.
40. Arrange bicycle tours of water drainage and water quality problems in Tallahassee.
41. Set up school garden plots as "demonstration centers" for the community. Work with garden clubs and school age classes.
42. Demonstrate to public and school groups the benefits and beauty of buried utility lines.
43. Do research on the history and benefits of canopy roads in Tallahassee. Run educational sessions to inform and involve others.



B. COMMUNITY ENVIRONMENTAL SERVICE

Teaching about the environment and promoting awareness are appropriate, but taken alone -- without personal action -- they have a hollow ring. The projects in the following list involve students and others in action.

1. Paint and place trash cans and litter baskets about the school grounds and, with permission, in parks.
2. Distribute litter bags for cars. Get a local businessman or civic group to underwrite the cost of the bags.
3. Conduct a clean-up campaign in your community. If you want, focus on a specific place like a schoolyard or a park. Get people together to clean it up one Saturday morning and follow-up with a pancake luncheon.
4. Design a park for small children on a small plot in a park or playground. Get permission first, and then be creative.
5. Hold a series of white elephant sales, swap-shops, and exchanges so that people may share their junk! It's a great way to recycle.
6. When something happens to favor environmental quality in your area, develop and conduct a victory celebration (no ticker-tape all over the place!). Victories seem few and far between so get ready and stay ready. Be sure to involve local politicians in the victory celebrations and don't forget the principal and business persons.
7. Conduct a "Plant a Tree" campaign. Contact the State forest service to secure seedlings, then get them into parks, roadsides, schoolyards, etc. In all cases plan the plant-in with appropriate officials first.
8. Arrange to label trees and other plants in a downtown park to help "educate" all of us.
9. To supplement #7 above, arrange a booth to distribute seedlings to the public if they promise to plant them. Give out some "Johnny Appleseed" buttons of your own design and manufacture to each person promising to plant trees. better, design some "Freddie Forester" buttons for children and their parents who will plant and care for the seedlings.
10. Set up some paper recycling or can and bottle recycling centers with local companies.
11. Teach a mini-course on auto tune-up everywhere you can during the next several months. Figure out ways to get as many involved as possible.
12. Hold a contest to accumulate ways to save energy at home and in schools. Once the contest is over and prizes awarded, impliment the suggestions!
13. Survey local business and governmental operations and suggest ways to save energy. Figure out what to do if some persons are flagrant in their abuses and will not change. Also check the utility rate structure in your area. Are there good reasons for charging less when a consumer uses more power?

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14. Build birdhouses with senior citizens and place them about the community. Also use scraps to construct birdfeeders. Give these away to senior citizens and school children.
15. Contact the city or county officials and set up a community compost pile. Each person contributes his or her leaves, yard trimmings, etc., and gets back compost. The government officials can contribute, too, along with the highway department.
16. If the local government officials aren't turned on to compost, establish a school compost heap. Use it for school beautification projects. Perhaps a way can be found to use waste paper, food wastes, etc. in the school heap.
17. Talk to the faculty and principal to set up procedures to recycle all school paper wastes and metal wastes. Set an example for the community.
18. Use the school grounds to provide community vegetable garden spots. Or get an interested land owner to contribute or rent small plots. Develop the soil and set a model for organic procedures.
19. Contact people on your block and turn them all on to organic procedures. Hold a mini-course. Use your yard as a training ground and a model for recycling and organic gardening.
20. Identify a real sore spot in the community -- an environmental sore-spot. Arrange to clean it up, i.e., a pond in a city park, a roadside reststop.
21. Set up a school wildlife management area in conjunction with a landowner or State forest people. Burn it off in fire ecology methods and set a model for others.
22. Find a plot and set up a school herb garden. Give the harvests to community leaders who in environmental battles have stood at Armageddon. They are our children's children's heroes -- add some spice to their lives now.
23. Attend the next rattle snake round-up in your area and observe. Report your observation to local officials.
24. Work with friends to plant gords. Once grown and dried, make birdhouses to hang in pine forests.
25. Read Ian McHarg's Design with Nature (New York: Natural Science Press, 1969). Then, redesign your yard using what principles you can. Contact the National Wildlife Federation, Washington, D.C., about their backyard wildlife program.
26. Conduct a public information campaign on what to do in case of an air pollution alert. Muster community media for this task.
27. In cooperation with your State forest Service personnel. promote awareness of Arbor Day. Distribute leaflets and arrange for a "tree sale" with Forestry officials. Assign fellow students and friends to specific neighborhoods to get trees planted and cared for in the months following planting. Don't forget to assist senior citizens and children who need help in caring for their trees.

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28. Do a three month study of local media (newspapers, radio, TV) on their coverage of environmental matters. Assess the content of the coverage for environmental attitudes and concerns. Report to the publisher or station manager.
29. Develop a nature trail for your school or another school.
30. Develop the organizational structure and objectives for a community-wide organization of citizens to monitor environmental quality and to confront environmental problems. Survey community interest in forming such an organization.
31. Develop an outdoor classroom for your school. Select an area with teachers and school officials. Plant and develop the area, including a place for seating and demonstrations. Inventory the vegetation, physical features, etc. Plan the use of this new facility with teachers.
32. Work with local or county officials to develop an Anti-Litter Campaign and effective local ordinances to control and eliminate littering.
33. Do an air pollution study in your community over several months and report to responsible officials. Use a Ringelmann smoke detection chart on a regular schedule at selected points in the community.
34. Select a stream or pond in your community which is threatened by pollutants. Do a water pollution study over several months, employing ph, dissolved oxygen, and phosphates tests. Report out your findings to the community.
35. Do a litter study in your community. Select fifty foot sections of sidewalks and roadsides randomly in your community. Once a week for several months collect and weigh the litter collected. Report your findings to the community through press releases to newspapers and radio-TV stations.
36. Build, erect and maintain Wood Duck boxes in suitable habitat. Get help and directions from the Game and Fish Commission.
37. Build, erect and maintain a Blue-bird trail. Get help and directions from the Audubon Society or the Game and Fish Commission.
38. Build, erect and maintain a series of Purple Martin houses. Get help and directions from the Audubon Society or the Game and Fish Commission.
39. Make up a checklist of the 100 most common species of birds in your neighborhood. Be sure to include the times of the year they are most likely to be found. Distribute the checklist through local birding organizations like the Audubon Society or Wildlife League.



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40. Conduct a campaign to get city officials to plant live oaks on public lands, including street rights-of-way.
41. Do an ECO-CALENDAR for Tallahassee. It should show bird migration dates, times to plant and care for various plants, the date of Arbor Day, etc. Distribute copies to interested persons.
42. Arrange tour of the sewage plant combined with a discussion of the sewage problems in Tallahassee. Work with public officials.
43. Plan beautification schemes for public buildings (i.e., schools) in Tallahassee. Work to implement these schemes.
44. Work on your beautification program by cooperating in a plant dig with the Upsy-Daisy Society...saving native plants and using them to beautify public and private places in town.
45. Build a program to get Sweet Bay Swamp "going" again. Enlist the support of school and community groups to secure a fence and to develop an instructional program there. Remember that the city now owns this beautiful facility.
46. Find an endangered TREE. Conduct a SAVE THE TREE campaign.
47. Do a research project. Monitor the temperature before and after the construction of another large parking lot. Report your findings to the newspaper and public groups.
48. Do a water quality study of the water run-off of a large parking lot or a newly widened highway.
49. Do a series of energy conservation checklists and information bulletins. Distribute these at shopping centers.
50. Develop demonstration projects at schools for solar energy or for energy conservation.
51. Review the City plan for bike paths. Suggest alternatives, and improvements, if possible. Then, conduct a campaign to encourage bicycle use in Tallahassee.
52. Monitor the sound levels on a roadway before and after widening. Report your findings to local authorities and public groups.
53. Survey the use of outdoor lighting by businesses in town. Estimate the costs of such lighting. Question the benefits by chatting with the businesspersons responsible.
54. Devise a wilderness experience for persons who might need converting to a new awareness.
55. Study the planned additions to the Arva Hopkins Power Station. What are the major issues and concerns involved in expansion? What are the projected "solutions"? Report on who wins and who loses in these "solutions".
56. Arrange a field trip to the city landfill operation by diverse community groups. Ask them to study what does it and what might come out. Rap about some alternative courses of action.

C. PUBLIC AFFAIRS

Education, awareness, and personal service are mighty forces in environmental protection. But our society has a political process which reflects social concerns and public demands. It is through this process that the society usually moves on major issues. The following projects involve student in-put as public policy decisions are formed on environmental issues:

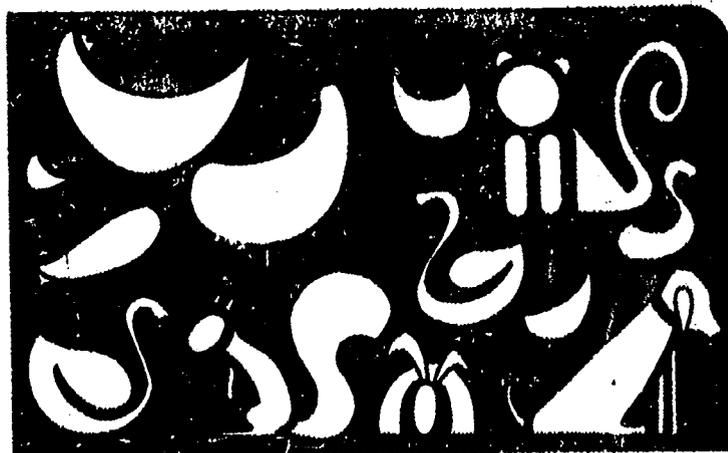
1. Conduct several community-school conferences on alternative sources of energy and/or on the conservation of energy in your community. Then, take some positive action.
2. Survey your community on the possibilities for bike paths -- or the improvement of existing bike paths. Develop a plan to encourage the use of the bike paths -- for persons of all ages.
3. Survey your community on mass public transit. What facilities exist? Given community needs, what is the schedule like? Who uses the system? Who could be encouraged to use it? Develop and conduct a campaign for better facilities -- and more community use of the facilities.
4. Write and distribute position papers on local environmental issues -- especially to civic and governmental agencies. Hold dialogue sessions with members of these agencies to elaborate on your mimeographed position papers.
5. Hold a community conference on solid waste disposal and recycling. Present the vast array of alternatives and use small groups to explore each with your community in mind. Present the conference summary to the county or city council.
6. Conduct a community campaign on the need for open space and the acquisition of park lands. Show people what life might be like in your town.
7. Develop and use in the community, a slide show on a local issues -- i.e., the need for a park, the need to save a local marsh, the need to block a big highway, or to find another route.
8. Hold a community celebration to honor "Great Environmental Decisions" by government and by individuals in your community. You might plan an awards program, or hold a banquet.
9. Plan and make a video-tape presentation on an environmental problem. Then, use it with civic groups around the city.
10. Do a survey of noise pollution in specific areas of the city (i.e., school zones, hospital zones). Report your findings with suggestions for improvements to the appropriate community officials.
11. Conduct a campaign for or against a State bill or local ordinance proposal which will affect the environment in your area. You might even propose an ordinance or bill to the appropriate officials and muster community support.

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12. Get copies of Environmental Protection Agency (EPA) pollution regulations -- or regulations from State or local agencies. Then survey your community to see how they apply, and to see if they are being violated. You might be especially interested in hazardous waste disposal -- toxic, explosive, radioactive, biological, or chemical-industrial wastes.
13. Design, write, mimeograph, and distribute a Voters' Guide to a forthcoming election in your community. Survey the candidates and get their position on environmental issues for the guide. Let them re-read their statements before publication. Then, go to print and distribute widely. Don't forget to type in the name and address of your group on the booklet -- it's the law!
14. Write up the history of an environmental battle in your area -- something like the Jetport, the Cross Florida Barge Canal, Turkey Point Nuclear Power Plants, or land fill operations along the coast. Bind your history and donate copies to local libraries.
15. Using published cartoons or your own, do a Cartoon Booklet on the Environment for young children. Print up copies and distribute to schools and to local government officials. Donate copies to the public library and to school libraries.
16. Prepare a photo essay (twenty 8 x 10 prints) on a local environmental problem. Get permission and mount the essay on the walls at city hall or at a bank.
17. Do an Earth Tool Kit for your community. Using brightly colored folders, put in mimeographed sheets containing civic and pressure groups concerned about the environment. Household tips on saving energy and preserving nature. Addresses on "When to Call If..." and "Where to call if..."
18. Perform water tests in the local lake, stream, river, water supply over a period of months. Then report to city or county officials what you discovered.
19. Work with the local Tuberculosis and Respiratory Disease Association in public concern programs and in governmental information efforts dealing with air pollution and air quality legislation.
20. Work up a survey form (questionnaire) and procedures to collect data from adults in your community on an environmental issue. Report your finding to local and State government officials.
21. Arrange spot announcements on TV or rush in to respond to TV editorials dealing with environmental issues. Conduct letters to the editor campaigns. Prepare 30 second radio spot announcements.-- all directed toward a specific local issue involving environmental quality.
22. After reading Ian MacHarg's Design with Nature, do a cost-benefit analysis on the channelizing of a stream. Report to the US Department of Agriculture's local representative or to the US Army Corps of Engineers.
23. Prepare a study of the possible uses for a State or National Forest. Rank order these uses given your values. Then, present your findings to the State or National Forest personnel in your area. Send copies to Washington.

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24. Visit the sewage treatment facilities in your town (Don't fall into any privies!). Can the job be done better? How? Do some research on treatment and the environmental benefits or proper treatment and uses of sludge. Report to the appropriate officials.
25. Do an energy study of your classroom or school. How is energy being consumed? Is all of that consumption worthwhile? How can the less worthwhile uses be reduced or cut out? Report to the school board -- or to the superintendent.
26. Try some more and follow up on #25. Design a classroom of the future or a school of the future, watching how much energy you use. Share your design with school officials, local architects, and the general public.
27. Obtain areal photographs and land use maps of your area. Layout the areas which, in your judgment, should not be "developed." State your criteria and arguments; then, present your position to the city or county planning office.
28. Select a governing authority in your area which makes environmental decisions (i.e., rules, ordinances, guidelines). Study the formal decision-making procedures of that authority. Then, prepare a citizens' guide to the informal power structure influences on that decision-making process. Interview persons throughout the community to get their impressions of its decision-making. Who seems to have great influence? Which persons, not officially in the authority, sway the most weight? Why? How?
29. Muster community participation in a letter writing campaign on a national environmental issue. Set up committees to recruit letter writers, to see that the letters are written, and to provide a clearing house for the analysis of the response from politicians and the influence the letters had. Report to the public, via the media, your findings.
30. Locate a burned-over forest area or a site cleared for construction. Do a study of water run-off as it affects streams over several months. Report your findings to local officials.
31. Do a photographic study of public uses of a park or other outdoor recreation area in your community. Collect information on how many people use the facility. Survey the area and design suggestions for improving its use. Report to the public and to responsible officials.
32. Start a campaign to emphasize the plight of endangered species. Get governmental agencies such as Department of Agriculture and Transportation to explain how they consider the special needs of endangered species in their planning.



There are three citizenship styles. If you reflect upon the last five years of your life or if you examine another's citizenship style, you will see a pattern. This pattern will fit into one of three styles:

REACTIVE
A person who simply responds to situations and problems as they arise.

PROACTIVE
A person who discerns problems and issues and goes forth to act on them with hope for the future.

INACTIVE
A person who does not discern problems and issues or who withdraws from confronting them.

Every once in a while, it is important to examine where you are, what you are doing, and where you are going. Your environment has needs. You have needs. You may be able to fulfill both sets of needs by examining and adjusting your citizenship style.

	REACTIVE STYLE	PROACTIVE STYLE	INACTIVE STYLE
Response to New Information	Accepts new information filtered by beliefs and predispositions.	Seeks new information to discern needs, hurts, and coming issues to shape appropriate action.	Disbelieves or discounts new information; closedmindedness
Disposition toward Change	Worries; wants change <u>back</u> to the way things were or might have been.	Feels efficacious, seeks to force or direct change toward a vision of the future.	Pessimistic toward life's possibilities; lack of efficacy
Community Participation Style	Worries, collects information from media on what's wrong; works with "conservative" groups.	Starts or joins groups working for vision of the future.	Withdrawal; Drop-out
Political Participation Style	Votes and may participate in political activities as response to "what's gone wrong."	Active in shaping issues, selecting candidates, campaigning, voting and political process.	Avoid; Doesn't Participate
View of Conflict	Conflict must be provoked	Seeks conflict as a vehicle for social change.	Avoid conflict and "trouble"
Time Orientation	NOW-- "What's wrong?"	FUTURE--Hope for the future; "What should/could be?"	PAST--"Look what has happened!What's the use?"

Student groups can get awards for their environmental action programs. Write for information to: C. Richard Tillis, Bureau Chief, Bureau of Environmental Education, Department of Education, Tallahassee, Florida 32304; or to Presidential Environmental Merit Awards Program, Environmental Protection Agency, Washington, D. C. 20202.

Teachers and their classes may win awards for their eco-projects. For more information write to Keep America Beautiful, Inc., 99 Park Avenue, New York, New York 10016 (212) 682-4564.

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TREES -- SOME THIRD AND FOURTH GRADE ECO-ACTIVITIES

prepared by

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November, 1974



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Part I

Read Joyce Kilmer's poem "TREE" to the students. Ask them to close their eyes and imagine the tree as you read the poem again. Have students share their images of "their" tree with one another in a discussion, or by drawing a picture.

*I THINK that I shall never see
A poem lovely as a tree.*

*A tree whose hungry mouth is prest
Against the earth's sweet flowing breast;*

*A tree that looks at God all day,
And lifts her leafy arms to pray;*

*A tree that may in Summer wear
A nest of robins in her hair;*

*Upon whose bosom snow has lain;
Who intimately lives with rain.*

*Poems are made by fools like me,
But only God can make a tree.*



--Joyce Kilmer, 1913

Tell the students about Joyce Kilmer's tree, using the following information. Encourage students to reflect upon why this tree was so famous and popular. Ask them if they know of any other famous trees, and get them to share their experiences with a tree -- a favorite tree, perhaps where they saw a bird's nest, had a tree-house, installed a birdfeeder, etc.

INFORMATION FOR THE TEACHER

A giant oak tree - a white oak - seventy feet tall, a hundred feet in diameter, with a trunk five feet thick, died in 1963. It was located on the campus of Rutgers University in New Jersey, and it was the tree believed to have inspired Joyce Kilmer to write "Trees."

Gnarled and split from the ravages of time, the tree was two hundred years old. It had rotten places into which tree "experts" had poured concrete. It had branches long decayed and fallen. It had sores painted and fixed by surgeons, who knew about trees' arthritis. It had withered, shaken by New Jersey's cold winters and by its heat in summer. Freezes and thaws over two centuries had not missed their mark.

Kilmer, who penned the famous poem in 1913, had also withered. Serving in France during World War I, Sargeant Kilmer was killed in 1918. His tree began to wither in 1953, and a battery of tree surgeons labored with sprays, medicinal paints, and gasoline-powered saws to ward off impending doom. Birds fled while they worked for over a decade, but on September 18, 1963, the end came.

At tree-side, over two hundred persons gathered to stand silently in the cold drizzle as the commander of an American Legion Post, Forestry Club officials, and a twelve year old girl eulogized the tree. Now only the poem remained.

At the tree's death college personnel planted one of its acorns, so that the tree would live on through its descendants. Eternal Life. News stories reported this death and 18,000 requests came in for a piece of tree, some accompanied by money. College officials couldn't fill these requests, but they did distribute pieces to groups "having an interest in Joyce Kilmer." For example, the Sargeant Joyce Kilmer Post of the American Legion got a cross section of the 200-year old trunk.

Tell the students that many people have favorite trees and very fond memories about trees. In fact, stories are told about trees. The following stories involving attitudes toward trees are told to children in India. Read each story and have the students discuss their answers to the questions.

A FRIEND

A hunter shot his arrow at the deer. Missing the deer, the arrow hit a big tree. The arrow killed the whole tree; its leaves dropped and it began to dry up. A parrot had lived a long time in a hole in the tree. It loved the tree and so it did not want to leave the tree. It stopped coming outside the hole and, without anything to eat or drink, became very skinny. The parrot made up its mind to die along with its friend--the tree. Because of the parrot's love for the tree, God's attention was drawn towards it, and God appeared before the bird. The parrot recognized God. God said, "Dear parrot, this tree has neither leaves nor fruit. No bird roosts on it now. There is a vast forest beside you, which contains thousands of beautiful trees full with fruits and flowers. This tree is about to die; it can no longer bear fruit and flowers. Why should you not move to some other green tree, leaving this withered one?"

The parrot replied: "O king of gods, I was born and brought up on this tree: I also learned some good things here, and it always looked after me as a child. It gave me sweet fruit to eat and also protected me from the attacks of my enemies. Now where should I go for my pleasure, leaving it to die? Having enjoyed pleasure with it, I shall endure sufferings too with it. When it was strong and healthy, I supported my life under its shelter and now when it is powerless and ruined, why should I go away leaving it to die?"

God was very pleased to hear these sweet and attractive words full of love from the parrot. He was moved with pity and said, "Parrot, ask any favor of me." The parrot replied, "Please make this tree turn as fresh and green as before." God watered the tree with a shower of nectar. The tree again bore new branches, leaves and fruits. It grew as before and years later the parrot went to heaven as a reward for this love of the tree.

- In your own words, tell us what happened in this story.
- Why did the parrot refuse to leave the tree?
- How does the parrot feel about the tree?
Why does the parrot feel this way?
- Could everyone who you know feel this way toward the tree? Why? Why not?
- Have you ever felt loyalty to a tree? Why?



A WISE PERSON

"Child! Why are your clothes bloody?"

"Oh Mother! I tried to scratch my leg with an axe."

Lifting the clothes, the mother saw that a part of his skin had been scraped off. The child was walking as if nothing had happened to him.

"You are very foolish," his mother said. "Does anyone try an axe on his leg? If the leg breaks, one would become lame, and if the wound gets infected, the leg may even have to be cut off."

"In that case even the tree should feel hurt with the axe. The other day I peeled off some bark from a tree with the axe and brought it, as you told me. I thought I should peel off the skin of my leg too, to see how I feel. Mother! I did this in order to see if something had happened to the tree as well."

His mother remembered that she had sent him to bring some bark for a medicine. His mother started crying and said, "Dear boy! It seems that you will become a great wise person. The trees and other living creatures have life like human beings. As we feel pain on being hurt, they do likewise."

