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ABSTRACT

The Sampler is designed to stimulate teachers, parents, students, and groups to look at various types of open spaces and facilities as resources for environmental study. Written for use with children, but adaptable to older groups, the Sampler tries to engage the feelings as well as intellects of its users in the process of inquiry. It locates interdisciplinary environmental studies activities in the home, the neighborhood, and more remote places. A few of the specific topics viewed from those vantage points are the source of food, taking water for granted, looking closely at buildings, living things around you, garbage and trash, school sites, under the city, beauty around you, and open spaces and group areas. The Sampler provides background information, asks questions, suggests activities, and lists community resources and reading materials on each topic. Developed particularly for Northeastern Illinois, most of the guide's activities can be transferred to other localities. The appendixes contain a glossary, local and national organizations and community resources, a reader reaction sheet, directory of publishers, bibliography, and subject index. (JH)

# FOREWORD


The Illinois Institute for Environmental Quality, created by the Illinois Environmental Protection Act of 1970, has some responsibility for environmental education in Illinois. To aid in teacher instruction, the Institute contracted with the Open Lands Project for production of this Environmental Curiosity Sampler, an environmental studies area handbook for the six counties of northeastern Illinois-phase one of a handbook encompassing all of Illinois. The Sampler should stimulate teachers, parents, students, and groups to look at various types of open spaces and facilities as resources for environmental study areas.

The Sampler supplements Environmental Education and Your School Site, a book produced in 1973 under a similar contract, by taking you out of the classroom and off the school site to observe and use your environment from a new point of view. These two books are, we think, a significant addition to the environmental education resource available to teachers, parents, and citizens.

The Open Lands Project is a non-profit citizens' association organized in 1963 to enhance the quality of the environment of the greater Chicago region in three ways:


1. By assisting in the permanent preservation of open space;

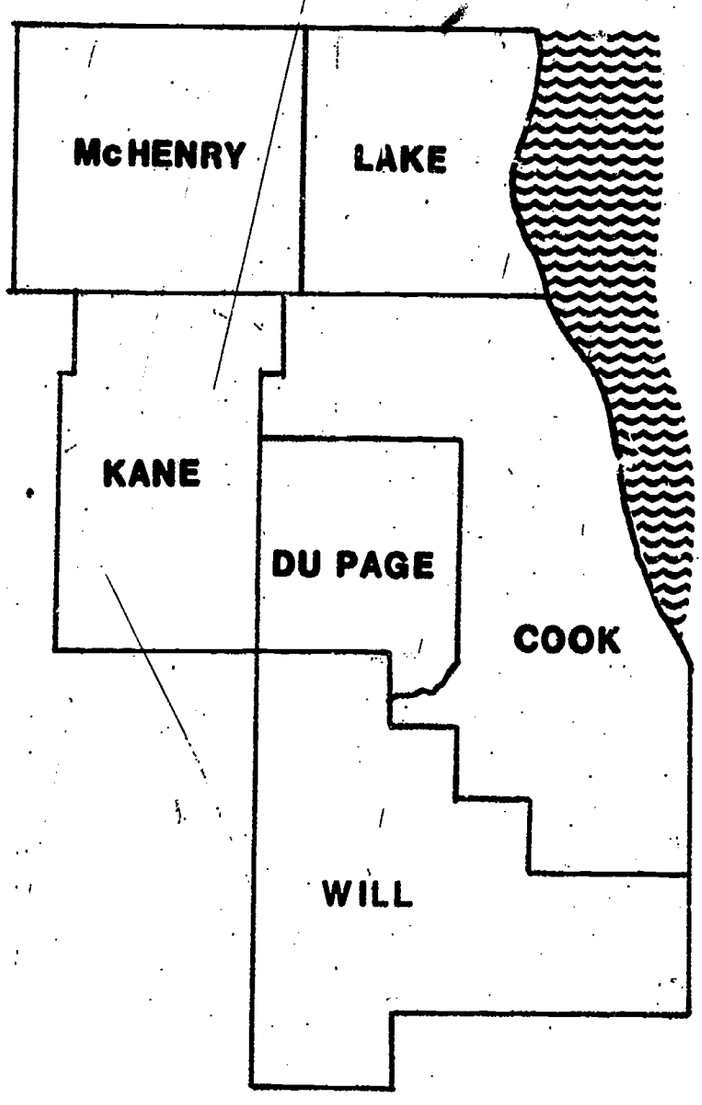
2. By assisting educational institutions in developing patterns for use of existing public open space as environmental study areas; and,

3. By serving as a resource center and referral agency for people seeking information about environmental problems and opportunities, open space preservation, and related matters.

# ENVIRONMENTAL CURIOSITY SAMPLER

Virginia A. Stehney

illustrated by Enid Warner Romanek




State of Illinois
Institute for
Environmental Quality
Samuel G. Booras, Director

*for use with environmental study areas in northeastern illinois*

00004

Symbols Used in This Book

● indicates an item in a list

▶ indicates an activity

IMPORTANT: Pages are T-punched. They may be removed and inserted easily so that you may take them with you or copy them.

Please fill out the Reader's Reaction Sheet in Appendix. If you wish, you may request a Directory of Illinois Environmental Information.