- In your own words, tell us what happened in this story.
- Why did the mother want tree bark? (medicinal tea, dye for cloth)
- If you were the boy in the story, would you have collected the tree's bark? Why? Why not?
- Would you have been concerned about the tree? Would you have wondered if taking the bark hurt the tree?
- Have you ever cut into the bark of a tree? What was your purpose? Have you ever seen others do this? Why did they do it? Did they have good reasons?
- Let's act out this story. Let one student play the tree and act out his/her view of the tree's feelings about having its bark removed.*

Part II

Take the students outside and pursue several of the following activities:

- Examine several trees and talk about the following pairs of words as they relate to your tree:

hard-soft	high-low	useful-wasteful
ugly-beautiful	on-off	funny-sad
happy-unhappy	tall-short	rich-poor
thick-narrow	dark-light	sweet-sour
heavy-light	wet-dry	moving-still
thin-fat	bright-dull	
growing-dying	young-old	

- List wild birds, animals, and fish in the habitat which depend upon the trees that you see for homes, food, or breeding places. Talk about the ways which animals depend upon trees. Don't forget to find a dead tree trunk, or trunk or branch rotting on the ground and examine it for living creatures.**

*To complement this story, teachers may obtain the 8-minute, color, sound, 16mm film, "The Treehouse" (King Films, 1971) from The Florida State University Media Center, Tallahassee 32306. The film vividly depicts the story of one boy, his tree, and a bulldozer. Also, teachers might use The Giving Tree, 8-minutes, color, sound, 16mm animated film (1973) available from the Leon County Library, Tallahassee.

**Teachers might use the following film: Life on a Dead Tree Trunk, available from The Florida State University Media Center, Tallahassee 32306.

- Near mature trees, look for seeds beginning to sprout. Talk about the things a little tree seedling needs in order to grow into a mature tree. Help students distinguish very small seedlings from weeds, grasses, and other plants. Talk about where these little trees come from; and what happens to them in a fire--even a grass fire--that sweeps through their home when someone is careless.
- Look for signs of insect or disease damage to living trees. How do insects and diseases affect trees? Look for a downed tree and see what lives in it and helps to decompose the tree, returning it to the soil.
- Distinguish between two types of trees: Deciduous and Evergreen (Conifers). Then, let each student identify several of each in the area. If time and interest permit, help students learn the names of several trees in the area and their identifying features (bark, leaves, twigs, etc.). Do a crayon or chalk rubbing of the bark of a leaf from several trees.
- Measure off a plot of ground outside and inventory the trees (count the number of trees, identify some or all of the trees). If time permits, locate some places where you think some more trees are needed.
- Begin a plan to observe two trees throughout the year: one conifer, one deciduous.
- Closely observe one tree, looking for various colors, shapes, textures, and sounds. Write a poem or song, paint a picture, do a dance to show how you feel about this tree.

The following activities from the U.S. Department of Agriculture's Smokey the Bear booklet complement the above suggestions.



There are two
kinds of trees...

DECIDUOUS trees which
drop their leaves
in winter.



EVERGREEN trees which
keep their leaves
all year round.

Name three deciduous trees - three evergreen trees

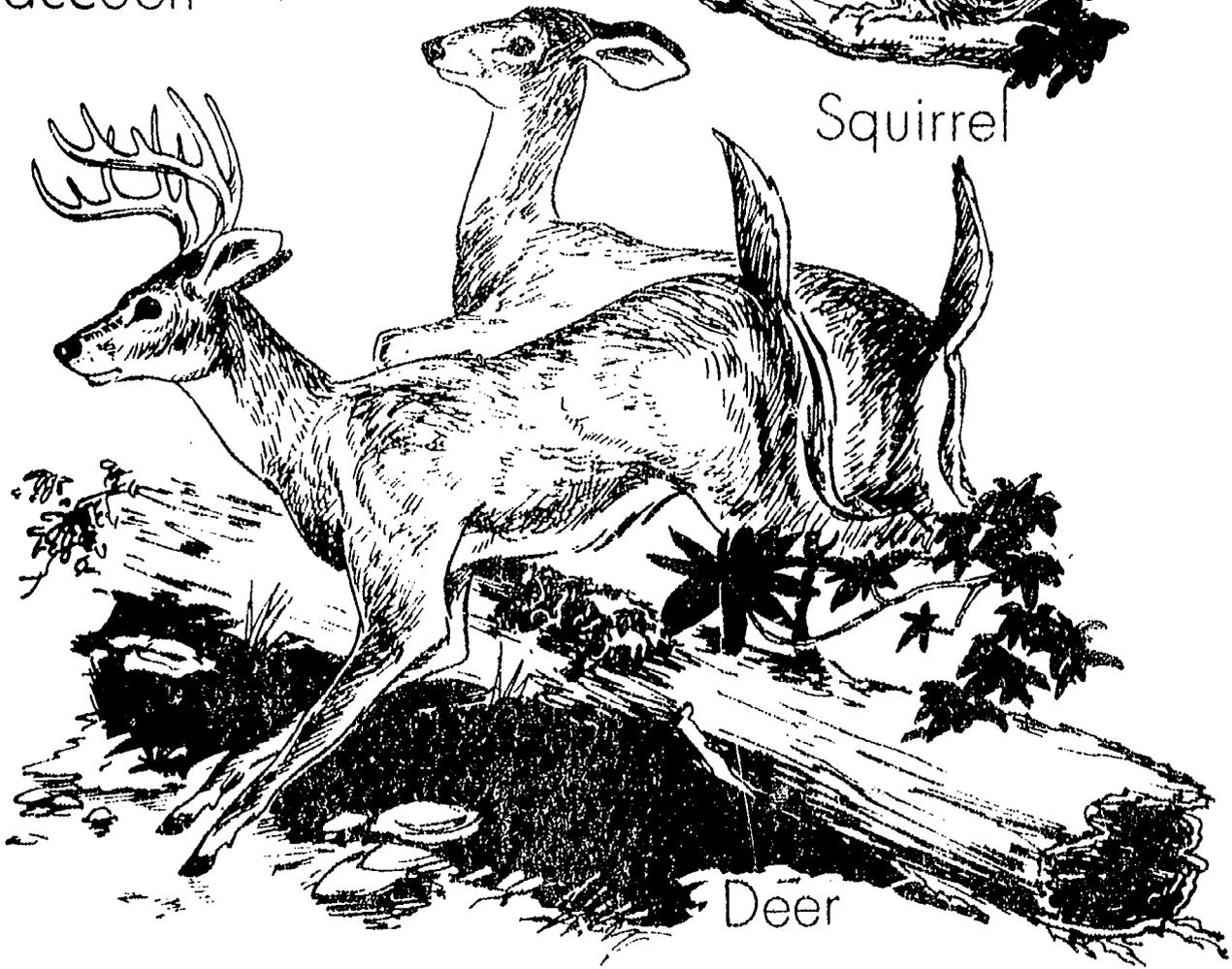
The forest is the home of many wild animals. What animals have you seen in the woods? Where do they get their food? Do they live on the ground or in a tree?



Raccoon

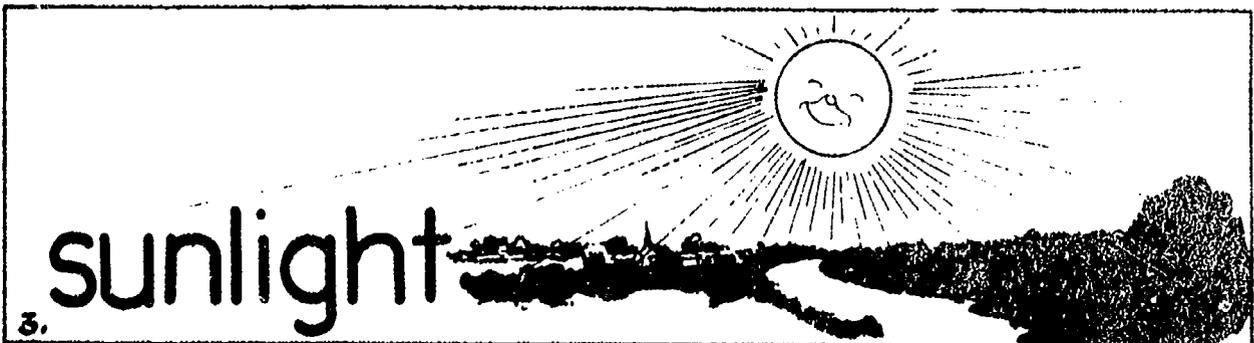


Squirrel



Deer

People need trees and trees need:
soil, water and sunlight.



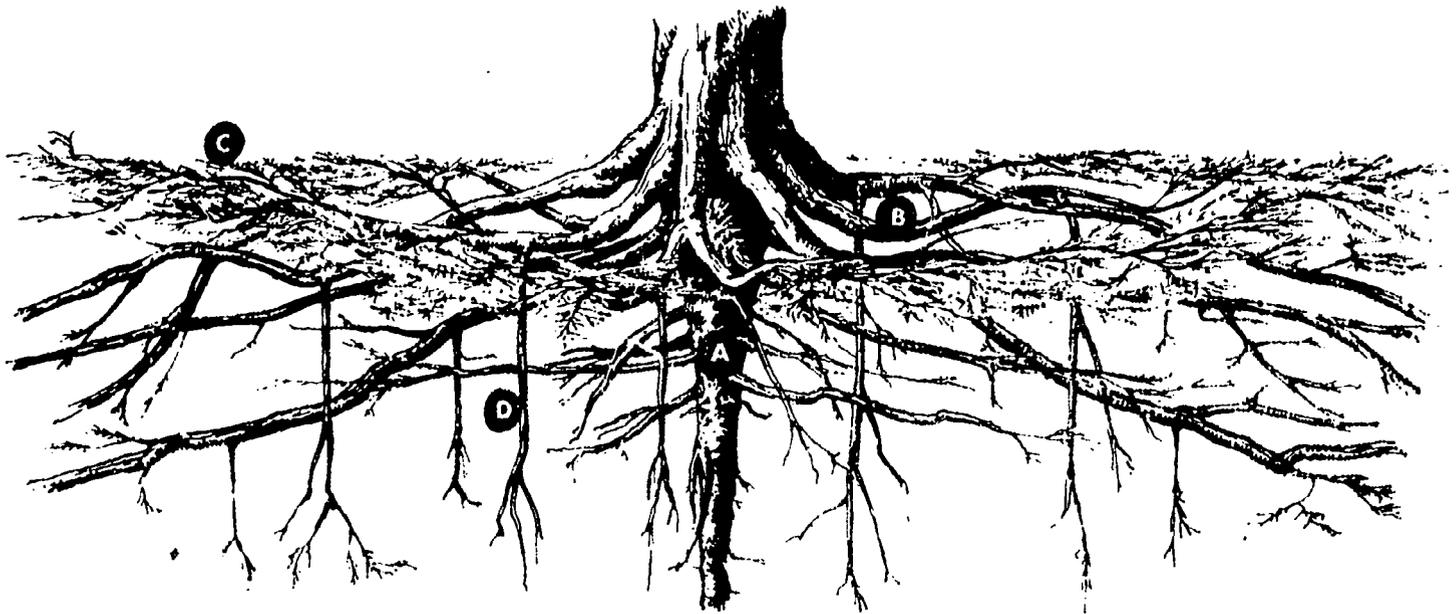
1. _____ 2. _____ 3. _____
Write the words

Learn how soil, water and sunlight help a seedling grow.
Find out how a tree protects the soil.

Part III

Select one tree for close observation. Let the students examine the tree closely and figure out ways in which the tree changes over time. List the ways suggested by students on a piece of newsprint. Then, give students pieces of newsprint and let them draw pictures of the tree, or make a sign with what they want to tell others about the tree, or write a poem or song to the tree, or(?)

Ask students to identify the parts of a tree and the function of each in the life (growth) of that tree: leaves, bark, tap roots, root hairs, etc. The teacher might draw a diagram of a tree on a large sheet of newsprint as students mention the parts.



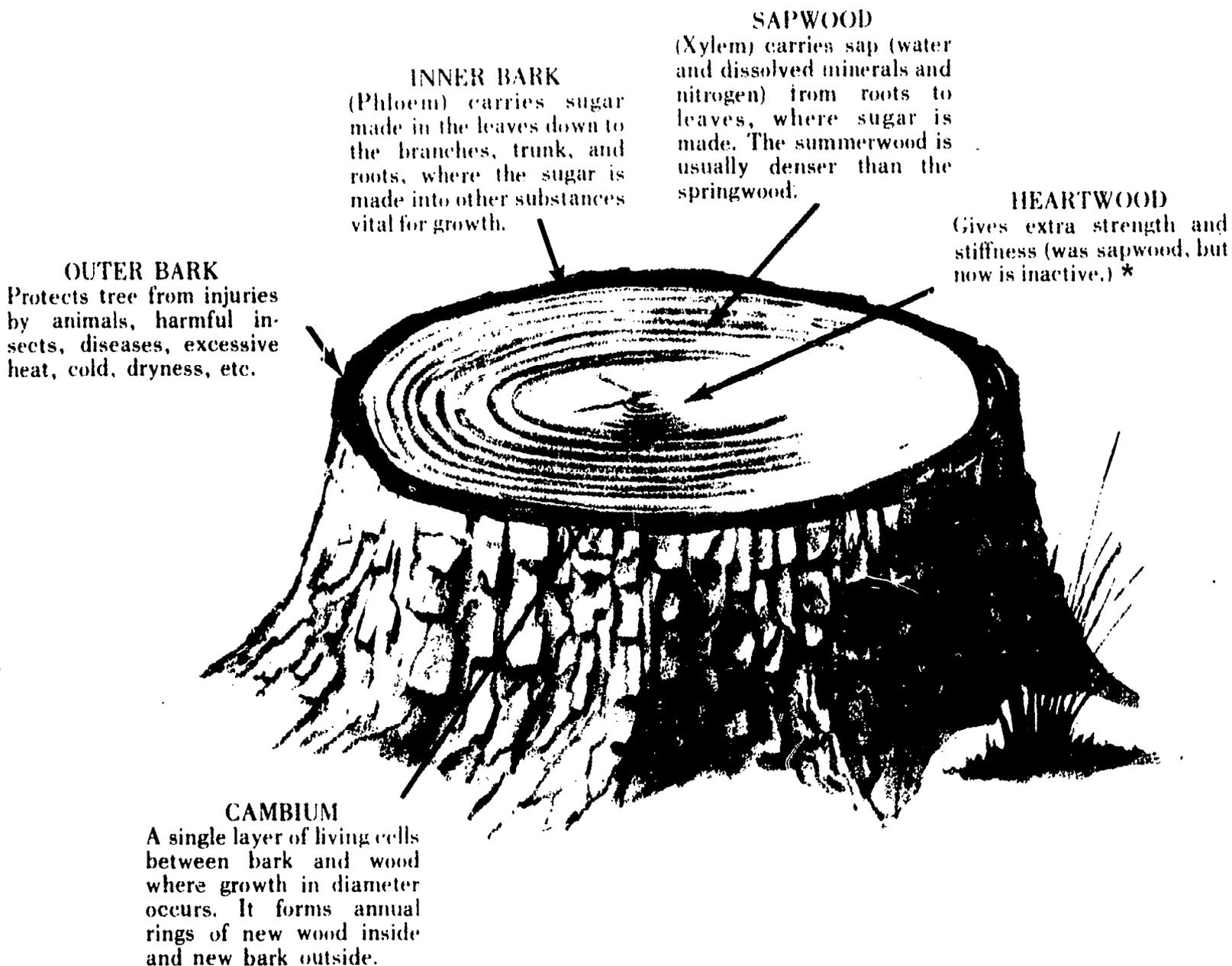
Tap Root (A)—Provides main support of tree and anchors it firmly in the ground. (Not all trees have one)

Lateral Roots (B)—Help support and anchor trunk, may extend far out, beyond crown spread.

Fibrous Roots (C)—Masses of fine feeding roots close to ground surface.

Deeply Descending Roots ('Sinkers') (D)—Grow downward from lateral roots.

Obtain a cross section of a tree trunk or limb. Have students examine the cross section and find the outer bark, inner bark, sapwood, heartwood, and cambium. The following teacher diagram from a U.S. Department of Agriculture booklet is helpful.



OUTER BARK
Protects tree from injuries by animals, harmful insects, diseases, excessive heat, cold, dryness, etc.

INNER BARK
(Phloem) carries sugar made in the leaves down to the branches, trunk, and roots, where the sugar is made into other substances vital for growth.

SAPWOOD
(Xylem) carries sap (water and dissolved minerals and nitrogen) from roots to leaves, where sugar is made. The summerwood is usually denser than the springwood.

HEARTWOOD
Gives extra strength and stiffness (was sapwood, but now is inactive.) *

CAMBIUM
A single layer of living cells between bark and wood where growth in diameter occurs. It forms annual rings of new wood inside and new bark outside.

Using the cross section, or a tree stump which has been sawed (not chopped down by axe), count the annual rings to determine the age of the tree. Students may find the ring for the year during which they were born, entered school, etc. Question students about differences in the thickness of annual rings and speculate on the causes (i.e., degree of shade, amount of rainfall, etc.). These are environmental influences which have a profound impact upon the growth of trees. To underscore this point, teacher might have students identify "Tree Enemies": insects, drought, uncontrolled forest fires, poor soil, excessive water, etc. Students might roleplay fantasy situations involving a "tree" and one or more of these "enemies."

*Inactive in the sense that it no longer carries sap, but still it serves to strengthen the trunk of the tree.

With students, demonstrate the conditions for seed germination and growth. Place corn seeds or lima beans in four containers: 1) one container will have fertile, moist soil and receive plenty of sunlight, 2) one container will have rich soil and plenty of water, but no sunlight (cover with cardboard), 3) one container will have rich soil and sun, but no water, 4) one container will have water and sun but no soil. very, very poor soil. Students should make periodic observations and record tree germination and growth for several months.*

Try several of the following demonstrations if time permits:

--Demonstrate the function of root hairs by planting two seedlings in glass jars, one with normal root hairs, the other with the root hairs carefully removed. Have students observe and contrast the growth of the two plants.

--Show how the root system conveys moisture to the tree seedling. Insert the bottom of a piece of celery in a jar of water dyed with food coloring. After several days remove the celery and cut it into sections to see traces of the coloring moving up the celery.

--Demonstrate the impact of trees upon their environment. Place a large jar over a seedling for one day and night. Moisture will accumulate on the glass, showing that trees add moisture to the atmosphere.

--Show that trees give off moisture into the air. Place a plastic bag on a dead twig. Place a plastic bag on a live twig with leaves. Check the moisture given off for two or three days. Guess the amount for a whole tree--or a whole forest!

Help students work out creative ways to celebrate what trees do for us and other living creatures in the natural world. Make some banners. Pick up litter around some trees. Fertilize trees on the school grounds. Write a poem or song. Take the Snoopy pledge, reprinted later in this booklet.

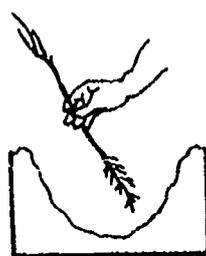
Perhaps best of all, you could plant some trees. The Florida Forest Service will give you information on planting seedlings:

*For a long-term project, plant several orange seeds in an indoor pot with rich soil and observe what happens with sunlight and proper watering.

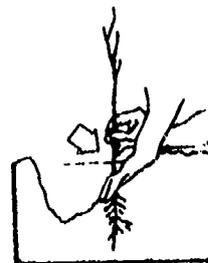
BEFORE PLANTING, you must take care in selecting a suitable site for your new tree. You should, as closely as possible, duplicate the forest's natural environmental conditions of soil, moisture and sunlight in which your tree would have normally thrived...

To plant your new tree, loosen the soil in the site you have selected, then dig a hole large enough to accomodate the tree's root system. Set the seedling into the hole so that the root-collar is at or somewhat below ground level. Packing the soil firmly, carefully fill the hole. About one foot away from the stem, form a circular dike and saucer around the new seedling.

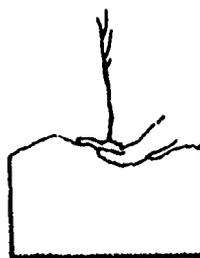
Fill this depression with a mulch - pine straw, peat, bark or other organic material. Finish the planting by filling the saucer with water -- let it soak in -- and fill once more.



1. Make the hole larger than the root system.



2. Set the root-collar at or slightly below ground level and fill with loose soil.



3. Firm the soil and form a dike and saucer, mulch,



4. then water twice.

... after the tree has become established, water it once a week.

EXTRA, EXTRA, TRY SOME OF THESE

- Children might enjoy having a live Christmas tree in their classroom this year which they could plant on the school grounds after the holidays.
- Florida has more record trees (size and age) than any other State on the Continental U.S. Students might like to talk with a tree expert about these record trees. Call the Florida Division of Forestry.
- Saving native trees has become a very popular "happening" in the Tallahassee area. Children might like to talk with Malcolm Johnson or Chuck Salter about these projects, or even participate with their families in the next "plant dig" by the Upsy Daisy Society!
- The forest may yield lumber, but learning about trees yields great vocabulary words for students. Have students make up lists of new words as they pursue the activities in this booklet.



Part IV

Individual trees are nice, but let's consider a lot of trees -- a whole forest. Let students share personal stories about their visits to, and good times in, forests. Then, consider these series of questions:

- Why were your times "good" in the forest?
- Why do people like forests? Why do you like them? Hunting; fishing; camping; hiking; watching nature; learning about nature; working in forests as a forester, game manager, scientist, lumberperson; relaxation and recreation. People like forests because of the quiet, their wildlife, their good impact upon water and air; and their products -- lumber and paper to name two products.
- Have students draw up two lists: 1) what do people do in forests, and 2) what do people get from forests.
- Before students work on the second list, ask them to look around the room or tour a building at the Junior Museum and have them identify wood and wood byproducts. To help, students might use the following activity page from the U.S. Department of Agriculture's Smokey the Bear booklet.

TREE ACTION

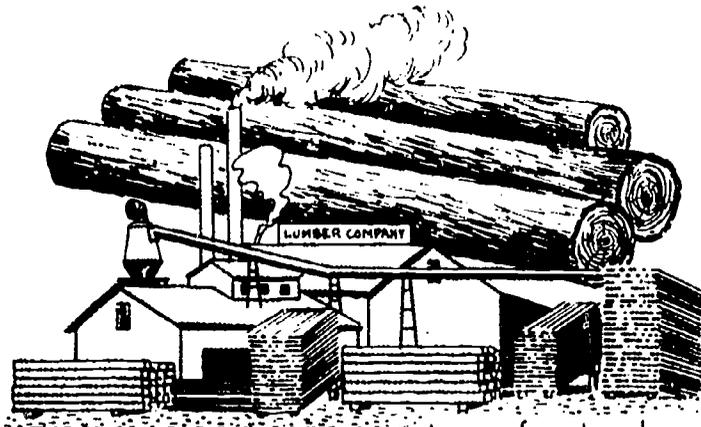
ART: Students might enjoy making eco-art (i.e., collages, jewelry, name tags, small figures) by glueing together natural items which they find on the ground beneath trees. They might press and dry newly fallen leaves and blooms.

DANCE: Students might enjoy listening to music and dancing their feelings about trees. Teachers will find excellent music for this activity in the following sources:

- "The Rhythms of Childhood," with Ella Jenkins. Folkways Record FC-7653. Two songs are particularly useful: "Pretty Trees Around the World" and "The Cedar Tree."
- Rhythms Today (a book and record series). Silver Burdett Company. Especially important is the song "Hurricane."
- Adventure in Music Series, Volume I (Grade 1). RCA Victor Record. One very useful song is "Argonaise" for swaying trees, etc.
- "New Dimensions in Music--Early Childhood Book Series." The song "Autumn Leaves" is about trees losing their leaves.
- "Making Music Your Own Series." The song "Autumn Leaves" is superb for dancing tree movements.



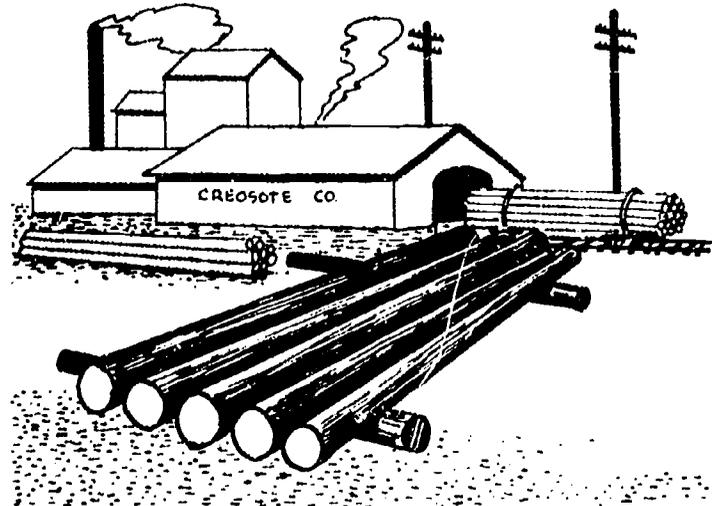
Trees are cut for many uses.



logs for lumber



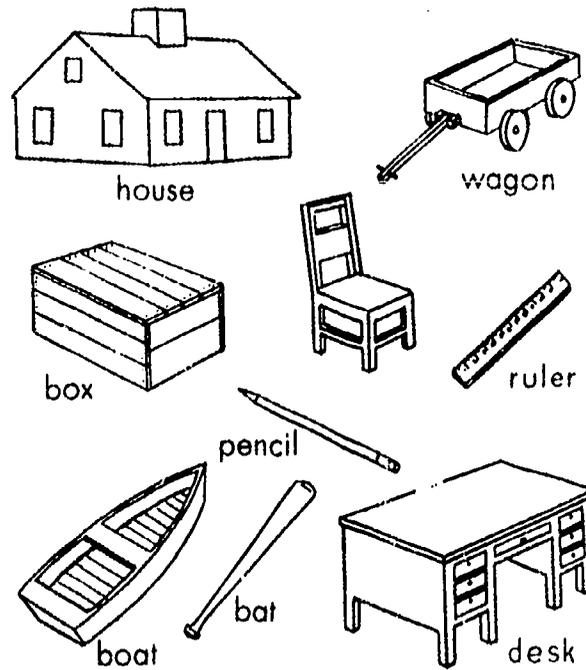
Pulpwood for paper



Poles for telephone wires

Many things are made from wood. List some of them.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____



What things can you find in the schoolroom made from wood?

1. _____
2. _____
3. _____

Talk to your teacher and parents to learn about other things we get from trees: (rubber, maple syrup, honey, plant mulch, . . .)

--If time permits, teachers might arrange a visit:

- visit a tree nursery, call the Florida Forest Service, or visit a commercial nursery
- visit with a forester--call the Florida or U.S. Forest Service
- visit a saw mill (Hannon Lumber Company, or Woodville Lumer Company)
- visit a paper mill or cellulose plant
- visit a lumber yard (Elberta Crate and Box Company)

--If time permits, interview some persons who work with trees:

- a paper salesman
- a newspaper printer
- a carpenter, home builder, or lumber yard worker
- a poet, song writer, or photographer
- a forester
- an artist
- a cabinet maker
- a person who just loves to walk in the woods

--Arrange with your local librarian to discover some interesting poems on forests. Learn several poems and do a poetry session for the parents of the students in the class. Tell them all that you have learned and found exciting about TREES.

--Work with these parents to figure out ways to save trees and tree products. Students could use less paper--and use both sides of paper. Students and their parents might recycle newspapers, and save paper waste at home for composting. Try the ideas on the Snoopy-Johnny Horizon page.

Two Suggestions

First, Arbor Day is celebrated in Florida on the third Friday in January each year. This is the continuation of rituals involving trees that are as old as primitive man. It is the continuation of an American tradition which began on the wind-swept plains of Nebraska in 1872 and began in Florida in 1886. Today, schools and community groups can obtain fifty slash pine seedlings from the Florida Division of Forestry for their Arbor Day celebrations, if ordered before the first of January. This is a fine opportunity for a personal experience for students who have pursued the activities in this booklet.

Second, additional teaching materials may be obtained free or at very low cost from the following agencies and organizations. Teachers should write or call them for the current listing of available materials.

Florida Division of Forestry
Collins Building, West Gaines Street
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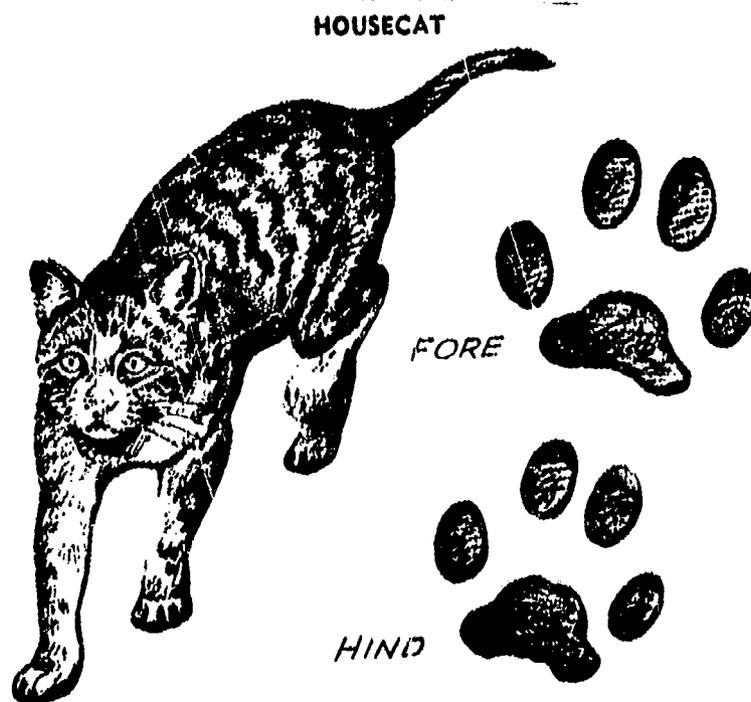
BEING HUMAN IS BEING HUMANE....

Film-Related Activities For All Ages

Prepared By

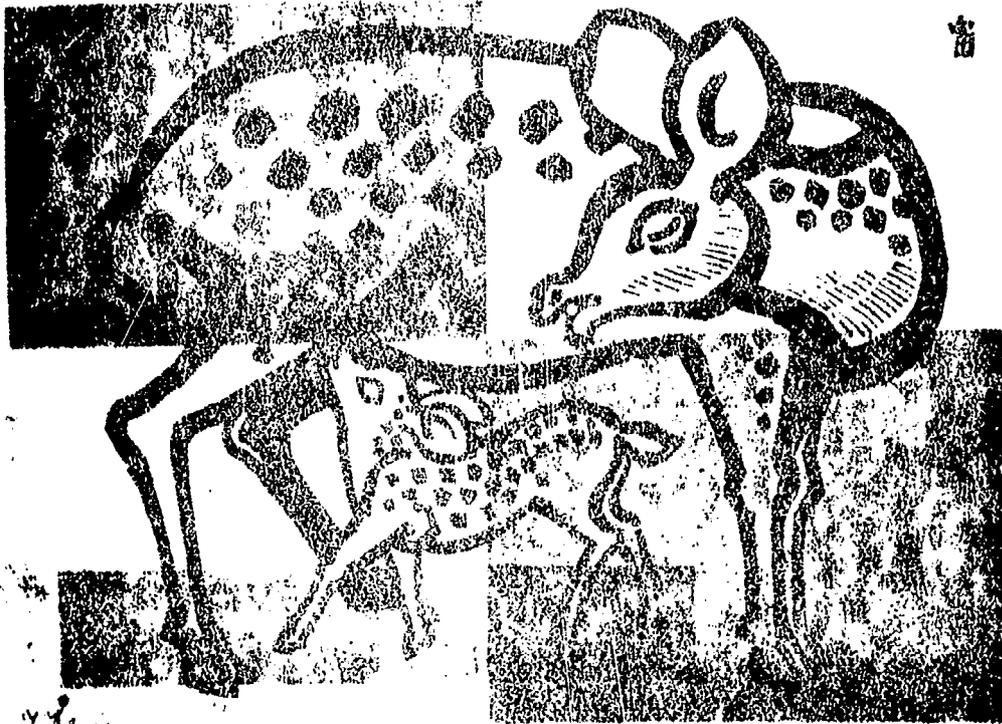
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October, 1974



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"Deer" Woodblock print by J. Schmitt, 1975

Introduction

Comments by teachers and class visits to the Tallahassee-Leon Animal Shelter and to the Tallahassee Junior Museum indicate a continuing interest in humane education and a desire for improving the lot of animals -- domestic and wild -- in our region.

As a service to educators and in an attempt to foster humane education in public, private, and religious schools, members of the Leon County Humane Society prepared the following sample lessons. Each lesson is tied to films which were donated to the Leon County Library by the Humane Society. The films are available on loan from the Leon County Library and, together with field trips to the Junior Museum and the Animal Shelter, they offer a beginning point for humane education for groups ranging in age from children to adults.

The following lessons are suggestive. We hope that teachers will build their own creative lessons and share them with the Humane Society and the Junior Museum personnel.

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ABOUT DOGS. 14 minutes. 16mm.
color. sound. Produced by Films,
Inc., 1144 Wilmette Avenue, Wil-
mette, Illinois.

This film is recommended for students from kindergarten to sixth grade.* It portrays dogs in numerous roles. Sled dogs work in groups to haul heavy loads across snow, sheep dogs control a traveling flock of thousands, mountain dogs trail scents to locate and rescue lost hikers, and seeing-eye dogs are trained to fulfill a very special function. Most important, students have the opportunity to see human beings and animals in a caring relationship. Teachers can use this film as a springboard to discuss the need for caring -- and to discuss the responsibility of humankind for all living creatures.

The audience for this film is so diverse no attempt is made to suggest a systematic lesson plan. Instead, we are listing various activities which teachers might select and try out, or use as springboards for their own creative use of the film.

1. Draw a picture of your favorite dog (cat, wild animal). Lets share a story about your favorite dog (cat, wild animal). Teachers might substitute the word "pet," "dangerous animal," "friendly animal," "special animal friend," etc.
2. With students, collect a lot of pictures of animals, especially close-up pictures of faces. Ask the students what each picture tells them about how the animal is "feeling" or what it is "thinking." Encourage students to share their ideas about what makes an animal feel "good" or "bad," and what animals might think about in various situations (i.e., when hungry, when lost, when sick, when shot at by human beings, when caged, etc.).
3. Let's do a painting, poem, or story about our "special animals" and share it with others.
4. Let's write a play about what your dog (pet or favorite animal) would say if she/he could talk.
5. Let's talk about some things about our special animal (dog, cat, wildlife). Think about the animal and imagine features which are:

hard/soft	big/little	slow/fast
beautiful/ugly	wet/dry	round/square
fat/skinny	light/dark	good/bad
friendly/unfriendly	young/old	right/wrong
plain/spotted	smooth/rough	left/right
open/closed	short/tall	up/down
loud/quiet	strong/weak	
hot/cold		
safe/dangerous		

* Early in this film, the narrator uses two difficult concepts (ancestor and trait) when discussing the ancestors of the dog, the wolf and the jackel. Teachers may want to teach one or both of these concepts before using the film.

6. Do you know any working dogs? What work do they do? For whom does the dog work? (You might make a list on the chalkboard) Why does the dog work? What was done to teach the dog to do the work? (See Extending Activity #2)
7. Do you have a pet dog? Does someone in your family or in your neighborhood? What kind of dog is it? Why does the person own it? Why should a dog be a pet? What are the benefits for the dog? For the owner?

Why do you think that people have pets? If a person has a pet, what are his/her responsibilities to that pet? (make a list of important responsibilities)

8. Do you think that dogs and other animals like to be pets? For example, would a pig, or a goat, or a deer like to be a pet? Why? Why not? Talk to your parents and other adults about this question and think about what they say.

Think about the many animals at the Tallahassee Junior Museum. Which ones would like to be pets? Why?

9. Talk to a teacher from the Tallahassee Junior Museum about making pets of animals which you find wild in the forest. Should you take wild animals for pets (i.e., turtles, rabbits, squirrels, etc.)? What does the teacher recommend? Why?
10. Talk to a person from the Tallahassee-Leon Animal Shelter about how to care for your pets. How can you be a responsible pet owner? How can you keep from losing your pet?
11. Let's talk about domestic and wild animals. Make a list of domestic animals and a list of wild ones. Talk about the similarities and differences between the domestic and the wild animals. Why are some animals domesticated?

Extending Activities:

1. To complement the reading program, teachers may want to use stories about dogs, cats, and wildlife. For example, Rudyard Kipling's story of cats, Doris Lessing's Particularly Cats, Collette's The Cat contain passages which may be read to children or passages may be used with better readers. The Leon County library and the school library contain superb stories for various age and reading levels. Teachers will find the librarians in school and in the County library willing to help identify appropriate books.
2. Students may enjoy a visit with animal trainers in the Tallahassee area. Ask students to identify any trainers who they know (they might consult their parents, too.) A field trip to visit the training site or a visit by the trainer to the classroom would be exciting and permit each child the opportunity to ask his/her questions.

The following trainers come to mind immediately:

Chris O'Mara
Algiest Kennels
(Dog obedience)

Leon County Sheriff's Department
(Bloodhounds)

Milton Cox
Tallahassee Guard Dog

Tallahassee Police Department
(police dogs)

Barbara Forehand
Robinhood Kennels
(dog obedience)

Various Riding Stables
(horses)

Various hunters who own and
train hunting dogs

Dogs used in drug searches
Contact Federal offices via
the Post Office, Park Street,
Tallahassee

Tallahassee Recreation Department's
Dog Obedience Club

Military guard dogs, Contact the
Army Reserve Headquarters in
Tallahassee

3. The boy narrating the film refers to one kind of dog as "super special dogs." Students might want to learn more about these special dogs -- seeing-eye dogs-- through a personal experience. Teachers can probably arrange such a personal experience by getting a dog and his/her owner to come to the classroom by calling:

Office of Information Services,
Florida State University

State Department of Health and
Rehabilitative Services, Bureau of
Blind Services, Tallahassee

WHY PROTECT ANIMALS? 10 minutes. 16mm.
color. sound. 1972. Produced by The
Humane Society of the United States.

This is a superb film on citizen responsibility for the humane treatment of animals in all communities. Beginning with some scenes of a rodeo, the film moves quickly to the varied problems faced by animals as they deal with humankind: leghold traps, zoo management, dime store turtles, dognapping, abandoned stray cats and dogs, federal poisoning of "predators," Easter chicks, and neglect. This film is recommended for middle and high school students, and adult education.

Given the diverse audience which may use this film, learning activities are merely listed below for teachers and group leaders to make their selection. There is no attempt to provide a systematic lesson plan or sequence of learning activities.

1. Zoos get special attention in the film, especially the attempts to exchange long lines of cages for open natural habitat areas. You might consider the reasons for this switch -- the benefits for the animals and the visitors. On your visit to the Tallahassee Junior Museum pay special attention to the ways in which animals are housed and discuss current fund raising and development plans with the museum staff. Special attention should be directed to the deer and bear habitats.

Ask your self: What kind of zoo is this?
 Why are animals displayed as they are?
 What can we do to assist the Museum?

Reflect upon other zoos you have known. What animals were displayed? How were they displayed? Why were they displayed that way? Were they animals native to the region?

2. The film makes a case for animal protection, especially wildlife. Your group might discuss questions such as:

--Why protect alligators?
 --Why protect endangered species? Haven't animals become extinct in the past while other life continued?
 --Why be concerned about "predators"? Why not clear them out? (You might also concern why we label living creatures "predators" and the psychology of such labeling.)

Since the film mentions animal poisoning and the use of leghold traps, you might interview, or invite to your meeting, an officer with the Game and Fish Commission. Florida was a leader in wildlife protection and in innovative legislation affecting the use of leghold traps.

3. The film talks about "surplus" animals and "overpopulation." You might study the ecology of wildlife and the ecology of domestic animals which are abandoned or uncared for. Then, interview one or more of the following:

--a veterinarian on neutering animals and animal diseases
 --a Junior Museum teacher or wildlife official on game management
 --a County Health Department officer, Animal Shelter warden, or a Humane Society member on the ecology of domestic animals

4. The film opens with scenes from a rodeo and it stresses ways in which animals are exploited. You might reflect upon the meaning of "exploitation" as it refers to human actions toward animals. How might a rodeo be concerned with the exploitation of animals? How might a "roadside zoo" (i.e., bear at a gas station, alligator farm on a tourist route, etc.) be considered exploitation? How might maintaining an animal for breeding and sale of offspring be exploitation? How might pet stores and department stores' pet corners be exploitation?

Your answers and concerns have local implications as these activities, and others like dog fighting, reportedly go on within the boundaries of Leon County, Florida. For example, a store gives away goldfish in plastic baggies as a "come-on" for a "big sale." A local civic group conducts a "rodeo" as a big fund-raising activity to benefit retarded children--a very successful fund-raising activity. How appropriate, humane, and just are such activities, given your values and orientation toward life and living creatures?

5. Some authors have argued that respect for living creatures enhances respect for fellow human beings and, the converse, that a diminished respect for animal life diminishes respect for human life. Do you agree or disagree? Why?

A practical issue involving this basic question surrounds the experimentation on animals in secondary school science classes and in community sponsored science fairs. The Leon County Schools and private schools in the county each have science classes and the Junior Woman's Club sponsors a community science fair. You might ask for the guidelines governing the use of animals in these activities, and discuss the argument (above) with the leaders of these activities to get their judgments after years of working with students in our county.

6. What are the laws protecting animals in our area?

For domestic animals: interview someone from the Tallahassee-Leon Animal Shelter (pets, research, pet stores, freely roaming domestic animals, etc.)

For wildlife: interview someone from the Florida Game and Fish Commission (zoos, pets, hunting, poaching, releasing exotic imported pets, etc.)

For slaughter animals: interview someone from the Federal and/or Florida Department of Agriculture (humane slaughter, roadside "zoos," etc.)

What are the laws? How do they operate? What do they cover? Who enforces them? Problems in enforcement? Why? What changes are needed?

As a follow-up, the next time you are in a shopping center visit a pet shop and talk to the owner regarding laws regulating his/her operation? Try a visit to the pet section of a department store, too.

7. Some decision-making situations: MOLLY SEES

For younger students, present each of the following and discuss student responses:

1. Molly sees a turtle in the woods. Should she take it home as a pet? Why? Why not?
2. Molly sees a boy beat a neighbor's dog. What should she do? Why?
3. Molly sees her friend throwing pop corn to animals at the Junior Museum when a sign says "Please do not feed these animals." What should Molly do? Why?
4. Molly sees an injured cat in her neighborhood. She heard her mother say that it was a stray cat. What should Molly do? Why?
5. Molly sees that her grandfather's dog has had puppies. She wants a pet dog and her grandfather offers her one. What should Molly do? Make a list of things to do (i.e., ask her parents, learn about caring for puppies, etc.).
6. Molly sees a man turn a pet monkey loose into the National Forest outside of town. What should Molly do? Why?

7. Molly sees a store selling baby chicks at Easter time. What should she do? Why?
8. Molly hears that a rodeo is coming to town and her brother wants to go. He urges her father to buy tickets. Her father asks if she wants to go to the rodeo. What should she say? Why?

Extending Activities:

1. For more information regarding the proper care of:

Wildlife: get pamphlets from the Florida Game and Fish Commission, Tallahassee

Pets: get pamphlets from the Tallahassee-Leon Animal Shelter, Tallahassee

Farm Animals: Florida Department of Agriculture, Tallahassee

2. For more information regarding the use of animals in school science classes, contact: Dr. John S. Hutchinson, Science Supervisor, Leon County Schools, and the Humane Society of the United States, 1604 K Street, N.W., Washington, D. C. 20006.
3. As a follow-up to the film, call the Tallahassee Junior Museum and arrange to take one of the following Wildlife Field Classes (special classes can be arranged for older groups):

FLORIDA WILDLIFE

Grades K-1

A general look at the animals of North Florida focusing on the animals' senses and coloration. Can you smell with your tongue? Can you hide on a pile of leaves?

INSECTS

Grades 1-3

A view of the common insects to be found in this area. Focuses on their habitats, their habits and their place in our environment. Offered only in the fall and spring months.

WHO WEARS WHAT?

Grades 2-3

Learn how to identify the five main types of animals - fish, amphibians, reptiles, birds and mammals. Who wears the feathers in your family?

WILDLIFE HABITATS

Grades 4-8

A view of a wild animal (deer, bear, waterfowl, etc.) in its natural surroundings. The study of what it eats, what eats it, how it protects itself and how it raises its young.