Printed on 100 percent recycled paper

Additional copies of this handbook are available to Illinois residents (as long as the supply lasts) by writing "Environmental Curiosity Sampler - Illinois Institute for Environmental Quality." Others may purchase copies from the Open Lands Project, 53 West Jackson Blvd., Chicago, IL 60604. The handbook is also available from the ERIC Document Reproduction Service, P.O. Box 190, Arlington, Va. 22210. Write for price information.

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Ill. Inst. for Env. Qual. Environmental Information Center.

Illinois Institute for Environmental Quality
309 West Washington Street
Chicago, Illinois 60606
312-793-3870

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Appendices

# Dear Curious Individual

Whether you are a parent, teacher, youth group leader, or simply an individual who wants to learn, we hope you will find something in this Sampler to interest you. This book, of course, is about environmental study areas. Such areas are often a pond, forest, prairie, or other natural area. However, we have come to view every place as a potential study area, where one can see the impact, or lack of impact, of people on the environment. For this approach many people need help to learn how to observe.

"Environment," as used here, is what is around you as well as areas farther away. It begins where you are--which is a different point for each of you--and expands to an ever larger area until it includes the entire earth and perhaps outer space. So we are starting with your immediate surroundings and then expanding to the six counties of Cook, DuPage, Kane, Lake, McHenry, and Will here in northeast Illinois.

Our beliefs that people are naturally curious about the world around them and want to make sense out of it,and that people learn best when feelings are involved as well as intellect,have strongly affected the contents of this book. Too often children, particularly, do not have the opportunity to discover their own answers to questions they have. One of the aims of this Sampler is to lead individuals to their own discovery.

Because you bring your own unique background to any activity or experience, it is not possible for us to anticipate your reactions and it is thus hard to pose questions without knowing your answers to previous questions. Nonetheless, many questions are included here from which you may choose those pertinent to help you observe more thoughtfully.

You adults who may find this resource useful will have a variety of backgrounds, experience, and feelings. You who are teachers are well aware of the range in your students' experiences and abilities as well as in what activities and field trips are possible in your various school districts.

It was not intended that the Sampler be comprehensive. It is a resource book from which the user will pick and choose topics and information on topics. The format has been chosen in which background information comes first, including questions to ask and occational activities, then lists of specific activities, and finally a suggestive bibliography. A detailed index has been included in order to help you do this, and it is hoped you will use it often.

Background information and questions have generally been written in the simplest terms one would use with children so that you will

not have to determine how to say something more simply. Anyone using the material with older children or those with more background, will, of course, want to change the wording. However, you may find it useful, if the topic or approach is new to you, to use the material as is until you become comfortable with the topic and develop your own style.

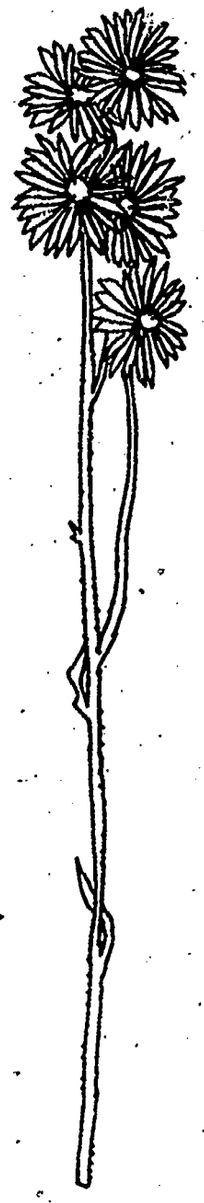
You will notice that some activities are feasible for individuals, families, or other small groups while others are more suitable for students and large groups. As with the background information, a wide choice has been included in the list of activities whenever possible for you to choose what is useful and possible for you.

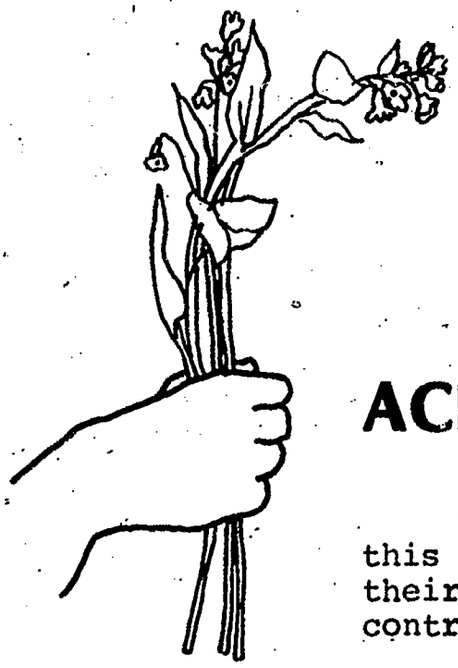
As will be evident, learning about the environment is seen as interdisciplinary. There has been stress on trying to see the world whole rather than fragmented, to see interrelationships rather than isolated aspects, to be aware of feelings as well as "facts". Therefore, the information and activities have not been divided into grade levels or subjects such as science or social studies. If this seems strange to you at first, please use the material and see if you do not become more comfortable with this approach. As you think of your own activities, you realize life is integrated, it is of a piece, rather than divided into subjects and levels.

We hope this Sampler will help you look, think, and perhaps act and react in more depth with what is around you--alone, with a friend, with your family, with several others, with a class--you decide how. We further hope the Sampler helps improve the quality of your life by bringing you increased awareness, enjoyment, and understanding, as it helps you become a more environmentally responsible and aware individual.

Sincerely,

Virginia A. Stehney





# ACKNOWLEDGMENTS

Warm thanks go to the many friendly people in this six-county area who, in giving generously of their time, ideas, enthusiasm, and expertise, have contributed immeasurably to the Sampler.

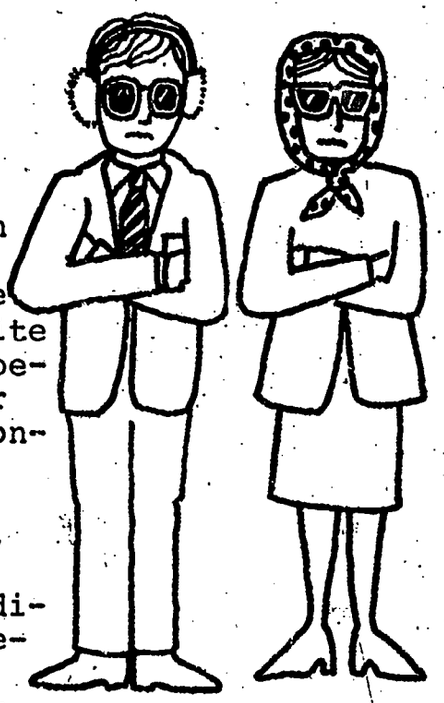
Heartfelt thanks to Douglas E. Wade, Asst. Professor, Northern Illinois University, Lorado Taft Field Campus, for his encouraging, thoughtful, and painstaking editing of the manuscript and suggestions for content, and to Doug and Kenneth V. Fiske, executive director of the McHenry County Conservation District, who, as members of the Steering Committee for this handbook, added humor, ideas and inspiration.

Particular appreciation is due that "Curious Individual", my friend Alaire B. Shields, for her environmental concern, her persistence in seeking out information, and her specific research and writing of the chapters on food, history, and transportation, to Julie Engelhart, budding environmentalist, who unfailingly found any information requested, and to Elenore T. Pounds for her invaluable help and encouragement.

In addition, special recognition should be given to Gunnar A. Peterson, Executive Director, and Wayne H. Schimpff, Director of Environmental Education, both of the Open Lands Project, and to Angela Trabert, Environmental Education Coordinator of the Illinois Institute for Environmental Quality, who made this project a reality.

# AT HOME

# What Is Around You ?



If you are like most people, your senses have been under-used. Most people go through their days missing out on a great deal that is around them. However, since colors, sounds, smells, noises, and so on have a definite effect on the way we feel and behave, you may like to become more aware of them. (If you are one of the rather rare individuals who is already sensitive to his environment, you may want to go on to another chapter.)

The exploration of your environment can begin now, right where you are--at home, at school, or wherever else you are. (You will notice that this material is directed to an individual, but a parent or teacher can reword the information and questions for a family or for students.) You can use all your senses eventually, but let's proceed with one at a time, beginning with your eyes.

Seeing--What gets your attention as you look at your immediate surroundings? Write down things you see, such as a building, a tree, or an animal. Make a long list. Then note how some of these things may be alike, perhaps in color, or size, or texture. Note any similarities in their function. Try to determine other ways they resemble each other.

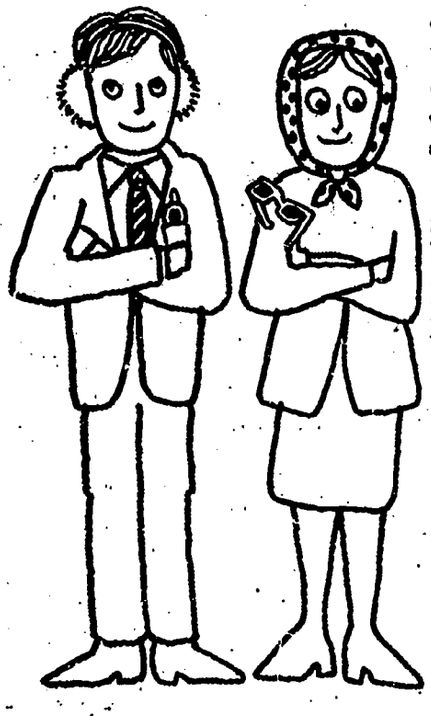
Now give some thought to ways these things are different. Use the categories you considered for similarities. Try to add other categories.

Next, choose one thing on your list. Think of the ways that thing is changing. Try to determine the cause(s) of the change. Consider what effect you may be having on that thing or it on you. Try to project what changes will occur to that thing in 10, 25, or 50 years. If that thing will no longer be around, what might have happened to it?

At this point think of some of the things you see that you do not like. Choose one thing. Could you do something to this part of your environment so that it would be improved? How could this be done? Would it help to work with other people on such a project? How would your proposed changes affect other aspects of the environment? What you have been considering here is a simple sort of "impact statement". For more on impact statements, see list of THINGS TO DO in chapter on "Land Use".