SNAKES

Grades K-8

Characteristics, habits and identification of common North Florida snakes. This class will be adjusted to the grade level and needs of the individual class.

REPTILES

Grades 4-8

Similarities and differences among snakes, lizards, turtles and alligators.

BIRDS OF NORTH FLORIDA

Grades 3-8

Characteristics, adaptations and habits of wading birds, birds of prey, perchers and others.

VANISHING WILDLIFE

Grades 4-8

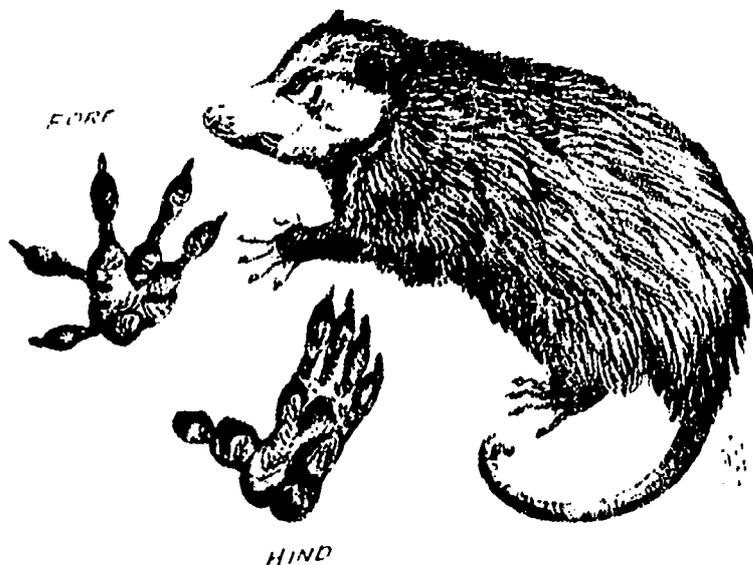
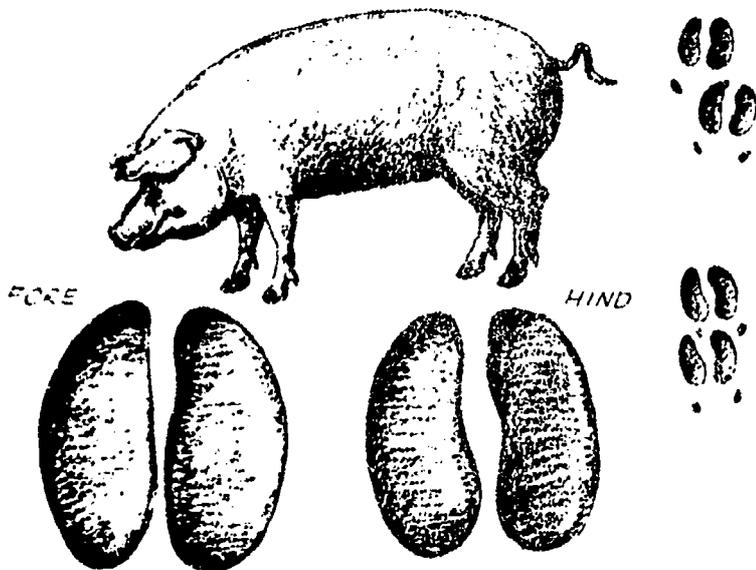
A study of Florida's endangered species using animals in the museum's collection.

YOUR SPECIAL INTEREST

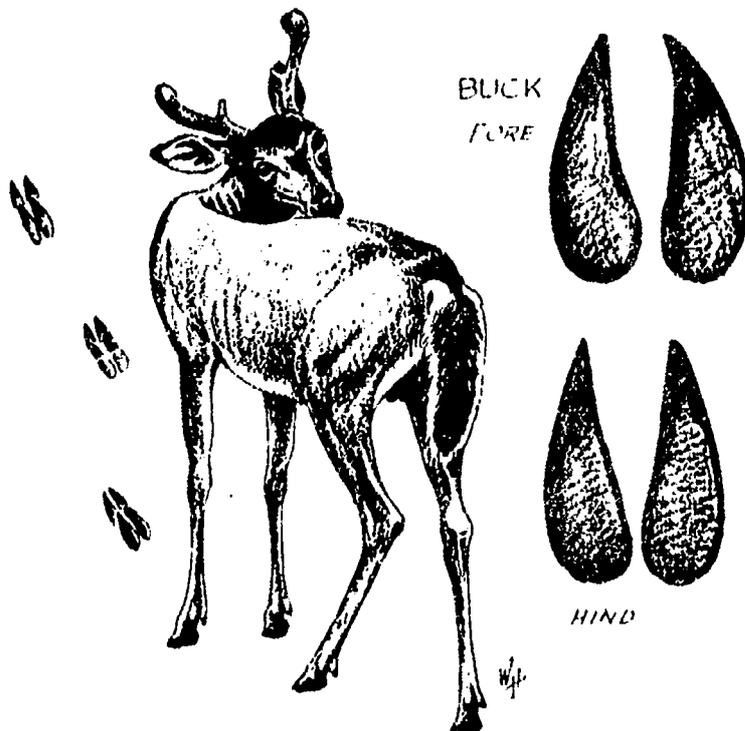
Grades K-8

If your group has a special interest in a particular animal or specific area of animal study, arrangements for a field class or classroom visit can be made by calling a museum teacher between 1 p.m. and 5 p.m., Tuesday through Friday. (Limited to one classroom of students per visit and three weeks advance notice necessary.)

DOMESTIC HOG



WHITETAIL DEER



The Animals Are Crying. 28 minutes. 16mm. color. sound. 1971, distributed by The Learning Corporation of America, produced with the Humane Society of the United States.

Section One. View the film The Animals Are Crying.

Teacher, ask the following questions to elicit a variety of student thought and feelings:

- (1) Why do people have pets?
- (2) Why should people have or not have pets?
- (3) Define "ownership" of a living creature. Use your own thoughts.
- (4) Define the limits of control or behavior by which an animal owner should ideally govern himself.
- (5) What are the responsibilities which accompany ownership of a pet?

Consider what responsibility accompanies ownership of another living creature within the framework of the following quotation by Albert Schweitzer and the accompanying questions.

"The fundamental fact of human awareness is this: 'I am life that wants to live in the midst of other life that wants to live.' A thinking man feels compelled to approach all life with the same reverence he has for his own. Thus, all life becomes part of his own experience. . . We must try to demonstrate the essential worth of life by doing all we can to alleviate suffering. Reverence for life, which grows out of a proper understanding of the will to live, contains life-affirmation. It acts to create values that serve the material, the spiritual, and the ethical development of man."

--Albert Schweitzer

- 1) What are the implications of what Schweitzer says to the concept of ownership of another living creature?
- 2) How might one behave toward a creature one owned if governed by Schweitzer's point of view?

Section Two. Draw up a "Bill of Rights of Pets."

Example:

A pet has the right to be protected from unnecessary pregnancy.

A pet has the right to be well fed.

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This "Bill of Rights" might be drawn through small groups working independently, or it may be drawn through a general larger class discussion and interaction. In either event it could serve as a springboard for lively and productive discussion of the concept of ownership of an animal both during its construction and after it has been completed.

Section Three. The class will compile a booklet outlining how to care for a pet, particularly cats and dogs. The booklet might also include sections on other specific types of animals of the students' choice, and it should certainly include a section on ownership.

Suggested procedure for compiling the booklet:

- Divide the booklet initially into two major divisions, dogs and cats.
- Divide the two major divisions into smaller, more specific sub-sections. For instance: Feeding, Grooming, etc.

While the class at large may choose which sections and sub-sections to include in the booklet, have smaller groups of students work independently on the actual construction of the sections; other groups will work on other specific sections, cover design, etc. All students can participate in the distribution of the booklets to other students in the school and to other pet owners or potential pet owners in the community.

Section Four.

- 1) In the film, why were the people at the animal shelter so concerned with seeing that pets have been neutered?
- 2) What are the consequences of not having pets neutered?

The teacher may wish to have in a Veterinarian, or possibly a biology teacher or some other specialist to explain exactly what neutering a pet is and what it entails. Or, the teacher may certainly feel qualified to explain spaying himself or herself.

Section Five. Neutering animals raises the ethical dilemma of human sterilization and taking life in order that other life may be preserved or allowed a humane existence. Transfer can be made from "animals" to consideration of occasions when similar taking of human life might be considered to be appropriate.

Section Six. Concentrating on the types of wildlife at the Junior Museum, do one or both of the following:

- a) Design a plan for a film such as "The Animals Are Crying" but using examples dealing with Florida's wildlife. Is wildlife in Florida crying? How? Where? Why? Why not?
- b) Draft a Bill of Rights for wildlife in Florida. Compare it with your Bill of Rights for domestic animals.

Slaughter Reform. 4 minutes. 16 mm.
black-white. sound. By Friends of
Animals, Inc., Washington, D.C.

Section One. Play the Blue Danube by J. Strauss. While listening to the music, the class will write down words which describe the emotions elicited by the music. In small groups of four or five, students will compare their individual lists, noting similarities and any extreme differences in the types of emotions and words used to describe them. They will consider further why the music tended to elicit emotions of similar character, and why emotions of this rather than some other character were elicited. At the end of these small group interactions the larger group will come back together, at which time the smaller groups will share their findings, and a master-list of words and emotions will be placed on the board (discussion may follow here as is appropriate).

Questions to consider during Section One discussion:

- 1) What emotions were elicited by the playing of the Blue Danube?
- 2) Were similar emotions elicited in most students?
- 3) What would account for the similarity in the emotions elicited in most individuals?
- 4) What does it take to elicit an emotion from an individual?
- 5) Possibly basic to all this discussion would be: what is an emotion?

Section Two. Show film. Follow similar procedures here as with Section One. Further, consider the question of why the music and film elicited such different feelings.

Questions to consider during Section Two discussion:

- 1) What emotions were elicited by the film and music?

- 2) Would you have expected these emotions to have been elicited by this music?
- 3) What factors caused these emotions rather than the ones present with the music only to have been elicited?
- 4) What in particular makes this film uncomfortable to watch?
- 5) Should one being (man) be arbitrarily able to choose to inflict pain on other living creatures as depicted in this film?
- 6) If so, by what right?
- 7) Does "owning" another living creature entitle one to be able to arbitrarily inflict pain and suffering upon that creature without having to give any other account than the circumstance of ownership? *

Three quotations for students, with the central question:
What responsibility accompanies ownership of another living creature?

A. *"The fundamental fact of human awareness is this: 'I am life that wants to live in the midst of other life that wants to live.' A thinking man feels compelled to approach all life with the same reverence he has for his own. Thus, all life becomes part of his own experience. . . We must try to demonstrate the essential worth of life by doing all we can to alleviate suffering. Reverence for life, which grows out of a proper understanding of the will to live, contains life-affirmation. It acts to create values that serve the material, the spiritual, and the ethical development of man."*

--Albert Schweitzer

- 1) What are the implications of what Schweitzer says to the concept of ownership of another living creature?
- 2) How might one behave toward a creature one owned if governed by Schweitzer's point of view?

B. *"So God created man in his own image, in the image of God created he him; male and female created he them. And God blessed them, and God said unto them, Be fruitful, and multiply, and replenish the earth, and subdue it: and have dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth. And God said, Behold, I have given you every herb bearing seed, which is upon the face of all the earth, and every tree, in the which is the fruit of a tree yielding seed; to you it shall be for meat. And to every beast of the earth, and to every fowl of the air, and to every thing that creepeth upon the earth, wherein there is life, I have given every green herb for meat: and it was so."*

--Genesis 1:27-30

*Students might interview persons in their community who are vegetarians to get another point of view. Or they might interview a variety of patrons of health food (natural food) stores.

- 1) What are the implications of what Genesis says to the concept of ownership of another living creature?
 - 2) How might one behave toward a creature one owned if governed by this point of view?
- C. *"The white people never cared for land or deer or bear. When we Indians kill meat, we eat it up. When we dig roots we make little holes. When we build houses, we make little holes. When we burn grass for grasshoppers, we don't ruin things. We shake down acorns and pinenuts. We don't chop down the trees. We only use dead wood. But the white people plow up the ground, pull down the trees, kill everything. The tree says, "Don't. I am sore. Don't hurt me." But they chop it down and cut it up. The spirit of the land hates them. They blast out trees and stir it up to its depths. They saw up the trees. That hurts them. The Indians never hurt anything, but the white people destroy all. They blast rocks and scatter them on the ground. The rock says, "Don't. You are hurting me." But the white people pay no attention. When the Indians use rocks, they take little round ones for their cooking. . . How can the spirit of the earth like the white man? . . . Everywhere the white man has touched it, it is sore."*

--an old holy Wintu woman

- 1) What are the implications of what this Wintu woman says to the concept of ownership of another living creature?
- 2) How might one behave toward a creature one owned if governed by this point of view?
- 3) How might adherence to this point of view govern one's behavior toward one's environment? How might acceptance of this viewpoint alter the present environmental situation?

Section Three. Ask students to display newspaper and magazine pictures of "inhumane" events and occurrences that have happened to human beings in recent years or ask students to express their views of "humane" and "inhumane" in picture collages.*

Have students consider the following questions:

- 1) What emotions do these pictures elicit? Are they as strongly felt as they were during the film? What might account for the difference in the intensity of reaction to the film and to the pictures?
- 2) Why has there not been more of a public outcry against the inhumane practices that have been filmed and fed into American living rooms every evening via TV?
- 3) What is it that happens to people which allows them to "get used to" seeing such atrocities, rather than these sights becoming steadily more horrifying?

*An alternative teaching plan would involve students in library research and interviews with Department of Agriculture officials (Federal and State) on humane slaughter. Some students should focus upon slaughter practices in European nations which have used different means than those currently the practice in the United States.

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Ask students to share the instances of cruel and "unusual" treatment of animals from films, TV, and the daily news. Question them on their response to such instances, and pose the three questions above.

Section Four.

- 1) Do the attitudes a people have toward animal life and the environment predetermine their behavior toward other people?
- 2) How might the different points of view expressed in Section Two, if adhered to, affect one's reactions and behavior to the circumstances shown in Section Three?
- 3) What does it take to motivate a viewer into some positive action to remedy situations identified as heinous?

Have students identify some situation which they feel is unjust. (It may be the methods of slaughtering animals that are depicted in the film, or it may be something else. It should be something of the students choosing, which is important to them).

After students have identified an area of concern, they may then begin developing and implementing strategies through which the injustice might be remedied. They should utilize some type of emotion eliciting media in their strategies.

In Section Four the requirement that an emotion eliciting media be used may provide for easy lead into consideration of the role of the media in modern society. At this point the emphasis may be shifted from a discussion of one's place in the world and one's responsibility to other living creatures to consideration of how media may be affecting the way one reacts to the world; or: "To what extent does the media determine the message one receives?"

Love To Kill. 12 minutes. 16mm.
color. sound. 1973. Produced by Columbia
Pictures and Learning Corporation of America.

Topic: Exploration of the concept of "killing", justifications, motives, and attitudes behind this concept. Particular emphasis is given to the feelings of beings with varying perspectives on killing.

Materials: (1) Film, Love To Kill; (2) "PIKE" by Ted Hughes; (3) Section Five: the reference materials listed within that section.

Information about the lesson: The lesson is divided into five sections. Each section can serve as a lesson in itself, with at least one class period devoted to it. The questions within each section should serve as the basis

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for either a teacher-guided discussion, or if the teacher prefers, small group discussions of a less structured nature, with eventual sharing with the whole class. It is possible to use some sections and delete others; for instance, a teacher may choose to begin with Section Three, deleting the sections which utilize Ted Hughes' "Pike."

Section One. Read "Pike" by Ted Hughes, from 100 Postwar Poems, edited by M. L. Rosenthal.

1) As you read "Pike" by Ted Hughes, be concerned and conscious of what the Pike can tell us of the human condition. Analyze the Pike: identify its characteristics and features.

NOTES TO TEACHER: Below are listed some identifiable features of the Pike corresponding to particular lines of the poem. These and others identified by yourself and students are suitable as points of departure into discussion comparing and contrasting the Pike with the human condition. Also, these analyses should be used to explore the Pike as a hunter and killer.

Stanza one, line three: The Pike has always been a killer; it has never changed throughout time.

Stanza two, line three: Note the joining together of opposites. This is not a simple beast, but rather a complex, paradoxical one with unexplainable or at least confused motives.

Stanza four, lines one and two: A physical feature suitable to its nature which has remained always unchanged.

Stanza six, line one: Another unchanged, unalterable feature.

Stanzas eight and nine: The environment of the Pike has maintained its unchanged features throughout time.

Stanza eleven, lines three and four: Mental darkness.

Ask:

- 2) Why does the Pike kill?
- 3) How does the Pike feel about killing?
- 4) How do you feel about the Pike?

The poem "Pike" has been removed to conform with copyright laws.

Section Two. Show the film Love To Kill.

Teacher, ask the following questions:

- 1) The Pike kills to satisfy its appetites, why are the men in the film killing the buffalo?
- 2) If the men are satisfying some part of their nature through killing, as was the Pike, identify this side of man's nature and describe it.
- 3) Is man a born killer like the Pike is, or are the killer instincts in man controllable?

NOTE: Consensus among students' opinions about the foregoing three questions is not necessary or particularly desirable. A point that could be destructive would be the conclusion that man is a killer by his very nature, that this is an unalterable fact which could serve as justification for man's killing of beasts and other men. If this point of view is taken, then man intervening in his own life to prevent senseless violence becomes an impossibility. It could be assumed easily that man was trapped in his killer nature, that this is a fact of life, and that it must be learned to live with it. If this kind of fatalistic attitude develops, the teacher should be prepared to deal with it in subsequent lessons, certainly not with the idea of indoctrinating students with a particular point of view, but rather through the pointing out of occasions when man has been humane and has intervened to prevent suffering and/or violence, i.e., Albert Schweitzer quote in lessons on the film Slaughter Reform.

Section Three. After viewing the film, Love To Kill, ask the following questions:

- 1) What are some of the reasons men kill animals?
- 2) Are some reasons for killing animals justifiable while others are not? How can one draw the distinction?
- 3) Why do you think the ranchers enjoyed shooting these buffalo?
- 4) Why were the buffalo being destroyed? Was this justifiable? Why? Could the buffalo have been destroyed in some other, more appropriate way?
- 5) Why were the boys opposed to the killing of the buffalo?
- 6) Were the boys justified in what they did to prevent further killing of the buffalo? Why?
- 7) Were there other ways in which the boys could have gone about saving the buffalo?
- 8) Why were the men so angry with the boys?

Section Four. Teacher, ask the following questions:

- 1) Did the man shoot the boy purposely?

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- 2) Describe the feelings the men had before the boy was shot.
- 3) Describe the feelings the men had after the boy was shot.
- 4) Describe the feelings the boys had before the other boy was shot.
- 5) Describe the feelings the boys had after the other boy was shot.
- 6) How might you feel in each of these situations? Why?

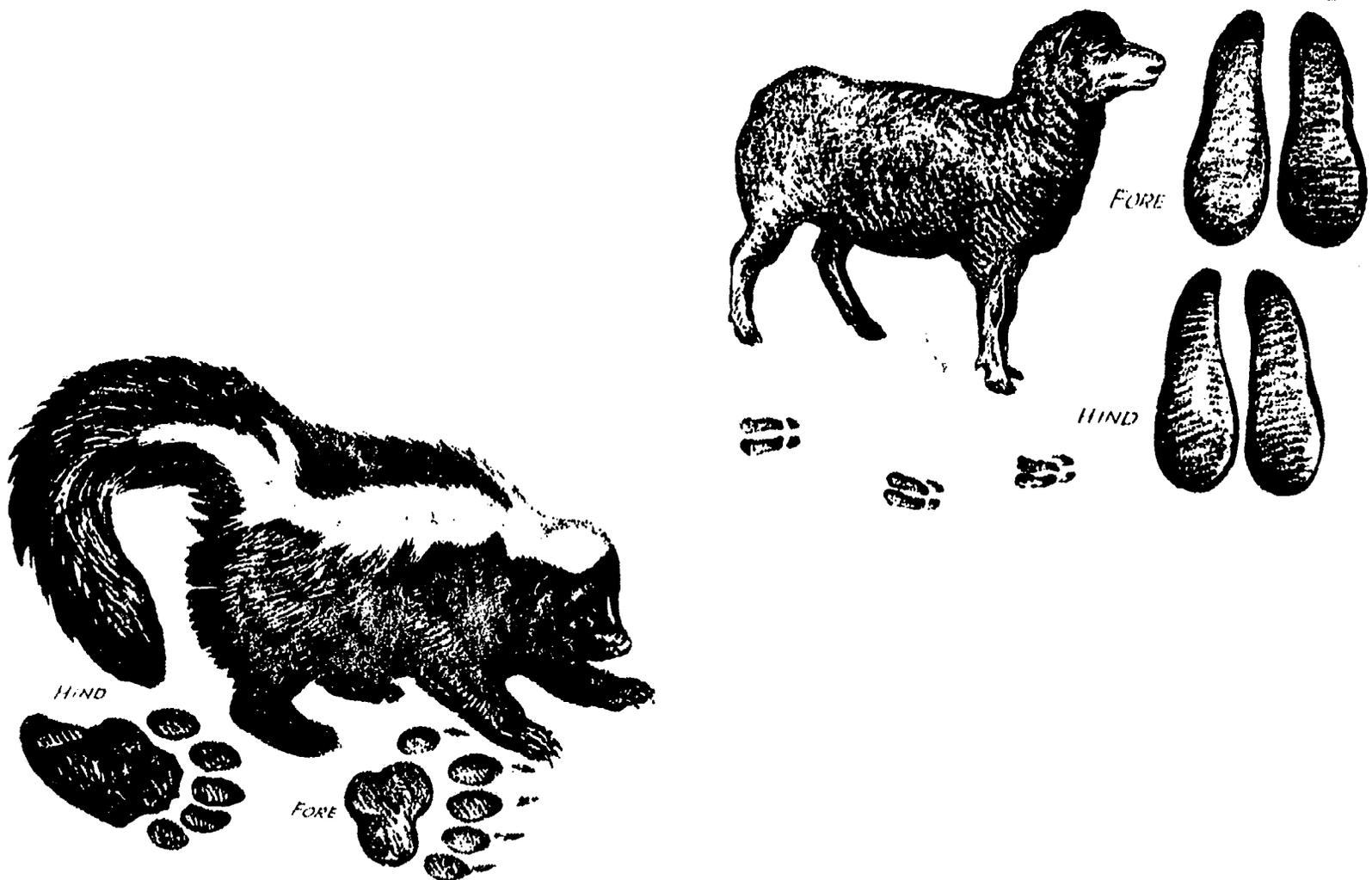
Section Five. Have the students design a social action strategy which the boys could have utilized to accomplish their goals. Also, have students identify a local issue involving domestic animals or wildlife and then, develop an action-plan.