Look again at your list. Consider the color(s) of the things you do not like. Compare them to the colors of things you like. Do you notice any pattern to your reactions? Do your feelings about colors affect your feelings about things that have those colors?

You may be interested in noticing the various kinds



of advertising around you, including stop signs and speed limit signs, signs for doctors' offices, churches, and so on. List them and indicate their colors. Notice the colors that attract your attention. Consider the effect of colors on your feelings. How would you feel with only green around you? Or only blue? Or only black? Think how color affects your choice of clothing.

Smelling--Now let's concentrate on smells. In people the sense of smell is perhaps the least developed sense. Breathe deeply. List the different smells you can detect. Most of the time smells are combined, but try to separate them and then determine where they come from.

Do you find some odors more pleasant than others? If so, why do you like them? Are some odors caused by air pollution? If so, can you tell the source? (car exhaust? factory smoke? something else?) Can you do anything abou this pollution? (Look for more ideas in the chapter "Over the City,", page 78)

If you think your sense of smell helps you in your daily life, list ways it helps. Try to think of ways to make your sense of smell keener? Do you want it to be keener? Perhaps you would rather not smell some things in your environment.

Hearing--Sounds are very important to us, especially near a street or railroad so we are aware of danger. However, as noise in our environment has increased, we may have unconsciously used this sense less. Because this topic is dealt with in the chapter "What Do You Hear?", page 62, it is not developed here.

Tasting--While we may taste things unwillingly, such as pollutants in the air, tasting is difficult to do in the way we have been approaching this topic. Perhaps you can think of reasonable, helpful activities for this sense.

Touching--Many things in our surroundings might tempt us t use our sense of touch--for example, the velvety or smooth surface of some plants, a rough stone or brick wall or bar of a tree, a furry live or toy animal. Shut your eyes and see what you can learn about an object by feeling rather than looking at it. Do you use your sense of touch often? If not, you may want to further develop this sense. Look around you and try to think of two or three activities to do this.

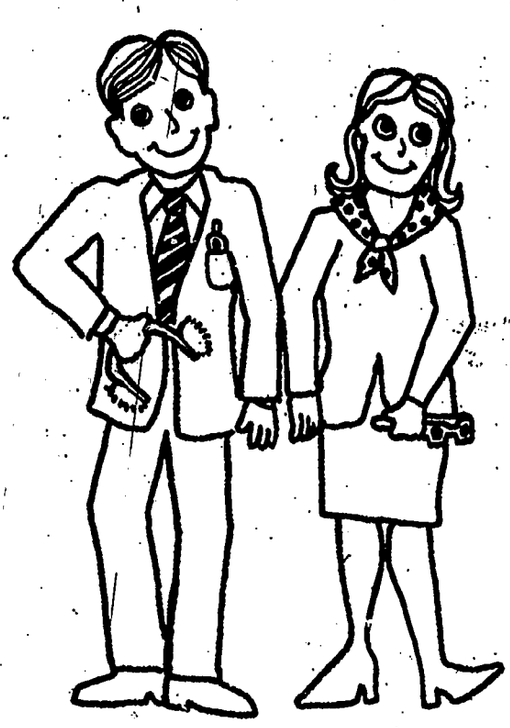
THINGS TO DO:

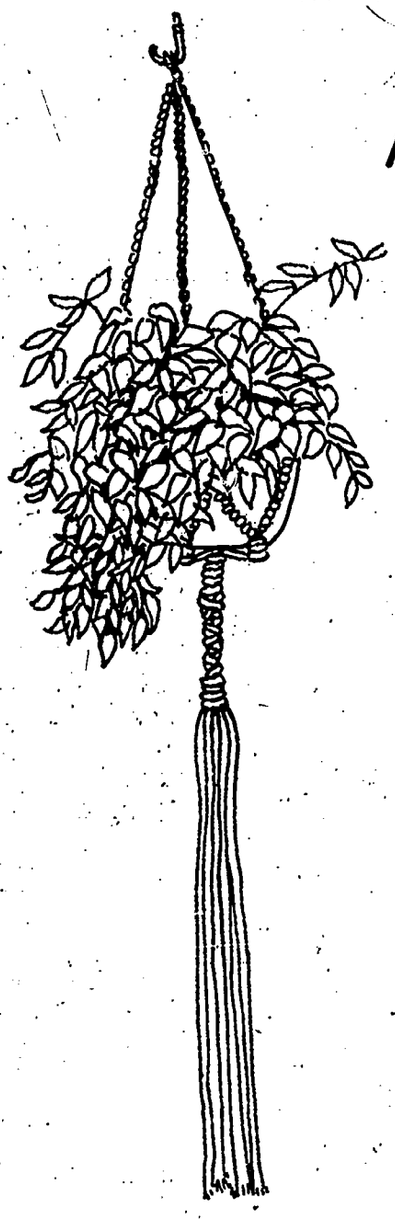
- Think about smells outside when the first rain begins to fall after a dry spell, in the woods or meadow on a hot day, when a road or roof is being tarred, and so on.
- Think how your area may have smelled 50 or 100 years ago, how it may have looked, what sounds might have been there.

- Think about, and perhaps write about, how you would have used your senses if you lived in a forest about 300 years ago and depended on hunting for your food.
- Take the list of things around you; consider items one at a time, listing words that describe the colors, the smells, the sounds, the textures; see what a variety of words you can get.

BOOKS TO ENJOY:

Aliki; My Five Senses. Crowell, 1962. Primary. $4.
Freestrom; Five Senses. Benefic Press, 1970. Primary $4.
Vasilu, M. The World Is Many Things. Day, 1967. Primary. $4.





# Are Green Things Growing Nearby ?

You may see grass, trees, or flowers from where you live, perhaps in a yard or park. If so, how do nature's colors and shapes make you feel? Are you aware that seeing growing things has any effect on you? Some individuals realize they need to see green, growing plants often for peace of mind or renewal of spirit. They may also enjoy the beauty of bare branches because of the shapes themselves and also because of the promise of spring they know is hidden in those seemingly dead branches.

If you have a yard, what is growing there? Are there trees, bushes, and flowers? If not, why not plant some? Many growing things require little care, and even a mini-yard or a few potted plants add beauty to your world--as well as moisture and oxygen. How else do plants help our environment?

Look closely at what is growing. What changes do you see at different times of the year? Do you notice how the buds on trees and shrubs are formed in the fall? Do you notice their waxy or other covering to protect them from the rain and snow? Do you enjoy the variety in size and shape?

Have you thought about how we depend on soil for these beautiful growing things as well as for our food? Besides soil, what do plants need to grow? For more on plants, look at "Living Things Around You", page 43 .

Do you have a vegetable garden or know someone who has? Perhaps you have a patio or balcony tomato plant. Such "container gardening" is becoming popular. Or you may have tucked a few tomato plants in a flower bed or put lettuce or radishes in a border. If you have no room for a garden, contact your local park district. Look under (your town) Park District in the telephone book or phone your town hall for information. Some park districts are making land available for gardens, and apartment complexes and companies have set aside garden plots.

*The Chicago Horticultural Society's excellent bimonthly publication "Garden Talk" includes such helpful articles as "Highrise Vegetable Garden"--in their June-July, 1974, issue. The Society's address is 18 South Michigan Avenue, Chicago, 60602.*

Even if your home does not have a yard or is far from a park, you can have the joy of watching green things grow. The simplest hardy potted plant or window box may brighten your spirits and surroundings. Plants are almost like pets and are wholly dependent upon you for their care. Learn how to care for the kind of plant you choose. Ask a florist or call the Chicago Horticultural Society (see information in the box below).

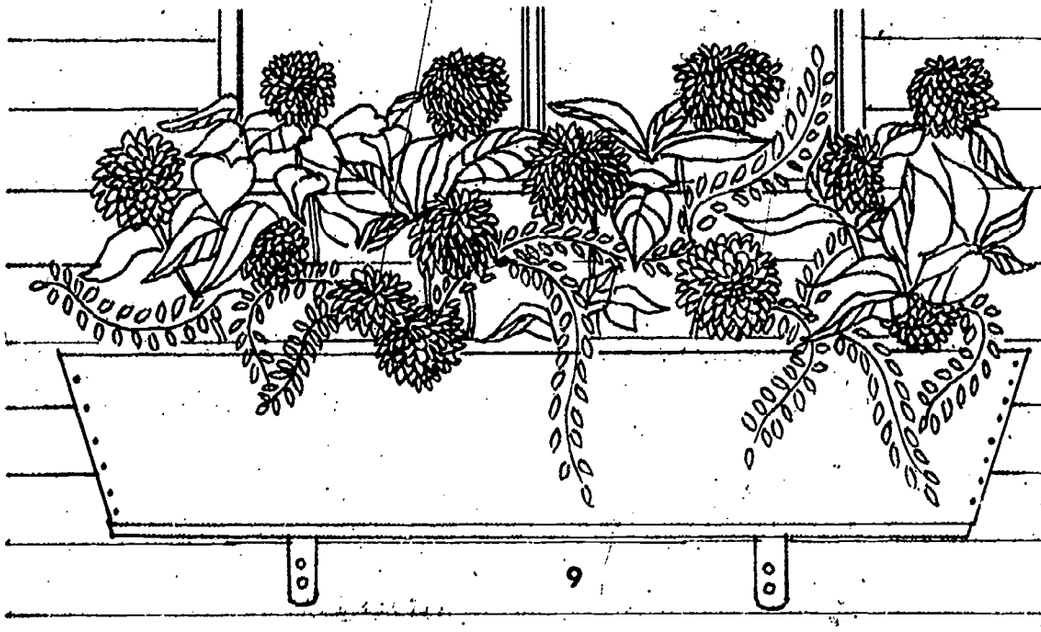
Some people who enjoy house plants have had good luck with philodendron, jade plants, and sansevieria. It is important to have patience with plants--they may take a while to start to grow and flower--and not to water them too often.