References:

Reveille For Radicals, Saul D. Alinsky (Vintage Books, New York: 1969).

Planned Change, Ronald Lippitt, et al. (Harcourt, Brace & World, Inc., New York: 1958).

Finding Community, W. Ron Jones (James E. Freel & Associates, Inc., Cupertino, California: 1971).



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ACTIVITIES WITH ANTS

Developed by:

**Gail Hazlett
Irene Osborne
Anita Shepard**

and Judy Gervin

**with the Project
Staff**

LESSON 1: WHAT DO ANTS EAT?

What is your favorite food? _____

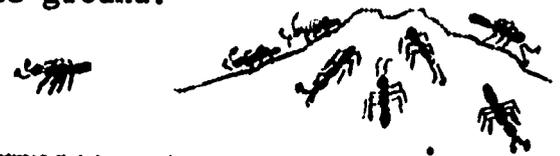
What do you think ants like to eat? _____

This activity will help you find out if ants have a favorite food.

An ANT COLONY is a group of ants living together.

An ANT HILL is the place a group of ants live.

Some ants live in a BURROW which is a hole in the ground.



A group of ants living together is called a _____.

An ANT HILL is _____.

Some ants live in a _____ which is _____

_____.

Find an ANT COLONY off by itself. Find some things you think ants might like to eat. Put down a small amount of each of the foods near the ANT COLONY. Observe the ants closely, so that you learn:

- A. The amount of time it took the ants to find each kind of food.
- B. What the ants did when they found the food.
- C. Which of the items was their favorite food.

Fill in a chart for each ANT COLONY with this information on the following pages.

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Fill in the chart below for Ant Colony I:

Food	Time to Find	What the Ants Did

What seemed to be the favorite food? _____

Find a different ant colony away from the first ant colony.

Repeat your activity and fill in the chart below for Ant Colony II.

Food	Time to Find	What the Ants Did

What seemed to be the favorite food? _____

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Try to find two ant colonies as close together as possible. Sprinkle each ant colony heavily with different colors of chalk dust. Try to dust as many ants as possible in each ant hill or burrow. We will call one ant colony Ant Colony 3 and the other Ant Colony 4. Decide which color chalk dust will be on Ant Colony 3 and which color will be on Ant Colony 4 so that you can tell them apart.

Now, put more food down so that it is between the two colonies. Make sure that each colony has an equal chance to reach the food. (If you can not find two ant colonies close enough together, you will have to bypass the parts of the booklet that have to do with Ant Colonies 3 and 4).

Fill in the following chart for each ant colony.

Food	Time taken to find food		What ants did	
	Colony 3	Colony 4	Colony 3	Colony 4

What seemed to be the favorite food for Ant Colony 3? _____

What seemed to be the favorite food for Ant Colony 4? _____

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Did the ants from the different colonies appear to fight over any of the food? _____. Why do you think that happened? _____

Did ants in the same colony appear to fight over any of the food? _____

Was there any difference in the way the ants in Colonies 3 and 4 acted in comparison to Colony 1? _____ What was the difference, if any? _____

Was there any difference in the way the ants in Colonies 3 and 4 acted in comparison to Colony 2? _____ What was the difference, if any? _____

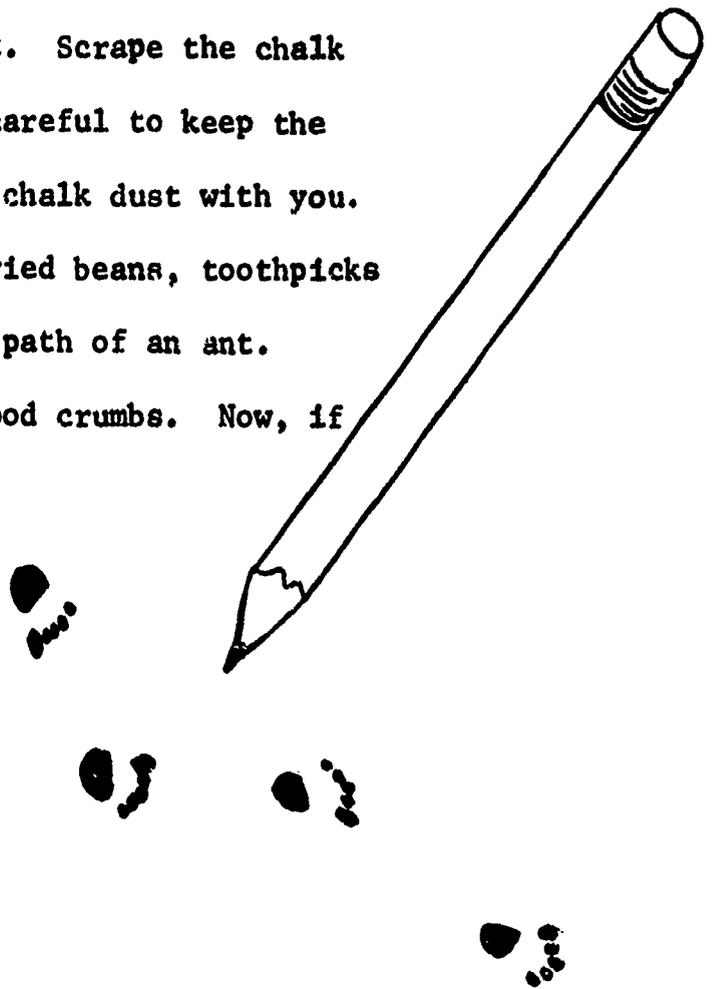
Looking back at all of the charts that you have filled out, what was the overall favorite food? _____

Of all the foods, which one did all ants like the least? _____

LESSON 2: WHERE DO ANTS GO?

Hello. Harvey Ant here. I'd like you to come outside and visit my family and me at the ant colony today. Can you find where I live? Let your teacher know exactly where you intend to be.

I thought that you might like to get to know us ants better. That's why I've invited you for a visit. To help you learn more about us, you'll need this booklet, a pencil, one piece of notebook paper, and four small pieces of colored chalk. You will also need a plastic spoon or something to scrage against the chalk to make a small amount of chalk dust. Scrape the chalk over your piece of notebook paper, being careful to keep the colors separated. Take the chalk and the chalk dust with you. You will also need some bits of gravel, dried beans, toothpicks or something that you can use to mark the path of an ant. Bring along a few bread crumbs or other food crumbs. Now, if you have everything all ready, let's go!



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PART I

Well, here we are. Look around until you find one ant. So that you don't lose sight of him, sprinkle him with a little bit of chalk dust. Get down on your hands and knees to follow your marked ant. Make a note of his path by placing tiny markers behind him every six inches or so. (This is what your tiny bits of gravel, stuck-in toothpicks, dried beans, chalkmarks on black-top, etc. were for: markers!) Follow the ant for some distance. Now look back at the trail you've made from your ant! Sketch the trail design in the space below.

Trail Design of Ant #1

Chalk color _____

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Now, find another ant. Mark him with a different color of chalk dust. Follow him in the same way. Look back at the trail make from this ant. Sketch the trail design in the space below.

Trail Design of Ant #2

Chalk color _____

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Find a third ant. Trail him in the same way as the other two, using a third color of chalk dust. When you finish, sketch his trail design in the space below.

Trail Design of Ant #3

Chalk Color _____

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Compare the trail sketches of your three ants. Did you find any pattern to the ants' movements? _____ What kind of a pattern? _____

Did all three ants seem to be going to the same place? _____
Where do you think they might have been going? _____

Part II

Find some other ants. Drop the food crumbs in their paths or near enough to them so that they can find the food easily. Sprinkle these ants with your fourth color of chalkdust. Trace the ants to their burrow or anthill. Disturb the ant as little as possible as you follow him...try not to make him change his natural behavior.

An ANT COLONY is a group of ants living together.

An ANT HILL is the place a group of ants live. Some ants live in a BURROW which is a hole in the ground.

A group of ants living together is called an _____.

An ANT HILL is _____.

Some ants live in a _____ which is _____
_____.

Now that you've found the ant hill or ant burrow, and its colony of ants, I'd like to ask you some questions.

Where do your ants live...in an ant hill or an ant burrow? _____.

Draw a picture of the ant hill or burrow and what is near it.

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Why do you suppose the ants picked this place for their home?

What color or kind of ants have you selected to study?

Do you suppose that the kind of ants that they are might have something to do with the place they picked for a home? _____

Why? _____

Watch the ants around the (outside) of the anthill or burrow carefully. Are the ants carrying food other than the food crumbs that you gave them? _____ What kind? _____

Do the ants pay any attention to each other? _____ What kind of attention? _____

Why would the ants touch antennae with each other? _____

After watching the activity around the ant hill or burrow, do you think ants are very strong, pretty strong, or weak? _____

What makes you think so? _____

What other kinds of activity did you notice around the ant hill or burrow? _____

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What was the most interesting thing that you learned about ants today? _____

Did you enjoy this activity? _____ Why or why not? _____

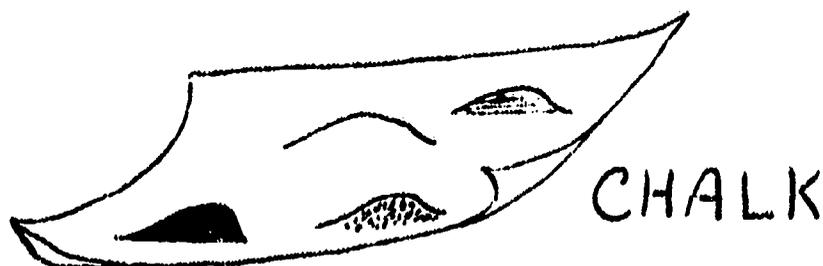
LESSON 3: HOW FAST CAN AN ANT RUN?

Did you know that math could come in handy to figure out some things that might tickle your curiosity? Well, it can. I should know. I have some things I've been curious about for a long time, but I can't figure them out without a little help... math help. (I never should have dropped out of the Ant Academy!) Would you help me? Oh, good. I'm glad. I'll finally get the answers to some things I've been wondering about! Oh, by the way, my name is Harv....Harvey Ant, that is.

It would probably be a good idea to look through this lesson and decide where would be the best place for this activity. Of course, you'll have to find a place where there are ants.

You will need to take this booklet, a pencil, a 12 inch ruler, a few bits of gravel or toothpicks to use as markers, and a watch. You will also need four small pieces of colored chalk, one piece of notebook paper, a plastic spoon or something to scrape against the chalk to make a small amount of chalk dust. Scrape the chalk over your piece of notebook paper, being careful to keep the colors separated. Take the chalkdust with you.

Okay, if you have everything...let's go!



PART I

1. Find an ant.
2. Dust him with one color of chalk dust so that you don't lose sight of him.
3. Make a note of his path by placing tiny markers (like your gravel bits or stuck-in toothpicks) behind him every so often so that you can keep track of how far he goes.
4. Track his path for one minute.
5. Go back and measure how far the ant traveled in one minute.

Repeat the above activity three more times with three different ants. Use a different color of chalk dust each time. Fill in the chart below after you finish with each ant.

ANT	INCHES TRAVELED IN ONE MINUTE
1	
2	
3	
4	
	TOTAL inches traveled

Look back at the chart and add together the inches traveled by all four ants. Put your answer in the box underneath the chart. In the space on the next page, divide the Total by 4. This will give you the average distance an ant can travel in one minute.

Put you division problem here.

$4 \overline{) \quad \quad \quad}$ Inches
 Average distance an ant can
 travel in one minute.

Change the inches in the above answer to feet by dividing your answer by 12 (the number of inches in a foot).

$12 \overline{) \quad \quad \quad}$ Feet per Minute

How far can an ant go in $\quad \quad \quad$ # of Feet per Minute $\quad \quad \quad$
 one hour? $\quad \quad \quad$ Feet. Minutes per Hour X $\quad \quad \quad$

Feet per hour

A mile has 5280 feet in it. How many miles would an ant travel in one hour? $\quad \quad \quad$ miles.

(This is the number of feet an ant traveled in one hour divided by the number of feet in a mile.) Figure your answer in the space below.

If Tallahassee is 6 miles away, how long would it take an ant to go non-stop to Tallahassee? $\quad \quad \quad$ hours.

(Divide 6 miles by the amount of miles an ant goes in an hour.

This will give you the number of hours it should take an ant to to to Tallahassee). Figure your answer here.

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If a man could run a mile in 12 minutes, how far could he run
in one minute? _____ Feet in one minute.

Figure your answer here.

Answer: $12 \overline{) 5280}^{440}$ feet in one minute

The man is 200 times larger than the ant. If the man were the
same size as the ant, how far could he go in one minute?

_____ Feet (Divide your above answer by 200.)

Figure your answer here.

If the man and the ant are the same size, who can run faster?

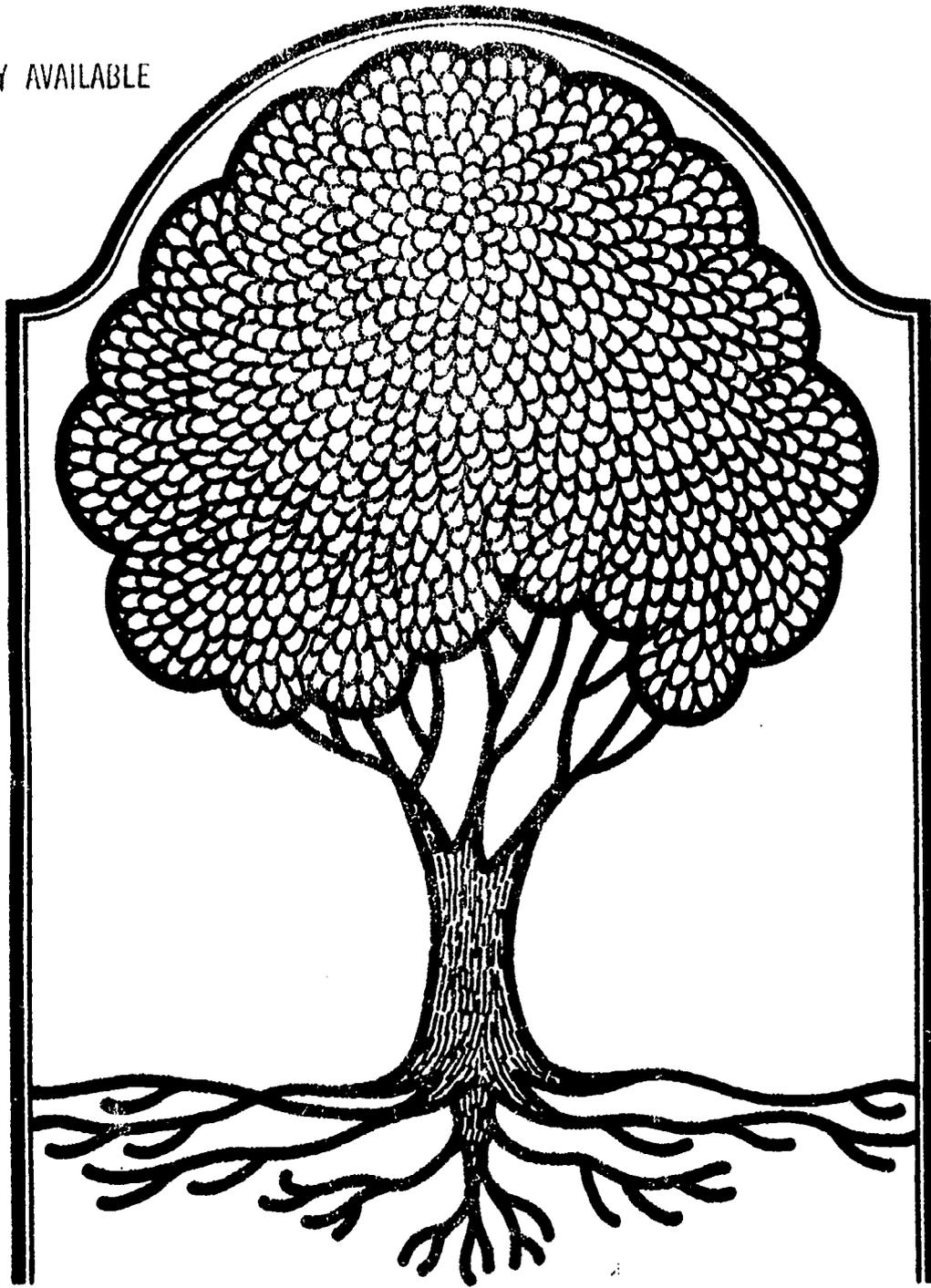
_____.

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PART II

In the space below, write a story about what could happen if you were an ant who suddenly became man-size. What kind of feelings would you have about your new situation? (use additional paper if necessary.)

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TREES - SOME HIGH SCHOOL ECO-ACTIVITIES

FOR EXPERIENCING TREES

Developed by

Helen Deans

Charlotte Hunt

Will Veal

Ed Woodruff

Florida State University Developmental Research School

Part I What Is a Tree?

Let's imagine that someone ran up to you at the Junior Museum and asked you to describe a tree. Could you do it? What would you say? Try describing a tree to the person next to you. Use words. Don't use your hands to motion. Don't draw or or scratch any diagrams.

How did you do it? Did you talk about the characteristics of a tree? What were they? Make a list of a tree's characteristics:

What types of trees do you know? Try to define two types of trees, giving examples of each type: Deciduous and Coniferous.

Try some tree identification on the grounds of the Tallahassee Junior Museum. Start by teaching one another the names and features of trees which you know. Then, get your teachers to share their knowledge. Make a list of what you know: the tree's names and features. Then, get a guidebook. The Museum library may have several. The school and public libraries have several. Try your hand at tree identification using handbooks. Add to your list as you identify trees, then test persons in your group (employ bark, needles, leaves, twigs).

--Activities: Try one or two of these to complement your identification effort.

- a) do a rubbing of leaves or bark on tree trunks (cover the leaf or place a piece of paper over a section of bark. Rub a crayon, charcoal, or chalk over the paper firmly). Do several to show differences and similarities.
- b) select an area of the museum grounds and within that area locate the oldest tree and the youngest tree. Discuss the reasons for your choice. How do you know that you are "right"?
- c) select a tree and point out the most POWERFUL feature of the tree. What is POWER in a tree? Point out the most tender, delicate feature of the tree. Then, point out contrasting features: passive-active, hot-cold, soft-hard,*moist-dry, growth-decay, etc.
- d) work with others to do a tree census at the Junior Museum. List all the species that you can identify. Build a display to show the diversity and the richness of the Junior Museum's "collection."
- e) plan a project with the Museum staff to label some trees.
- f) prepare a display of leaves, twigs, bark, and maybe wood samples for five kinds of trees at the Museum. Ask the staff to arrange a place for your display.

Do you know how a tree "works"? Describe the process as you think it takes place. Then, use the diagram on p. 3 to "see" the process on a real tree at the Museum.

*The diagram on the next page is reprinted from Trees for a More Livable Environment (San Francisco: Ortho, Chevron Chemical Company, n.d.) p. 6.

The following diagram has been removed to conform with copyright laws.

Part II How Is a Tree Valued?

Once you know what a tree is and how it works* an important question involves the worth of a tree or for that matter a forest of trees! How do you figure the worth or value of a tree or forest?

Do you figure it in dollars?

-or-

Do you figure it in something else? (What?)

Use your imagination to do a "commercial" based upon your own conception of the value of a tree or forest. Do a radio commercial, or a TV commercial, or a newspaper ad. Share your commercials and the concept of value upon which they are based.

The following quotations reveal their authors' conception of the value of a tree or a forest. Read each quotation and identify the author's conception of a tree's value. Compare their conceptions with your own.

A. TREE FARM

The first time I saw youthful Bob Murphy at his 950-acre farm near the town of Washington down in Wilkes County, Ga., he was jabbing a chemical injection gun deep into the trunk of a deformed old tree. The purpose, Bob explained, was to kill the unwanted vines, brush, and hardwood trees with but little commercial value and to make more room for his young 3- to 5-foot pines which needed more moisture and sun.

Three years before, Bob, his wife, and some hired help had wound their way through this field of nondescript trees and underbrush and hand planted about 900 loblolly pine seedlings on each acre. Seedlings were spaced every 6 feet in rows 8 feet apart. Most had survived. Now they needed more room to grow.

Bob said the brush and hardwood trees killed by the chemical injection lose their leaves and then gradually rot and fall to the ground. The resulting debris provides a thick moisture mulch for the young pines and protects the soil from erosion.

Crewcut and sporting a healthy tan, Murphy at age 26 typifies today's younger generation of farmers. . . the Murphys have been able to work over and improve about two-thirds of their 800 acres of woodland. Around 200 acres of previously unproductive woodland have been planted with loblolly pine seedlings, and the undesirable brush and hardwoods removed from about one-half of this newly planted area.

Besides this, they have carried out conventional timber stand improvement work-mostly killing off the undesirable brush and the poor quality trees-on more than 300 acres of other land. This area had a fairly good stand of pine trees intermixed with other tree growth when the Murphys purchased the farm. By removing the unwanted growth, the remaining pines could grow fast and straight.

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* Film suggestion: Life in the Woodlot. 17 minutes. Color. Sound. 16mm. available from the Media Center, F.S.U., Tallahassee 32306

By 1970, the Murphys hope to have all 800 acres of woodland producing a maximum growth of pine trees. . .

The Murphys' woodland is one of 4 1/2 million of our Nation's family forests, 75 percent of which are farmer-owned. What has been done on the Murphys' property can be repeated on many others.

As Tom K. Wilson, the Farmers Home Administration's credit technician for Wilkes County, points out, "Our wood-processing industries need more timber to meet ever-increasing demands from an energetic Nation which will see 330 million people living within its shores by the year 2000."¹

B. MAN'S BEST FRIEND, THE TREE

TREES help keep our air supply fresh by using up carbon dioxide that we exhale and that factories and engines emit. . .

TREES use their hairy leaf surfaces to trap and filter out ash, dust, and pollen particles carried in the air. . .