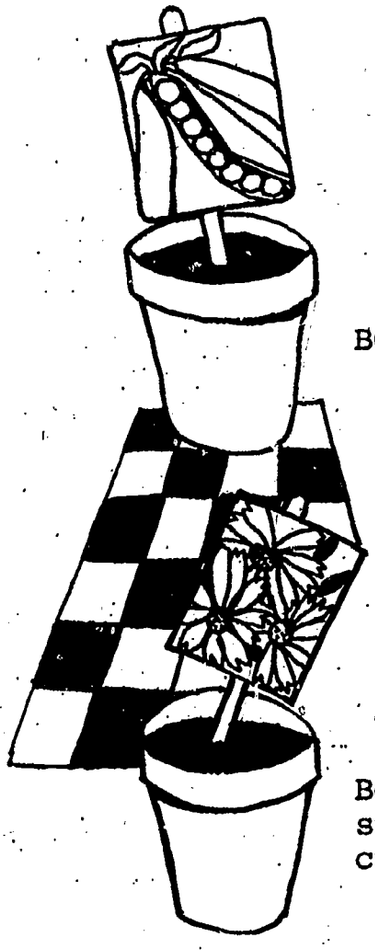
For information on house plants, call the

Brown Thumb Club
Chicago Horticultural Society
332-3868

THINGS TO DO:

- Visit a demonstration garden of vegetables and flowers; watch newspaper announcement for date of field days or phone 682-7486. See display of publications which can be ordered. University of Illinois Extension, located 1/4 mile north of Belmont and Ogden north of Downers Grove.
- To ask about the world's largest mulch pile of recycled leaves, phone John Robles, Department of Streets and Sanitation, City of Chicago, 744-4587. Mulch not yet available to the public as this book went to press.
- For residents of Chicago Housing Authority developments--space for gardens, seeds, and plants available; watch for publicity in CHA newsletter and on posters.
- Learn about Chicago Beautiful Committee's annual contest for treatment of open spaces around the city (not private gardens); phone Nancy Stemwedel, Coordinator, at 744-3392 for information or write her at City Hall, Room 406, 121 N. LaSalle, Chicago 60602.
- Also available from the Chicago Beautiful Committee "The Chicago Beautiful Story" slide program for groups.
- Learn about a compost pile and perhaps start one. Write to Rodale Press, Educational Services Division, Emmaus, Pennsylvania 18049, for Composting Workbook and poster, $1.75.





- Free sludge is available for gardens from the Metropolitan Sanitary District of Greater Chicago. Locations for obtaining it are: on north side--north of sewage treatment plant right off Oakton Street, west of McCormick Street, Chicago; turn in on gravel road and look for sign saying "Metropolitan Sanitary District--New Earth"; on southwest side--on gravel road which would be an extension of Lombard Avenue (6400 W.) just south of Pershing Road (3900 S.), Stickney. Calumet Site--west of Frontage Road on west side of Calumet Expressway between 115th and 130th Streets, Chicago.
- Have children make posters using theme "Have You Thanked a Green Plant Today?"

BOOKS TO ENJOY:

Dubkin, Leonard; The Natural History of a Back Yard. Henry Regnery Co., 1955. Adult.
Polgreen, John and Cathleen; Backyard Safari. Doubleday, 1971. 6th grade level. $4-5.
Stone, A. Harris and Irving Leskowitz; Plants Are Like That. Prentice-Hall, 1968, 6th grade level. $3-4.
Sullivan, George; Plants to Grow Indoors. Follett, 1969. Upper primary grades. $2.

Books Expecially Recommended by Virginia Beatty, Consultant in Environmental Education and Urban Horticulture, Chicago Horticulture Society

National Audubon Society; A Place to Live. Urban ecology unit for 4th-5th grades. student manual 75¢, teacher's manual $1.50. Write Educational Services, National Audubon Society, 1130 Fifth Ave., New York, N.Y. 10028.
Russell, Helen Ross; Ten Minute Field Trips. J. G. Ferguson Pub. Co., 6 N. Michigan Ave., Chicago, 1973. For teachers - paperback $7.
Skelsey, Alice and Gloria Huckaby; Growing Up Green: Children and Parents Growing Together. Also useful for teachers, grandparents, and individuals. Workman Pub. Co., 231 E. 51st St., New York, N.Y. 10022. $4.95.

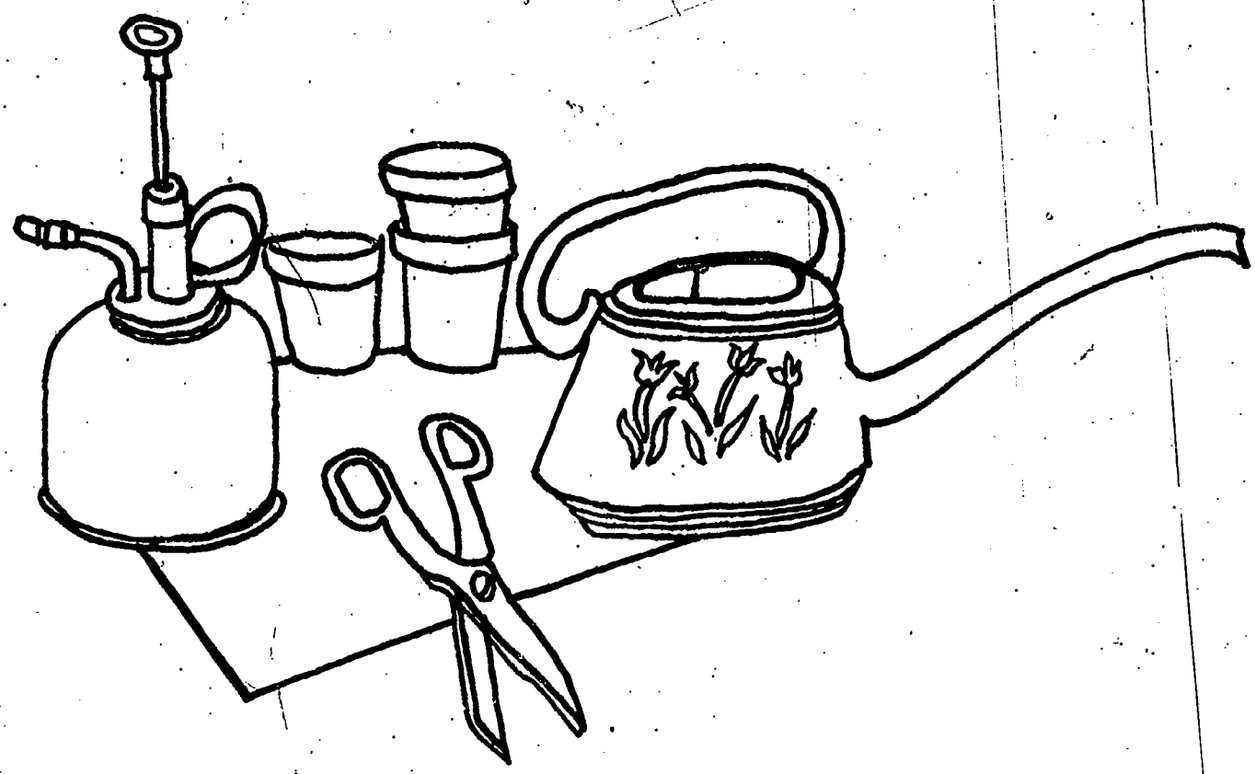
For information on organic gardening and a list of their excellent publication, write Education Services Division, Rodale Press, Inc., Emmaus, Pa. 18049.

Write Windrift Prairie Shop and Nursery for free list of gardening books, including those on growing plants under lights. R.D. 2, Oregon, Il. 61061.

Green, Growing Things and Good Feelings...the getting together of people and plants was the focus of two Workshops in Urban Horticulture for Chicago public school teachers during 1973-1974. The teachers learned to work with plants --to trim, cut, water, and transplant. They learned that many plants require little cost, care or expertise, but do respond to a small amount of human encouragement.

People like to have plants around. Plants improve the psychological as well as physical environment!

Sara J. Segal
Director of Land Advocacy Program
Open Lands Project



# Conservatories

Garfield Park Conservatory - 300 N. Central Park at Lake.Chicago, 4½ acres of palms, ferns, cactus, economically useful plants. Free group tours on application. Open 9:00 a.m.- 5:00 p.m.. 533-1281.

Joliet Bird Haven Conservatory - Gougar between U.S. 6 and U.S. 30 (east side of Joliet). Open 8:00 a.m. - 4:00 p.m., Sundays and holidays - 9:00 a.m. - 5:00 p.m. Tours given upon request. Fee of 35¢ per person. (815) 727-4824.

Lincoln Park Conservatory - 400 Stockton Drive, south of Fullerton. 3 acres with rooms of palms, tropical plants, ferns, show flowers. Free group tours upon request. Open 9:00 a.m. - 5:00 p.m. 294-4770

Oak Park Conservatory - 621 Garfield, Oak Park. Open to general public Saturday and Sunday 2:00 - 4:00 p.m. Tours may be arranged for groups during the week; advance notice required; tours given only to children younger than 6th grade. 848-6602.

## Miscellaneous

Amling's Flowerland-8900 W.North Ave.,Chicago; 40 greenhouses and large showrooms of garden and landscape features. Weekdays open 9:30 a.m. - 9:00 p.m., Saturday 10:00 a.m. - 5:30 p.m., Sunday 10:00 a.m. - 5:00 p.m. Tours given at 9:30 and at 1:00 to children over 12 years. Reservations required. 378-7200.

Botanic Garden of Chicago Horticultural Society - east of Eden's Expressway between Dundee and Lake-Cook Roads in Glencoe. Has Home Landscape Center, Demonstration Vegetable Garden, waterfowl sanctuary, and braille nature trail. Activities include short courses and lectures and small plant shows. For further information phone Dr. DeVos 385-5360.

Gilmer Nursery - Route 2, Box 146, Mundelein. 80 acres, owned and operated by Chicago Park District. Open 8:00 a.m.- 4:30 p.m. Tours given June 1 - October; Monday - Friday. Advance notice required. 566-6375.

Ladd Arboretum - 2024 McCormick Boulevard, Evanston. 869-8030. Tours given with advance arrangement.