TREES dilute gaseous pollutants in the air as they release oxygen. . .

TREES can be used to indicate air pollution levels of sulfur dioxide, just as canaries were once used to detect dangerous methane gas in coal mines. . .

TREES provide food for birds and wild animals. . .

TREES lower air temperatures by enlisting the sun's energy to evaporate water in the leaves. . .

TREES increase humidity in dry climates by releasing moisture as a by-product of food-making and evaporation. . .

TREES give us a constant supply of products-lumber for buildings and tools, cellulose for paper and fiber; as well as nuts, mulches, oils, gums, syrups, and fruits. . .

TREES slow down forceful winds. . .

TREES cut noise pollution by acting as barriers to sound. Each 100-foot width of trees can absorb about 6 to 8 decibels of sound intensity. Along busy highways, which can generate as much as 72 decibels, this reduction would be welcome to residents. . .

TREES provide shelter for birds and wildlife and even for us when caught in a rain shower without an umbrella. . .

TREES shade us from direct sunlight better than any sombrero. They are welcome in parking lots on hot, sunny days. . .

TREES camouflage harsh scenery and unsightly city dumps, auto graveyards, and mine sites. . .

TREES offer a natural challenge to youthful climbers. . .

TREES make excellent perches for Robinson Crusoe-style playhouses. . .

TREE branches support ruggedly-used swings. . .

TREE leaves break the onslaught of pelting raindrops on the soil surface and give the soil a chance to soak up as much water as possible. . .

TREE leaves, by decaying, replace minerals in the soil and enrich it to support later plant growth. . .

¹ Robert E. Nipp, "Pine Trees and Profits from a Family Forest," in Outdoors U.S.A., The 1967 Yearbook of Agriculture (Washington, D.C.: Government Printing Office, 1967) pp. 371-372.

TREE roots hold the soil and keep silt from washing into streams. . .
TREE roots help air get beneath the soil surface. . .
TREES salve the psyche with pleasing shapes and patterns, fragrant blossoms, and seasonal splashes of color. . .
TREES break the monotony of endless sidewalks and miles of highways. . .
TREES beautify our gardens and grace our backyards. . .
TREES soften the outline of the masonry, metal, and glass cityscape. . .
TREES increase the value of property. . .
And TREES provide for America's economic growth and stability.²

C. WHAT DO TREES MEAN TO FLORIDA?

The forests of Florida are among the most valuable assets Floridians have. Trees are a renewable resource, a unique kind of wealth.

Florida's forests provide more than 5,000 products and by-products, and support a \$1.5 billion dollar industry. This economic value is important, of course, but the human values also have to rank as priceless benefits that we receive from the forest.

The forest resources can and must extend into the urban and suburban areas, for the environmental benefits are vitally important.

Some of the many ways in which trees can substantially improve an urban or suburban environment:

Trees as oxygen producers for urban areas. Through a marvelous process, trees take on carbon dioxide and return pure oxygen to the atmosphere

Trees as dividers for urban communities. A screen of green and growing trees can shield unsightly urban areas, or separate residential areas from other urban land uses.

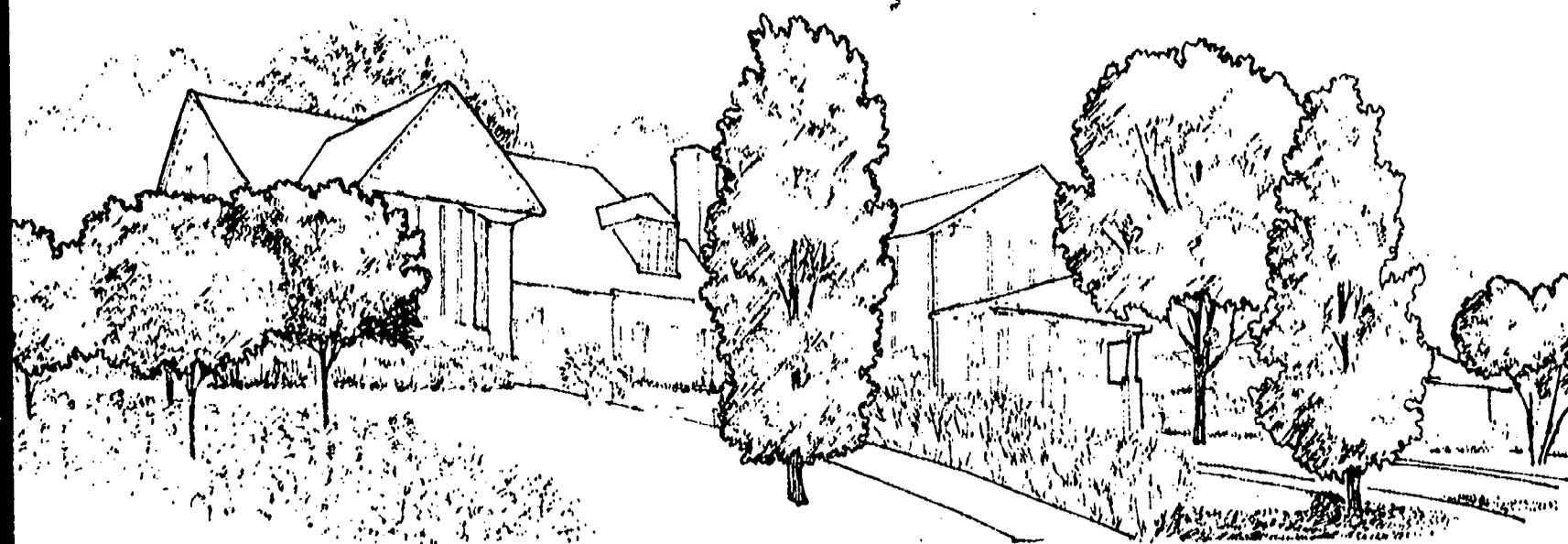
Trees as blotters for urban floods. Stands of trees can help to control floods, with the forest floor acting as a giant sponge, soaking up rainfall.

Trees as windbreaks for urban storms. Rows of trees can protect urban areas from the full force of damaging wind and water.

Trees as coolants for urban temperatures. One tree can produce the cooling effect of several room air conditioners. Trees also provide shade, and absorb and reflect solar radiation.

Trees as tranquilizers for urban nerves. A pleasant stroll through a lovely wooded area can provide a soothing retreat from the crush and press of the workaday world.

² Florida Division of Forestry, Tallahassee, 1971.



Trees as wildlife habitats for urban enjoyment. A forest stand is the natural home of deer, squirrels, birds, and other woodland dwellers. For many people, trees symbolize havens and food for wildlife.

Trees as sponges for urban noises. Rows of trees, placed to good advantage, can effectively reduce high noise levels. A good example would be trees planted around airports for noise abatement.

Trees as filters for urban smog. Serving as "nature's air conditioners," trees absorb air borne pollutants, such as smoke, odors, and dust.³

D. ENVIRONMENTAL BENEFITS

What are these "environmental benefits" that we derive from trees?

Consider that on a roasting hot summer day, an average tree will transpire about 300 gallons of water. Expressed in an urban relationship, this tree has the same cooling effect as 10 room air conditioners.

Forest research indicates that just one acre of young, growing trees releases four tons of oxygen into the air each year. That's enough to supply the needs of at least a dozen people.

U.S. Forest Service data establishes that trees serve effectively as sound buffers. Studies show that each 100-foot width of trees can absorb six to eight decibels of sound intensity. Placed along superhighways and in residential areas, trees can help soften harsh sounds to a fairly pleasant level.

There are many other benefits. And not the least is the satisfaction of that deep hunger within all of us, when we pause to admire the blazing colors of a fall forest against the backdrop of an azure sky.

³ Florida Division of Forestry pamphlet.

Trees play a major role in the intricate scheme of Nature's Grand Design.

And south Florida, if it is to survive as a habitable place in the future, must have the full array of forest values.

Transplanting these values to the city will require the unique skills of a new breed of professional: the "urban forester."

For these foresters, the frontiers of modern forestry lie not in the calm solitude of the wilderness, but in the raucous, artificial environment of the city.

It is here that forestry must meet the challenge: to help mankind not only to survive, but to preserve a natural quality of life for future generations.

The answer lies in the development of an Inhabited Forest: a forest populated with people as well as trees.⁴

E. TREES FROM THE NATION'S HISTORY

Trees have always played an important role in the life of our country. The forest products industry in America dates back to the founding of Jamestown, Virginia in 1607 - the beauty and pleasure trees afford enhance the richness of our lives - and they are a vital part of our ecological balance. Through a program called "Trees From the Nation's History," the American Forest Institute plans to participate in the Bicentennial observance by offering to all Americans the opportunity to join the forest industry in the conservation of these very important natural resources.

Starting in 1975, "Trees From the Nation's History" will make available to organizations and private citizens seeds from six trees which exemplify the importance of forests in our nation's development. The seeds will be packaged and attached to cards containing a description of each species, planting instructions and historical information about the tree.

The six trees selected by the American Forest Institute are:

- The common apple - a symbol of westward migration and famed in folklore by the legendary "Johnny Appleseed."
- The white oak - a species of the famed "Charter Oak" in which the charter of Connecticut was hidden when King James II demanded its surrender in 1687.

4. Albert Schory, Sixty Trees for South Florida (Tallahassee: Florida Division of Forestry, n.d.), pp.3-4.

- The white pine - a tree which gave birth to the nation's first industry, lumbering. It was also the object of the "Broad Arrow" policy, under which trees over a certain size were reserved by and for the Crown and thus became the focus of one of many grievances leading to the Revolution.
- The eastern hemlock - the state tree of Pennsylvania. It was the main source of tannin for curing leather during the nation's early years.
- The live oak - a tree once used in shipbuilding. During the era of "wooden ships and iron men," the U.S. Navy acquired forests of live oak for the construction of ships... "Old Ironsides" is a famous example.
- The Douglas fir - a conifer which produces more timber than any other American species, and is the most important commercial tree in the nation.⁵

Part III Trees and Your Values

"I had to cut the tree,
it was ripe!"

--Tree Farm Manager

"We shake down acorns and dig pine-nuts. We don't chop down the trees. We only use dead wood. But the white people plow up the ground, pull up the trees, and kill everything. The tree says, Don't. I am sore. Don't hurt me. But they chop it down and cut it up. The spirit of the land hates them...."

--California Indian woman

A. When it comes to trees (or almost anything), we find that people have different, but conflicting values. Let's consider what you think counts as a good reason for cutting down a tree.

Examples:

- a) "That tree always got my rain spouts clogged with its leaves!"
 - b) "It had to go. We're widening the road."
 - c) "I want to sell it for lumber."
 - d) "It wasn't worth anything. I can't sell it for timber or pulp."
 - e) "Power lines are coming through. The trees have got to go."
-
-
-

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B. Well, with those reasons for cutting down trees, you might consider the following human behavior. For each behavior listed below:

1) state whether you think it is "right" or "wrong," "good" or "bad," "desirable" or "undesirable;" 2) offer reasons to support your judgment; and 3) offer reasons why persons might behave in these ways.

- 1) After years of cutting timber, the red pine is no longer found in our forests. Large cedar trees, once used in a flourishing pencil industry, are no longer plentiful in North Florida's forests. Black walnut wood is very, very difficult to obtain and then only at very high prices.
- 2) Advertising romance or proclaiming one's identity, a boy carves initials in a tree's trunk for all to see. Isn't that what a tree's bark is for?
- 3) Ever see trees burning along a path where a highway is being widened or where a new highway is under construction? Why didn't the trees go as timber or pulp and the roots to naval stores?
- 4) New regulations require the planting of trees along interstate highways, especially around cloverleaf intersections.
- 5) With a new highway under construction, the Upsy-Daisy group leads a thousand Tallahassee plant savers in ahead of the bulldozers to save and to replant native trees and shrubs.
- 6) Forests are often infested with beetles which will destroy trees. Owners spray the trees to save them, but the impact upon wildlife is not clearly known.

To summarize your responses to these behaviors, state what you feel are some obligations of those who affect the lives of trees:

C. Some Cases for Discussion:

1. Trees and Streets

Twenty years ago Jonesville was a small town renowned for its pleasant living conditions. But several major employers located office buildings in Jonesville and the town grew rapidly into a small city, complete with suburban developments. In the last two years major traffic tieups have occurred in the early morning and again around five o'clock. Many people, especially those living in the new outlying suburban areas are demanding wider streets and the construction of major highways into the city. But persons living in the older established areas of Jonesville object to this plan. They say that it will be their neighborhoods which will suffer, losing beautiful 200-

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year old oaks which line the streets and losing beautiful tree-shaded lawns and parks. The city and county governments are receiving demands and counter-demands from each group.

In your judgment, what should the governments do?

--What is the conflict?

--What alternative courses of action seem available?

--What should be done?

--What reasons can you offer to support your judgment?

2. Tree or Office

Several years ago Mel Dickinson and his wife purchased a nice residential building lot near the downtown business district. They wanted to hold it for a few years while the lot's value increased, then get the zoning changed from residential to commercial, and sell the lot for a considerable profit. Last week a builder did call to say that she would buy the lot if the zoning change was made. Excited by the price offered, Mel and his wife rushed to get a zoning change submitted. Then, opposition developed. Several children and their parents objected because the zoning change would bring a building and the building would mean that a beautiful, old oak tree would have to be cut down. Mel argued that other old oaks had to be cut down so that the neighboring buildings could be built years ago, but the children and parents continued their protest.

In your judgment, what should the zoning board do? (use the questions in case 1).

3. Burned Up

Melvin Jones purchased a thousand acre forest ten miles from the town of Adams in the center of the county. In order to protect his forests, the State forester advised Mr. Jones to conduct a controlled burning of his acreage, a small parcel at a time until the whole was burned off. It seems that a controlled burning at the right time of year, gets rid of the underbrush and ground cover, which in a wildfire turn too hot and destroy the trees (see below).

Mr. Jones began his controlled burning on small plots, with adequate fire protection on hand. However, residents in nearby towns complained about the smoke -- even miles away. They called the State Department of Pollution Control officials, who immediately ordered Mr. Jones to stop burning. He was not permitted to burn off his forest.

Jones was perplexed. If burning was necessary to protect his forest, why not burn it. Wasn't everybody against damaging wildfire? He discussed this problem with friends.

How would you resolve this conflict? (use the questions in case 1).

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Consider the following information from the State Division of Forestry:

CONTROLLED BURNING: Fire at the right place, at the right time

Wildfire - uncontrolled fire - costs millions of dollars in Florida every year, in dead and dying trees and timber lost for both present and future.

Yet controlled fire is a useful forest management tool and a help in protecting forests against wildfire.

Why this paradox?

Forest protection in Florida has shown real benefits, but the protection necessary to get a pine plantation established and growing often produces heavy underbrush and ground cover as well. During prolonged dry periods, this heavy rough is a virtual powder keg. When wildfire does strike, it is extremely difficult to control and timber losses are exceptionally heavy.

The use of controlled fire can reduce fire hazard, hence losses from wildfire. Controlled fire is also useful in management of longleaf pine, in reforestation by natural or artificial seeding, and in reducing the cost of removal of scrub hardwoods.

Careful use of controlled burning can benefit Florida's woodlands. But it is always a weighing of damage against benefit, to reduce the threat of a greater danger. The purpose of using fire wisely is to outline ways to help keep the damage low and the benefits high. The landowner must recognize the dangers involved, and make his decision.

CONTROLLED BURNING: Why?

for fire insurance - to get rid of a dense rough that could mean the end of your trees if a wildfire ever started. Carefully controlled fire, backed against a steady wind to keep from preheating the fuel, can reduce fire hazard - yet cause little damage to slash pine a dozen feet tall or longleaf seedlings in the grass stage. Remember that even the best controlled burn will cause some mortality.

for natural seeding - controlled burning lends a helping hand to clear away rough which prevents the seed from reaching the soil or which will compete with tiny seedlings for nourishment. Controlled burning will also reduce rodents if the burn is made about a month before seed fall.

for removing brown spot - in longleaf seedlings in the grass stage, when they're two years old or older. The same conditions apply as for rough removal with one exception: a sweeping head fire with the wind causes less damage to seedling stems while it burns off the infected needles. Sometimes the cure is worse than the disease.

for weeding out cull hardwoods - judicious use of fire, followed by tree poison, can prepare an overgrown field for planting or seeding. Don't use fire in attempting to control large scrub trees: fire will not kill them, but will damage small pine saplings in the area. Catch cull hardwoods when they're young and tender.

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before planting seedlings - a good controlled burn will clear land of heavy grass or rough which competes with seedlings, and will help protect the young plantation.

for "greening up" unimproved pasture - burning during the winter months when the trees are dormant will provide green pasture in the spring. It won't kill the older trees, but continued burning every year slows down growth of larger trees and kills off most of the young seedlings.

for wildlife management - turkey, quail, and deer need the browse of open areas as well as dense cover. Controlled burning can open up small areas for better hunting. Burning a large area destroys food for game and drives it away.

Complementary Activities:

1. Take a field trip to the nearest tree farm, commercial forest area, or tree nursery. Discuss the species and their market destination with the owner, manager, or staff personnel. Also, discuss forestry practices.
2. Visit the closest wood processing plant (saw mill, pulp mill, paper mill, naval stores plant). Find out where the wood comes from and where it goes, as well as the processes and procedures used at the plant.
3. Arrange a visit with a person from the Florida Division of Forestry to discuss fire protection and controlled burning practices.
4. Visit an "urban forester" -- a nurseryperson. Discuss the value and uses of trees in urban areas, the market for trees, the sources of tree stock, and the operating procedures and costs of the nurseryperson's operation.
5. Visit the tax assessor in your county. Discuss the evaluation of forest lands and the impact of trees upon the valuation of houses in towns. In other words, how does the tax assessor figure the value of a tree or trees?
6. Interview representatives from various tree-interested groups. See addresses on the last page of this booklet.
7. Figure out ways to save a tree in your community (i.e., conserve paper use, recycle newspapers). Try one or more of your "ways."

Part IV A Different View of Trees' Value

There are a lot of different ways to see a tree and to discover its worth. You have explored some of these, but in this section there are three quite different attitudes toward trees. As you read each passage, think about these questions and share your thoughts:

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1. What is the value of a tree (or trees) expressed in each of the following quotations?
2. How does each author see and feel the presence of a tree and its personal meaning for the author?
3. How important are such attitudes toward trees? Can we feel that way toward all trees? Just a few? One? None?

You might select a favorite tree at the Junior Museum, sit in a comfortable place, and try to see, feel, and value that tree the way one of the three authors did for their "tree." Try out their perspective.

To warm up, try one of the following --

- a) take a series of photographs (or do sketches) to tell a mystery story involving your tree. Build in some clues about how the story ends. Or use your camera to make a film strip telling your tree's story.
- b) concentrate on sounds near your tree and things about your tree which make you feel - joy, anger, sad, loving, afraid, beautiful, awe, wonder, powerful.
- c) Create some biological metaphors about your tree: My tree eats My tree produces. . . . My tree thinks. . . . My tree says. . . .etc.

TREE

Didn't you know?
 This is mine.
 This is my friend and consolation.
 He is what I say he is.
 He can't talk.
 He listens.
 Putting his strong body
 Around me.
 None can come near.
 Because he wants it that way.
 Everyday we meet.
 He grows bigger.
 The sun shines warm on his arms.
 And back.
 The grass and flowers bow before him.
 The wind runs to meet him.
 While the sun rushes by
 The king of nature.
 The ruler of happiness and peace.
 For the lonely.
 My tree.
 Didn't you know?

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"Before I made any friends I sort of liked this tree... it's right here at school. It's hard to explain but it was like a friend."

"When I write I like to describe something. I like to write down things and save them and later take them out and improve on them."

Christa Cervenka
Pinellas Park Junior High School⁶

HUMAN MEANING

Some details of a person's inner greatness may have come to one's mind like the story of the young woman whose death I witnessed in a concentration camp. It is a simple story. There is little to tell and it may sound as if I invented it; but to me it seems like a poem.

This young woman knew that she would die in the next few days. But when I talked to her she was cheerful in spite of this knowledge. "I am grateful that fate has hit me so hard," she told me. "In my former life I was spoiled and did not take spiritual accomplishments seriously." Pointing through the window of the hut, she said, "This tree here is the only friend I have in my loneliness." Through that window she could see just one branch of a chestnut tree and on the branch were two blossoms. "I often talk to this tree," she said to me. I was startled and didn't quite know how to take her words. Was she delirious? Did she have occasional hallucinations? Anxiously I asked her if the tree replied. "Yes." What did it say to her? She answered, "It said to me, 'I am here--I am here--I am life, eternal life.'" ⁷

I CONSIDER A TREE

I can look on it as a picture: stiff column in a shock of light, or splash of green shot with the delicate blue and silver of the background.

I can perceive it as movement: flowing veins on clinging, pressing pith, suck of the roots, breathing of the leaves, ceaseless commerce with earth and air--and the obscure growth itself.

I can classify it in a species and study it as a type in its structure and mode of life.

I can subdue its actual presence and form so sternly that I recognize it only as an expression of law--of the laws in accordance with which a constant opposition of forces is continually adjusted, or of those in accordance with which the component substances mingle and separate.

I can dissipate it and perpetuate it in number, in pure numerical relation.

6 From Section D, St. Petersburg Times, ca. 1971.

7 Viktor E. Frankl, Man's Search for Meaning (New York: Simon & Schuster, Inc., 1959), pp. 68-69.

In all this the tree remains my object, occupies space and time, and has its nature and constitution.

It can, however, also come about, if I have both will and grace, that in considering the tree I become bound up in relation to it. The tree is now no longer It. I have been seized by the power of exclusiveness.

To effect this it is not necessary for me to give up any of the ways in which I consider the tree. There is nothing from which I would have to turn my eyes away in order to see, and no knowledge that I would have to forget. Rather is everything, picture and movement, species and type, law and number, indivisibly united in this event.

Everything belonging to the tree is in this: its form and structure, its colors and chemical composition, its intercourse with the elements and with the stars are all present in a single whole.

The tree is no impression, no play of my imagination, no value depending on my mood; but it is bodied over against me and has to do with me, as I with it--only in a different way.

Let no attempt be made to sap the strength from the meaning of the relation: relation is mutual.⁸

Extending Activities. There are a wide variety of "places to go from here" if students and teachers are interested. The following activities and addresses suggest but a few of those "places."

- 1) Students might survey the writing of some of Florida's best known authors for material on trees: Marjorie Kinnan Rawlings, Gloria Jahoda, Zora Neale Heuston, Frank Slaughter, and Frank Yechym for example.
- 2) Students might use anthologies of folklore and ballads to locate music and stories involving trees (i.e., lumber camp songs, Western "hanging trees," etc.). Each will express attitudes toward trees and a conception of human beings' relationship to trees.
- 3) Students might interview local foresters and Division of Forestry personnel and use the morgue at the local newspaper to identify "record" trees in their region. Florida, for example, has many unusual species and has more trees of record size than any other state in the continental U.S.
- 4) Students might explore references to, and uses of, trees in modern poetry. For example they might read Robert Frost's Birches and The Sound of Trees. A good place to begin is with W. D. Snodgrass' Planting a Magnolia:

⁸ Martin Buber, I and Thou (New York: Charles Scribner's Sons, 1958), pp. 7-8. Second Edition.

W.D. Snodgrass' "Planting a Magnolia" reprinted from Richard Ellman and Robert O'Clair, ed., The Norton Anthology of Modern Poetry (New York: W.W. Norton, 1973), pp 1088-1090, has been removed to conform with copyright law.

FOR ADDITIONAL INFORMATION

Florida Division of Forestry
Collins Building
West Gaines Street
Tallahassee, Florida 32304

Florida Forestry Association
P. O. Box 1696
Tallahassee, Florida 32302

Forest Service
United States Department of Agriculture
Washington, D.C. 20250

Soil Conservation Service
United States Department of Agriculture
Washington, D.C. 20250

American Forest Institute
1619 Massachusetts Avenue, N.W.
Washington, D.C. 20036

American Forestry Association
919 17th Street, N.W.
Washington, D.C. 20006

Bureau of Land Management
Bureau of Land Reclamation
Bureau of Parks
United States Department of
the Interior
Washington, D.C. 20240

Teachers and students will want to write to the National Wildlife Federation, 1412-16th Street, N.W., Washington, D.C. 20036, to learn more about the Backyard Wildlife Program, which involves trees.

10 Reprinted from Richard Ellman and Robert O'Clair, editors, The Norton Anthology of Modern Poetry (New York: W. W. Norton Company, 1973), pp. 1088-1090.

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**ACTIVITIES FOR SECONDARY SCHOOL STUDENTS
AT THE TALLAHASSEE JUNIOR MUSEUM**

September 1974

Written by:

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In cooperation with:

Florida Department of Education

Bureau of Environmental Education

LIVING WITH NON - LIVING

1. **PROBLEM:** How does the environment interact with living things?

THINGS YOU'LL NEED: Map of nature trails and habitats,
Drawing board and pencil, graph paper,
meter stick.

FINDING OUT: "Environment" is the interaction of things such as the amount of water, temperature, light, altitude, etc. This interaction affects all living things. Living things are inter - dependent with their environment.

Find areas on the museum grounds that are warmest, coolest, brightest, darkest, wettest, driest, windiest, etc. Choose 2 or 3 of these sites to work with. (Example: Swamp habitat and grassy habitat near Murat house).

Measure off a square that is 15 meters on each side. Draw a square to scale on your graph paper and fill in symbols to represent any trees, shrubs and grasses you find in the measured area.

MORE: What differences are there in the types, shapes, and sizes of plants in the different habitats? Why?

Repeat the same activity this time using animals. (If there are no animals to be seen, fill in what type of animal you might expect in each habitat).

Look straight up. . .how much sky shows through?
Look straight down. . .Are there any plants at your feet?
How does the type of plant relate to the amount of sky showing through?

What other environmental factors are responsible for type of vegetation?

Read BSBC Green High School Biology Pages 47 - 52

Cross Reference: Who Grows There?
Ring Toss
Tell It Like It Is.

I NEED YOU

2. PROBLEM: How do living things interact?

THINGS YOU'LL NEED: Pencil, paper, camera (optional).

FINDING OUT: The world is a complex, interdependent, interacting system. Plants and animals often interact. Animals may use plants for food or shelter and plants may use animals to help spread seeds, etc. Find examples of animals interacting with their environment. Collect or photograph examples of animal signs (example: chewed nuts, holes in trees, nests, etc.) BE CAREFUL NOT TO DISTURB THE HABITATS! Explain how each sign demonstrates interaction.

MORE: Find examples of animals depending on plants; plants depending on animals, man depending on both plants and animals.

Make an exhibit of animal signs.

Do the optional activity - Casting animal tracks.

Can you find areas where man has interacted harmfully on the museum grounds? What would you recommend (to the people that run the museum) they do about any harmful interaction?

Cross Reference: Casting Animal Tracks

"TAKES TWO TO TANGO"

3. PROBLEM: What process is not necessary for the continuance of a single animal or plant but is necessary for the continuity of groups of living things?

MATERIALS: Pencil, paper, Map of Junior Museum and a keen eye.

FINDING OUT: If a group of organisms (living things) wish to remain a "group" for any length of time, they must reproduce. By reproducing, these groups can replace any members that die. Here at the Junior Museum there are several habitats. Each habitat - from the deer, to the farm, to the exhibit houses - have many types of plants and animals that reproduce by different means (Example: some animals may lay eggs.) Find and record as many organisms as you can (don't forget insects, fish, and worms).



Look for signs of reproduction (nests, shells, larvae, etc.). If there are no obvious signs put down how you think the organisms reproduce.

MORE: Take your list home with you and check reference sources (encyclopedia, biology book, etc.) to find out if you are right.

Can you group organisms according to the method of reproduction they use? Try it.
Read BSCS Green High School Biology - "Continuity of the Biosphere" beginning on page 577.

CHECKERS ANYONE

4. **PROBLEM:** Certain organisms (living things) rely on others for their survival, some are deadly to others. How do these organisms attract or warn others?

THINGS YOU NEED: Small pieces of drawing paper, crayons or colored pens, string and a vivid imagination, colored cellophane paper optional.

FINDING OUT: Plants must attract animals for pollination and seed dispersal. Animals must attract mates. Often animals will use color to hide or warn others of danger (the white tail of a deer, or the black and white striped pattern of a skunk). Using the following patterns: checkers, rectangles, diamonds, stripes, spots, triangles create some designs that could be used for camouflage in the habitats on the museum grounds. Hang them or place them in the habitats to see if they work. If you have someone with you, see if they can find your designs or are "you" well camouflaged.

MORE: Are there any organisms that have patterns similar to the ones you've designed?

List some animals or plants found at the museum that use odor or color to attract others.

What would happen if all organisms were attracted to the same designs?

What kinds of sensory displays do humans use to attract attention?

There are several white squirrels on the museum grounds (near the deer habitat & near the farm animals). How do you think they camouflage themselves?



Not all animals have the same quality of vision. (Some may see in "black and white" while others may see in "technicolor." Tape some colored cellophane paper to your forehead and cover your eyes. Now look again for your designs. Are they as easy to find?

Cross Reference: Now You See Me, Now You Don't

RECYCLE IT

5. **PROBLEM:** There is an old saying that goes "You don't have to do anything except die and pay taxes!" This may be true (unfortunately) for humans, but in the plant and most of the animal kingdom there are no taxes. What happens to all the dead organisms? Why aren't we up to our ears in them?

THINGS YOU NEED: Plastic bags (baggie size), paper and pencil.

FINDING OUT: "Rolly-Polly's" or "Sow Bugs" are little gray bugs that are very commonly found under decaying logs, leaves or rocks. These little bugs roll up in tight little balls when touched. Take several baggies and put a couple of leaves of one type in each. Collect and place 8 to 10 sow bugs in each baggie. A good place to look on the museum grounds would be near the swamp or bear habitat where it is cool, dark and moist. Don't leave the baggies in direct sun, be sure there is plenty of moisture and renew the air supply every day by opening the baggies. Each day record the number and size of the bugs, the type of leaves, where at the museum you collected them and how long it took the bugs to eat all the leaves.

MORE: Did your bugs prefer one type of leaf over another? Could they digest one type faster than another? What happens to dead organisms that sow bugs can't digest? Sow bugs and other little "critters" like them are very important in our environment. Find out what other type of "beasties" are responsible for decaying dead plants and animals. What takes care of dead sow bugs? Reference: BSCS Green High School Biology, page 237.

FRIEND OR FOE

6. **PROBLEM:** Plants and Animals always interact in nature. Are all these interactions harmful to one of the organisms?



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THINGS YOU'LL NEED: Paper, pencil, and a sharp eye.

FINDING OUT: There are certain relationships found in nature. Some animals will kill and eat others. The animal that does the killing is a predator. The act is called predation. Another relationship is called parasitism. This is when a plant or animal lives off of another but doesn't kill it. (Tape worm). Often two plants or animals will live together and it helps both (Squirrel and oak tree). This relationship is called mutualism. On your paper draw three columns. Head each column with one of the relationships (Predation, Parasitism, Mutualism). Follow the nature trails and keep an eye open for plants or animals that might belong under one or more of these columns. (Don't forget "man"!.) Explain the relationships you find.

MORE: What special features do predators have? Examine the foxes, racoons, Clawdette, the owl, and Hickel, the eagle, for possible answers. Design a device that a predator might use for digging animals out of holes. Design a device for holding on to a squirming prey. Read pages 84-88 in BSCS Green High School Biology.

Cross Reference: A Plant Adaptation.

TO CHANGE OR NOT TO CHANGE

7. **PROBLEM:** Is change always for the good? Or should some things remain the same?

MATERIALS: paper, pencil, and your thinking cap.

FINDING OUT: Change may often be necessary but there's a lot to be said for continuity. Locate the pioneer farm. Visit the following sites: general store and post office, livery, sugar cane and syrup mill, stables, gardens, farm house, out house, and vegetable house. At each site explain the following:
How have things changed in modern times?
Are the changes for the good?
Why or why not?
What would you have left alone on the farm if you had your way?

MORE: Re-design certain sites in your home town to be less complex and more beneficial as far as pollution and conserving energy are concerned.

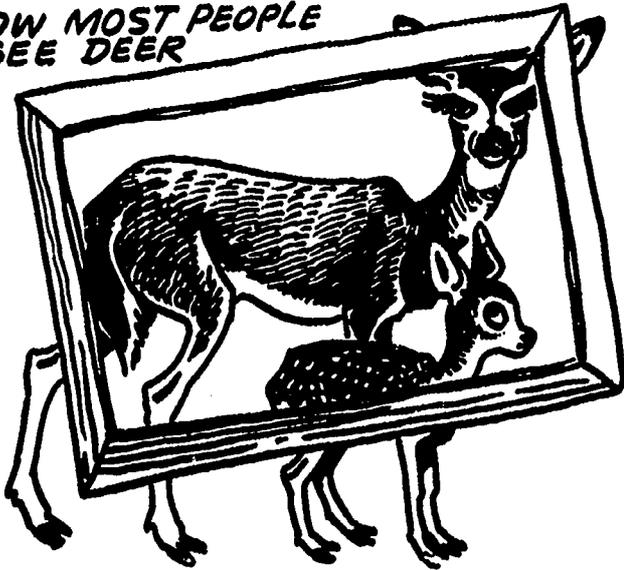
THE SHAPE YOU'RE IN

8. **PROBLEM:** How is it that living things get along so well in the environment?

THINGS YOU'LL NEED: Collecting baggie, construction paper, pencil and glue.

FINDING OUT: All living things interact with their environment. Some living things have developed structures to help them get along better in the environment (Example: Polar bears have thick fur to protect them from the cold). In the plant world, a necessary environmental element is sunshine. Only the green leaves can use the sun's energy. In this activity, collect leaves from the different habitats and place them in your baggie. (Try to take them from the ground so the bushes don't become bare! Take only what you need.) Label or remember the leaves, as to where you got them. Mount one or two leaves on only one side of your pages of construction paper. Punch holes in pages and join with string or yarn to make a booklet. On each page write what type of leaf (look it up), where you found it (swamp or forest area), and how its shape works to the advantage of the plant in the area you found it. (Does it help it get a lot of sun or very little?)

HOW MOST PEOPLE
SEE DEER



MORE: Find out why only the green leaves can use the sun's energy. If only the leaves use the sun's energy, what happens to some plants in the winter when the leaves fall off? Why do some leaves change color in autumn? Man no longer needs to adapt to suit his environment. He can almost control it. Explain how. Is there any significance in the fact that originally races found near the equator had darker skin and hair and those found near Scandinavia and the Arctic had light skin and hair? Explain.

CAN YOU HEAR ME

9. **PROBLEM:** How do living things communicate?

THINGS YOU'LL NEED: Tape recorder (optional) and cassettes, a good pair of ears, and paper and pencil.

FINDING OUT: Choose a habitat on the museum grounds. Sit down and get comfortable. Be very quiet. . . soon the animals will continue their normal activities. Record or write down any sounds that you hear and

the time of day you heard them. Try to identify what made each sound. Does the sound tell you anything? Does it have a meaning to other organisms? Is it meant to warn or attract? How do you feel about each sound? Keep a log or diary for these sounds and the above questions.

MORE: Visit the same place at different times of the day. Do the sounds change? How? Repeat the same activity at different habitats, and compare them with each other. How do animals that live under water communicate? Talking is not always the best method of communication. People don't always say what they mean. What other ways besides talking does man use to communicate?

Reference: "Here a Sound, There a Sound"

BACK TO NATURE

10. **PROBLEM:** People talk about "returning to nature and the simple life." But are things as simple as they seem.

THINGS YOU'LL NEED: Camera (optional), notebook, pencil.

FINDING OUT: Many things in our world are interrelated. They may not be as simple as they seem at first! On the museum grounds take a series of pictures (or write a description on paper) so that a first thing is related to a second, the second is related to the third, and so on. . .but! so that the last picture taken appears to have no casual relationship to the first picture taken.

MORE: Have your negatives made into slides and give a "slide-show" to your class, explaining the importance of inter-relationships. (You can borrow a projector from your media center through your teacher.) Design a bulletin board for your teacher showing "Cause and Effect" (in other words, your first picture and your last picture.) Then show how the effect came about (all the in-between pictures.) Spraying DDT on fields to eliminate insects has caused bird populations to decrease because their eggshells aren't strong enough to support the females' weight. Many farmers said: "We didn't spray the birds or their eggs. . .it's not our fault." Can you explain the missing steps to the farmer?

YOU CAN'T TOUCH IT BUT YOU CAN FEEL IT

11. **PROBLEM:** What is this thing we call power?

THINGS YOU'LL NEED: paper, pencil, camera (optional)

FINDING OUT: We all know that all living things need energy. Some non-living things need power or energy too. Cars for example. What is this stuff called energy? Where can we get some? In this activity go out on the museum grounds and note any signs of power. . .try to photograph any examples that you find! You'll have to use your imagination on that! Each time you find any power, answer this question. Where did this power or energy come from? Try to trace all energy back to one common source.

MORE: Visit the pioneer farm, note down how their use of power compares with ours today. Do you think we are careful enough about our uses of power today? If you were King of the World (you'd have lots of power) how would you see to it that everybody had enough power to last them a long time.

What is Power?

How do you get it?

How do you keep it?

How do you lose it? Where does it go?

Who has it?

If you used a camera, mount your pictures and make a bulletin board on power.

IT'S LIKE THIS

12. **PROBLEM:** Are there things in the natural world that can help us express our feelings?

THINGS YOU'LL NEED: paper and pencil, camera and/or tape recorder (not necessary, but helpful)

FINDING OUT: As you walk around the Museum grounds, find and bring back things that make you feel:

happy	beautiful	gentle
angry	afraid	cold
sad	tough	peaceful

You might bring back sounds, pictures, objects, or word descriptions. It's up to you.

MORE: Think of other feelings that you might find expressed in nature.

Try making up a list of colors. Then go out and record sounds that make you think of those colors.

Arrange a scavenger hunt with a group of people. Each person must bring back examples of items on a list-- colors, textures, shapes, etc.

FEELING THE ENVIRONMENT

13. **PROBLEM:** How can we use materials from our environment to show our feelings about the environment.

THINGS YOU'LL NEED: (maybe) paper, glue, string or wire

FINDING OUT: Go out and collect materials from your environment. Make art with them, using the materials to show one of the following:

How beautiful your environment is
How ugly your environment is
How it makes you feel
The joy of your environment
The sadness of it
How time changes your environment
How things remain almost unchanged in your environment

MORE: Think of something about your environment that you want to express. Go out and find materials in the environment that will help you do this.

Arrange a scavenger hunt with friends in which you must bring back examples of certain shapes, colors, and textures.

Cross Reference: "It's Like This"

OH, WHAT TANGLED WEBS THEY WEAVE

14. **PROBLEM:** How do the webs of spiders differ? How are they alike?

THINGS YOU'LL NEED: stiff white paper (poster board, construction paper, etc.), black spray enamel and scissors

FINDING OUT: Go out early some morning for this activity. Find spider webs in places you can easily reach. Gently spray each web on both sides with enamel. Ease the paper carefully against the web, trying to touch all the strands at one time. The web will stick to the paper the moment it touches. Then cut the support lines, the strands of silk from which the web is hanging. Lay it flat to dry.

What similarities and differences do you notice in the webs?

Which web do you think is the most beautiful? Why?

MORE: Make a display of the webs you "caught". To preserve them, spray the webs and mounting papers with clear plastic spray.

Try to identify the type of spider that made each web. Perhaps you can find similar webs with spiders working on them or hanging nearby.

Using a geoboard and string, try making a spider web.

HOT AND COLD RUNNING WATER

15. PROBLEM: How does water temperature vary from one site to another? Can you account for these differences?

THINGS YOU'LL NEED: paper and pencil, thermometer, 25 feet of string or twine, with knots tied every 2 feet

FINDING OUT: Two bodies of water may be very close to each other but have quite different temperatures. If the sun is shining, a shallow body of water will warm up more quickly than a deep one, and water in full sun will be warmer than that in shade. Moving water, such as that in a river, will be cooler than standing water in a pond.



Find three water areas on the Museum grounds. At each site, measure the water temperature one foot beneath the surface. (the long string will let you lower the thermometer into the water from a catwalk, if you wish.) You might want to include one man-made body of water, such as the goldfish pond. Be sure to leave the thermometer under water long enough for it to show the temperature correctly (1-2 minutes.)

Which body of water was the warmest? Why?
Which body of water was the coolest? Why?
Which two bodies of water were most nearly the same in temperature? Were there other things about these sites that were similar?

MORE: How does water temperature vary in the same body of water? Take the temperature of the water at three different depths. Why are there differences?

Go back to your same three original spots at another time of day. Measure the water temperature again. Are there any changes? Why?

Cross Reference: "Temperature's Rising"

WHO GROWS THERE?

16. **PROBLEM:** How do the living things in a forest ecosystem differ according to the distance above the forest floor that they live?

THINGS YOU'LL NEED: pencil and paper

FINDING OUT: There are five main levels of growth in the forest. The canopy is above your head, at the level of the crowns of the tallest trees. The understory begins at about the level of your head. The shrub layer is at knee-level. The herb layer is around your feet. Finally, there is the forest floor -- the level under your feet.



As you take a walk through the forest, notice what grows at each of these levels. Look for both plants and animals.

What did you find at each level?

Were there any examples of plant life or animal life that you saw at more than one level?

Can you think of a way of telling generally what kinds of things live at each level?

MORE: How does the temperature vary at the different levels? How might an animal use more than one level of the forest for survival? Can you give some examples? Which level would you most like to live at? Why? What would happen if the forest were turned upside down so that the canopy became the forest floor?

Cross Reference: "Living With Non-Living"

THE OPPOSITE IDEA

17. **PROBLEM:** What kinds of "opposites" can you find in the world of living things?

WHAT YOU'LL NEED: pencil and paper, paper bag (maybe)

FINDING OUT: Have you ever thought about ways that the same kinds of living things can be very different from each other -- so different that they are almost completely opposite in some way? For example, most leaves are green. Some, though, are smooth along the edges; others are jagged.

Go for a walk. Find at least ten examples of opposites in nature. To report your findings, you might want to make sketches, make rubbings,

or bring back samples of what you found.

Think of ways that things could be opposite-- temperature, color, size, texture, shape, etc. You might want to begin this activity by looking at two trees and seeing how many opposites you can find there.

MORE: Give some of the examples or pictures you brought back to a friend. Ask him to go out and find opposites of your samples.

Think about some opposites in behavior in the world of living things. Go out and try to observe some of these.

RING TOSS

18. PROBLEM: What kinds of living things are found in many different ecosystems in the same area?

THINGS YOU'LL NEED: pencil and paper, magnifying glass, hula hoop or a 10 foot length of heavy rope formed into a circle.

FINDING OUT: Choose three different ecosystems represented on the Museum grounds (for example, wooded area, grassland, lake shore, cleared area). At each site, toss the hula hoop or rope ring down on the ground. Within the circle, look for all the living things you can find. Make a record of what you find at each site.

What living things were present at all three sites?

Were there any living things that were found at two sites but not at the third? If so, why do you think there were none at the third site? How can you prove it?

What things were found at only one site? Why do you think they were found only in that place?

MORE: Think of a fourth ecosystem you could visit. What living things do you think you would find there that you have already seen in the other three ecosystems?

What kinds of non-living things did you notice at each site? How did they get there? What will happen to them? Create your own ecosystem with all the living things you found.

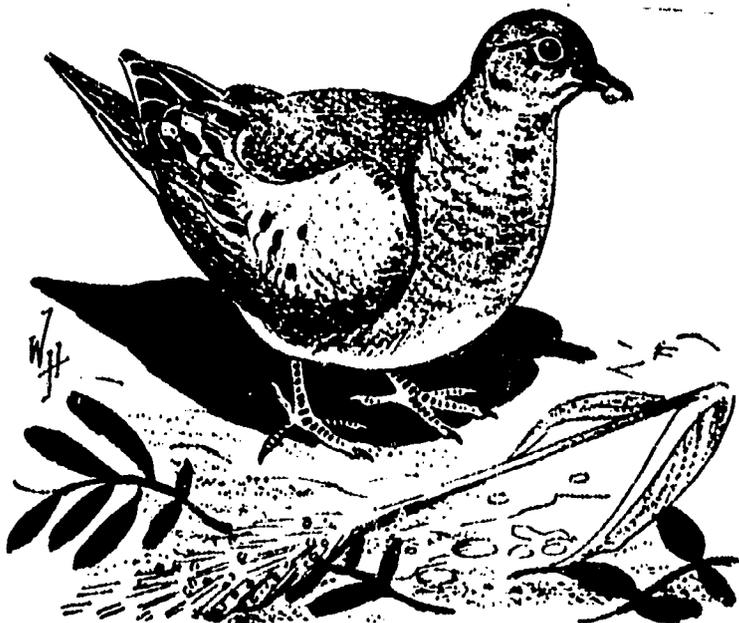
Cross Reference: "Living With Non-Living"
"Tell It Like It Is"

TEMPERATURE'S RISING!

19. **PROBLEM:** How and why does the temperature of the soil vary from place to place? Does the soil temperature have anything to do with the kinds of plants that grow there? Do the kinds of plants have any effect on the soil temperatures?

THINGS YOU'LL NEED: a sturdy thermometer, a shovel or trowel, pencil and paper

FINDING OUT: Within a relatively small area -- an acre, for instance -- there may be many variations in the temperature of the soil and the vegetation growing there.



Go to three or more different sites (suggestions: an open grassland area, a lake shore, a wooded area, a plowed field). At each site, measure the temperature of the soil three inches below the surface. Also note the types of plants growing at each site.

What differences or similarities did you notice in the temperature of the soil?

Which sites had the highest surface and below-ground temperatures?

Which sites had the lowest surface and below-ground temperatures?

Were any sites nearly alike in temperature? If so what other things about these sites were similar?

Can you think of any ways that the soil temperature affects the plants growing at a site?

Can you think of any ways that the plants affected the soil temperature?

MORE: What do you think your findings might mean to someone trying to farm in this part of Florida? What could be done to change the soil temperature of a farm field? What might your findings mean to you if you were looking for a place to build a home and plant trees and flowers?

Cross Reference: "Hot and Cold Running Water"

A SIX-LEGGED WORLD

20. **PROBLEM:** How do the parts of an insect vary?

THINGS YOU'LL NEED: a magnifying glass, 5 clear plastic bags and a way to keep them closed (or clear pill bottles), pencil and paper

FINDING OUT: There are some things all insects have in common -- a body divided into three pairs of jointed legs, and antennae (sensory feelers) on the front of the head. In addition, most insects have wings.

Although insects have these things in common, this does not mean that all insects have identical features. To find out some ways that insects differ from each other, go out and collect five different insects. Put each one in a plastic bag or bottle so that you can examine it with a magnifying glass.

As you look at each insect, see what differences you can notice. You may want to look at size, color, and different parts of the insect.

MORE: How many wings does each insect have? Describe or sketch the wings -- thickness, length, scales, etc.

What types of mouths do they have? Does the insect bite, claw, stab, or suck? What does this tell you about the insect's diet?

What kind of antennae does each insect have? Are they like hairs, feathers, or strings of beads? Describe or sketch the antennae.

Are any of the differences you noticed related to the sex of the insect?

Did any of the insects you looked at have more in common with some than with others? Use reference books on insects to help you find out how scientists group these insects together.

IN AND OUT

21. **PROBLEM:** How do different types of soil vary in the amount of water they retain? How does this affect plant growth?

THINGS YOU'LL NEED: paper, and pencil, shovel or trowel, sieve, cup and pan

FINDING OUT: Have you ever noticed some plants dying from lack of water -- or from too much water -- while others nearby remained healthy? Not all plants need the same amount of moisture. Different kinds of soil can vary in the amount of water they hold.

**HOW BIOLOGISTS
SEE THEM**



Go out and dig up samples of three different types of soil (sand, clay, forest topsoil, muck, etc.) You will need enough of each to almost fill the sieve. As you dig, notice the plants that seem to be growing successfully in the area.

Put one of the soil samples in the sieve. Holding it over the pan, pour a cup of water on the soil. Observe what happens for the next minute or two. Notice how quickly the water goes through the soil, and how much goes through. Repeat this with the other two samples.

Which soil held the most water? Why?
Which soil let the water go through most quickly? Why? What differences did you notice in the plants growing at each soil site? Did the types of plants seem to have anything to do with the moisture content of the soil?

MORE: Which of the soil types would you want to have if you were a farmer or an enthusiastic home gardener? Why? Might your answer depend on what you wanted to grow?

At home, take three plants of the same kind. Put them in pots of the same size, with approximately the same kind of soil. Do not water one. Water the second one every day. Water the third plant when the surface of the soil feels dry. What happens to the plants? Where in your yard might you want to put that kind of plant?

HERE A SOUND, THERE A SOUND

22. PROBLEM: What kinds of sounds are present in various environments? How are these sounds related to the environment?

THINGS YOU'LL NEED: paper and pencil, tape recorder (if you want one)

FINDING OUT: Go for a walk through the forest area of the Museum. Find a spot where you are alone. Sit down, close your eyes, and listen for two minutes. How much can you hear? At the end of two minutes, write down what you heard. Then go to the Museum farm and repeat the listening session. Compare your two lists.

What sounds came from the natural environment?
What sounds came from the man-made environment?
Which kind of sounds were there the most of?
Were there any sounds you heard in both places?
Were there sounds you could not identify?

MORE: What sounds in the environment would you like to eliminate?
How could this be done?
What sounds in the environment would you like to hear more of?
How could these sounds be increased?
Make a tape recording of the sounds in an area. Play it for others and see if they can tell where you were.
How does a blind person experience the environment? Have a friend blindfold you and lead you to a spot he chooses. Do the sounds you hear help you decide where you are?

Cross Reference: "Can You Hear Me"

WHO'S WHO?

23. **PROBLEM:** How can the physical characteristics of an animal help you decide what group it belongs to?

THINGS YOU'LL NEED: pencil and paper

FINDING OUT: Scientists group animals according to their physical characteristics. By looking at an animal closely, we can decide what group it belongs to. In this activity, you will be looking for examples of mammals, reptiles, and birds.



As you look at the animals, keep these things in mind:

- (1) A mammal has a body covered with hair. It uses lungs to breathe air. Young mammals are born alive, and are fed milk by the mother.
- (2) A reptile has scaly skin. It uses lungs to breathe air. Reptiles are land animals, but many of them also spend a great deal of time in the water. Reptiles usually lay eggs.
- (3) A bird has feathers. It uses lungs to breathe air. Most birds have wings. Their bones are hollow and filled with air, making it easy for them to lift their weight into the air and fly. Young birds hatch from eggs.

MORE: What physical characteristics helped you the most in deciding whether an animal was a mammal, a reptile, a bird or some other kind of animal?

What physical characteristics do mammals, reptiles, and birds all have in common?

A PLANT ADAPTATION

24. PROBLEM: How are seeds spread in nature?

MATERIALS: pencil and paper

FINDING OUT: Most plants produce seeds which grow into new plants. New plants require nutrients, sun, air and water to survive. These requirements may be in short supply for sprouting seeds if they try to grow in the same area where the parent plant is established. Many plant species have mechanisms that move their seeds away from the parent plants. This spreading process increases the likelihood that some seeds will arrive at locations favorable for growth. The spreading of seeds is called seed dispersal and is one type of plant adaptation. Adaptations are features of plants and animals that enable them to survive and reproduce.

Choose a natural area along the nature trail and carefully study the seeds of various plants. Observe the form (shape, texture of coat, etc.) of each seed you find. Based on the form, how do you think the seed is dispersed by the wind, by animals, other? Make a chart consisting of a sketch of each different seed and a description of how you think it is transported. Why do you think it is moved that way? What might be the result if there were no seed dispersal in plants and all seeds simply fell to the ground beneath the parent plant?

MORE: Use bean seeds and a variety of other materials (e.g., construction paper, tape, rubber bands, toothpicks, cotton, feathers, etc.) to make seeds adapted for various means of seed dispersal. Make a seed adapted to floating on water. Make one adapted to hitchhiking on an animal. Make one that will be carried by the wind. Can you think of others?

Cross Reference: "Friend or Foe"

NOW YOU SEE ME NOW YOU DON'T

25. PROBLEM: Does coloration have a function in plants and animals?

MATERIALS: pencil and paper

FINDING OUT: The nature trail will probably be the best place for this activity. As you walk the trail, look first for plants and animals that are brightly colored and easy to see. Write down the type of organism (living thing), its colors and pattern. Also, record the background color of the area. What advantages or disadvantages do you think the bright coloration has for the plant or animal? If you were a flowering plant that needed to attract insects for pollination, would you rather be a bright color or one that blends in with the surroundings?

Next, look for plants and animals whose color makes them hard to find. Write down their color, pattern and the color of the background. What are the disadvantages or advantages of this coloration? If you were a defenseless insect that birds love to eat, would you want to be a bright color or one that blends in with the background? What if you were a bee or a horrible tasting creature?

MORE: Very often male and female birds of the same kind are quite different in color. The males are usually bright and easy to see. Females are usually less brightly colored and often blend in with the surroundings. Can you think of any advantages to this arrangement? If you can't, consider these clues: male birds often put on displays to attract females for mating; female birds are usually responsible for care and protection of the nest and eggs.

Cross Reference: "Checkers Anyone"

NATURE'S RECYCLING

26. **PROBLEM:** What happens to trees when they die?

MATERIALS: pencil, paper, stick, hand lens (optional)

FINDING OUT: Along the nature trail you can find dead trees and fallen logs in various stages of decomposition (rotting). Try to locate a standing dead tree. Examine it closely and make a record of the kinds and numbers of plants and animals present. Do the same for a newly fallen log, a log with a hard exterior but which is rotten inside, and a log which is almost completely decomposed. When moving a log on the ground to investigate what is underneath, use a stick to roll it over. Watch for snakes. After you complete your observations, carefully return the log to its original position.

Did you find any differences in the kinds or number of plants and animals in the different situations? How would you explain such differences? Are trees still useful after they die? Name some uses. If plants and animals remained the same after death, what do you think the result might be? If this were true, how would it affect the ability of the soil to provide food for living plants?

MORE: Often, man makes things by changing natural materials into something not found in nature. Plastics are an example. From your experience, would you say that these man-made things are readily recycled by natural processes? Do you think it is healthy for the earth when man makes such things and does not take care to return them to some natural form? Why?

Select some items commonly put in your home garbage can and bury them. Check them weekly and keep a record of the rates of decomposition. What items seem appropriate for disposal in landfill garbage dumps? Which ones should not be buried in such operations? Why?

Cross Reference: "Recycle It"

I REGRET TO INFORM YOU

27. **PROBLEM:** How do you feel about some of the ways man's activities change the environment?

THINGS YOU'LL NEED: pencil and paper

FINDING OUT: Spend a few minutes walking around the museum grounds to become familiar with them. Find a nice spot to sit down - one you really like.

Imagine that you have just been given the task of destroying the Junior Museum so a new shopping center may be built. How do you feel about it? Good? Bad? Indifferent? Why?

Write a letter to the plants and animals of the Museum telling them why they can no longer live there.

What do you suppose happened to the plants and animals that once lived where Tallahassee Mall now stands? Do you think there could be a better way to provide for man's material needs that would be less harsh on plant and animal life? Write down your ideas.

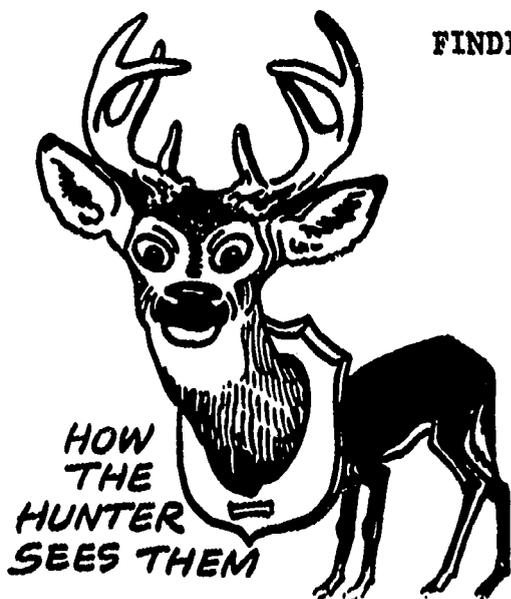
- MORE:** Visit the city planning commission to see the future plans for Tallahassee. Is their plan going to affect the environment of plants and animals? How will it affect you? What can a community do to preserve some of the natural environment? What is the city of Tallahassee doing?

THE CHANGING SKY

28. **PROBLEM:** Have you ever really looked at the clouds?

MATERIALS: Just your eyes, imagination and a friend.

FINDING OUT: The sky is a source of constant change. Go to the grassy meadow on the nature trail on a fair to partly cloudy day. Lie on your back on the ground and look up at the clouds. Can you see faces, objects, color changes? Are some clouds higher than others? Try to really concentrate, forget about everything else for awhile. What kind of cloud would you like to be? If you do this with a friend, it might be fun to exchange the things you see and feel while you watch the clouds.



MORE: Draw a picture of things you see in the clouds.
Write a poem about the clouds.

Cross Reference: "It's Like This"

WHAT FOLLOWS WHAT?

29. PROBLEM: Do the populations of plants and animals inhabiting an ecosystem change with time?

THINGS YOU'LL NEED: At the Museum - 3 jars with lids, pencil, paper, ph paper (1-12), thermometer

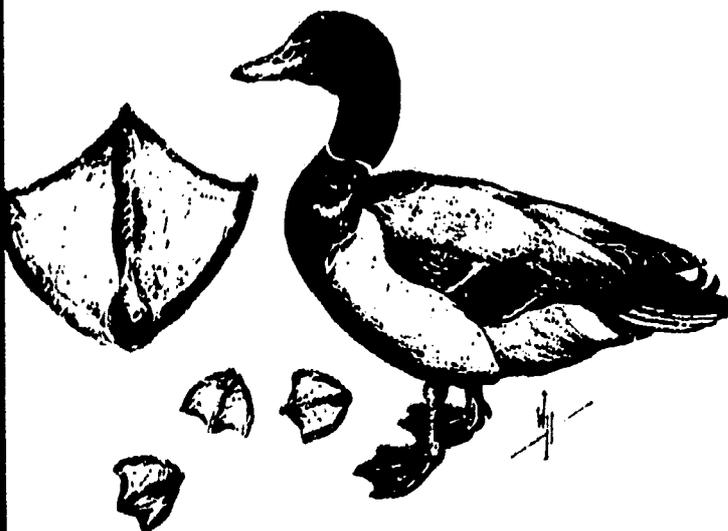
In the classroom - Microscope (in addition to the above)

FINDING OUT: This activity is designed to be continued when you return to the classroom. The work you do at the Museum is only the beginning.

Go to the part of the nature trail which passes close to the water's edge. Choose a place where water samples can be easily obtained. Fill each jar three-quarters full of water. In one jar place some floating vegetation. In the second place some algae (slimy green stuff). The third jar should contain some submerged vegetation and dead plant material. Number the jars and make a record of the contents of each. Measure the ph and temperature of the water samples when you collect them. Record the data.

When you return to school, place the jars in an area of the laboratory where each will receive the same amount of light. Why is light important in this study? As soon as possible after returning to the classroom, make a record of the kinds and numbers of plants and animals you observe. Pay special attention to those present in large numbers. Examine the samples every day for about three weeks. Measure the temperature and PH and plot the values on graph paper. Record kinds and numbers of organisms (plants and animals). Have you noticed any differences among the three jars? Can you explain them?

What types of organisms did you find on the first day? How long did these remain dominant? Did any PH changes occur? What caused them? Is PH related to the changes which took place in the kinds and numbers of plants and animals? How? Was temperature an important factor in any changes which took place? Why or why not?



MALLARD DUCK

OPTIONAL ACTIVITY

"CASTING ANIMAL TRACKS"

30. **MATERIALS:** Forceps, plaster of Paris, poster board strips two inches wide of various lengths, india ink, small brushes, spray can of shellac. (Most of these materials may be purchased some place like Bills Bookstore or Handy Dans Hardware).

THINGS TO DO: After locating the animal tracks, follow the procedure below:

1. Clean track of all debris, spray track with shellac or plastic.
2. Form poster board circle around print and press into ground to create a pouring form. (FIG.1)
3. Make certain that there is at least one inch of poster board above the surface.
4. Mix plaster of Paris to the thickness of pancake batter.
5. Pour the mold full of the mixture. Allow it to harden before lifting out of track (FIG.2).
6. Clean surface of cast and coat with vaseline.
7. Form mold around cast and pour mixture until level with top of mold. If the track case is to be hung on a wall, place wire loop in surface of mixture. Let harden at least two hours (FIG.3).
8. Remove mold and separate the two layers; wipe vaseline from cast. (FIG.4).
9. Scrape smooth with fine sand paper. Wash cast.
10. When thoroughly dry, paint inside of track with india ink and label.

Fig.1 poster board form



Pour this mold full of plaster mix

Fig.2



plaster cast

Fig.3



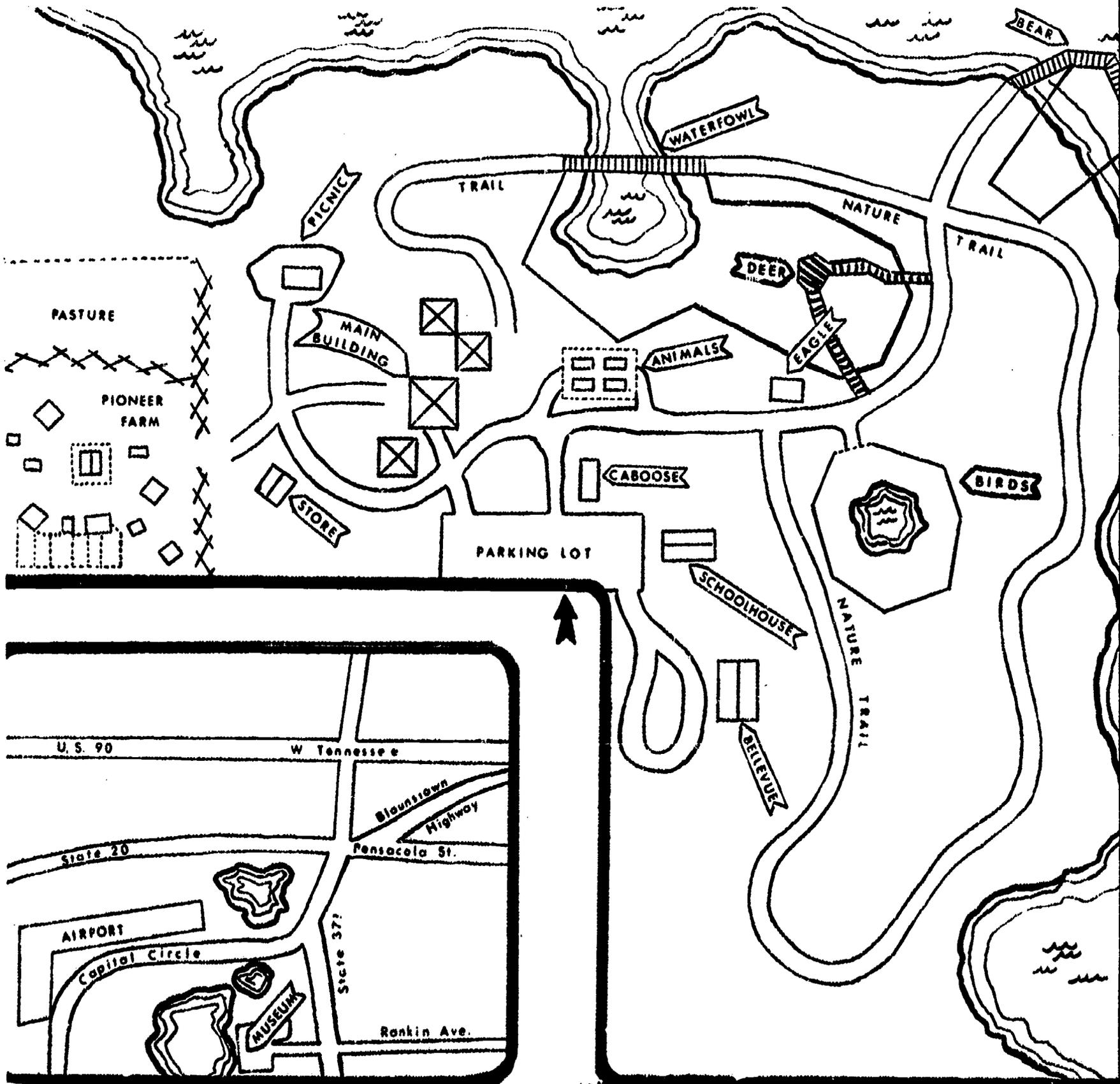
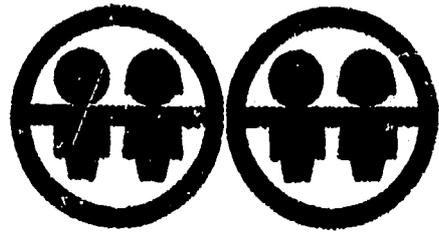
poster board mold around 1st cast; coat with vaseline

Fig.4 wire loop



Remove mold around the 2 layers of cast and separate

tallahassee junior museum



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The Tallahassee Junior Museum was established in 1962 on a site outside the city near Lake Bradford to provide the community a learning center for early Florida's pioneer history and environmental studies. Most of the Museum's education programs have been youth-oriented (in 1972-73 over 26,000 school children visited the Museum), yet the exhibits, wildlife, pioneer farm and nature trails have a tremendous appeal for the entire community.

The fifty acre site preserves the natural flora and fauna. The nature trails meander over forty acres of flowers, open fields and forests. Large oaks provide a canopy of shade and boardwalks over cypress swamps hold a special fascination for visitors. Birds are seasonally abundant. Small mammals are kept in an animal compound where they are used for study. Other creatures like the white-tailed deer, bald eagle, black bear, and waterfowl are exhibited in large natural habitats which allow them relative freedom. The Museum plans to have most of its animal collections in natural habitats as funds become available.

The Museum's "Big Bend" pioneer farm is authentic. The buildings were built in the 1880s at Hosford, about forty miles west of Tallahassee. Only the smokehouse and the blacksmith shop were reconstructed--and then, old materials were used. The farm area is enclosed by a split rail stake-and-rider fence also moved from the original farm site. The farm animals are typical of those found in early Florida barnyards.

The main Museum buildings house changing exhibits on natural science, history, social sciences, art and music. The Natural Science Building features diaramas on birds, a bird viewing window, and the Museum's collection of live reptiles.

The Tallahassee Junior Museum is a tremendous community educational facility for the Tallahassee area and represents a substantial investment of time and capital by members of the community. At a time when the community is very concerned about environmental quality--demanding increased planning and protective ordinances--the museum offers the place and the resources for community-wide environmental awareness and education programs.

For additional information,
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