Morton Arboretum - on route 53 north of Lisle. Charge of $1 per car for admission and parking. 1500 acres. Has marked and unmarked trails and areas for hiking, outdoor education and ecology field trips, nature photography, and landscape painting; meadow, woods, marsh, ponds, lakes, and restored prairie. Courses and field trips offered; group visits may be arranged, with advance registration required; Education Department offers workshop for teachers. (312) 969-5682 for information.

# Where Does Your Food Come From ?

Why is the subject of food included in a book on environmental study areas? Food, of course, is important to people. It is part of our environment. Therefore, learning how and where food is grown or raised, how far it is transported to market, and that farmland is disappearing as development occurs is important to an environmentally aware individual. Here in northeastern Illinois the area has changed from that with self-sufficient farms less than 150 years ago to a region where two of the six counties have little area that is still farmed and excellent farmland is continuously being covered by development of various kinds.

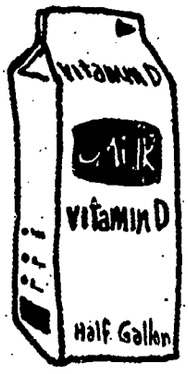

Some time ago each family provided its food by hunting, fishing, gardening, and raising poultry, a cow, and perhaps a pig or two. The root cellar was filled with apples, turnips, potatoes, and such in the fall. Part of the garden produce was canned. Some of the meat was smoked or pickled or dried to keep over the winter, and jelly was made at home. All year long bread was made at home. Do you know many people who do these things now? Probably not. Ask older members of your family or older friends to tell you stories of life a generation or two ago.

No longer does our area have primarily self-sufficient farms and small towns where people supply most of their needs. Now the majority of the people in these six counties, of course, live in Chicago or in towns and cities immediately around it. These people must rely on stores for most or all of their food. Even farmers buy most of their food in stores. Have you ever wondered where your food is grown, raised or caught and what happens to it between its source and you? You might be interested in asking these questions of some children and adults you know.

Here's part of the story of how we get our food today. It begins with three million farmers across our country who produce the various foods Americans consume at the rate of nearly 6,000 pounds per year for a family of four. Farming begins with the land

and the businesses that supply products such as fertilizer, pesticides and herbicides, and other products and machinery used by farmers. It includes the millions of farm workers who work the land and harvest the crops. Added to these are the countless marketing firms involved in processing and moving the many products. The food industry - which includes farmers, processors, packers, transporters, and wholesalers and retailers - is the single largest industry in this country in terms of people employed. Despite the numbers of people involved, Americans spend a smaller per cent of their income for food than people in any other country in the world. Today one U.S. farm worker feeds 45-50 peop.e as compared to the 15 he fed in 1950.

## Dairy Products

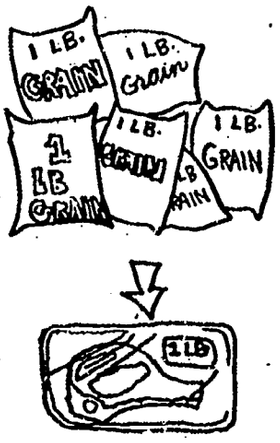



There are some dairy farms in these six counties, but most of the milk for our area comes from Wisconsin. It arrives here by refrigerated tank truck after being picked up at the various dairy farms. (Look for these trucks on the roads and highways.) The milk is taken to a processing plant where it is pasteurized, separated, and put in wax containers or made into cottage cheese, butter, or yogurt. Because of the legal liability and sanitary health considerations, few dairy plants offer tours, but if you know of a dairy farm or processing plant, you may want to inquire about visiting.

Most dairy products are marketed through grocery stores or supermarkets, but can also be purchased in drug stores, filling stations, and other stores.

## Beef and Livestock

One of our most important foods is beef. When the cattle leave the farm or ranch in a truck (few being shipped by railroad today), they are taken to an auction house or stockyard. For many years the Union Stockyards in Chicago was the largest in the world. Carl Sandburg spoke of Chicago as "hog butcher for the world", and he might have said "steer butcher for the world". Stockyards, slaughter houses, and processors are now more scattered about our country than ever before. In our area, the stockyards moved from Chicago to Joliet in 1971. The Chicago-Joliet Livestock Marketing Association in Joliet is a very large operation. These yards handle about 75 per cent of the beef and 50 per cent of the hogs formerly handled at Union Stockyards in Chicago. Ninety per cent of these cattle and hogs are raised within 440 miles of Joliet.




Most of the animals have been raised elsewhere and fattened in feed lots, some of them in the six counties, before reaching the stockyards. The relatively small amount of lamb raised in this six-county area is handled chiefly by a firm near Aurora.

The most costly factor in producing cattle today is grain used for feed. Five to six pounds of grain are required to produce one pound of good beef. In this country about 85 per cent of the corn, barley, oats and sorghum produced is fed to livestock, and 90 per cent of the non-exported soy beans goes for cattle feed.

*Something to Consider:*

*Can Americans continue to be consumers of so much meat or should we consider getting more of our protein directly from grains or cereals?*

Buyers for supermarkets, packers, and suppliers for restaurants, hospitals, and other institutions go to stockyards and purchase what they need. The animals are trucked to a slaughter house and/or packing plant. Some chain stores have ranches, perhaps in Colorado, on which their beef is produced. In that case it is often slaughtered there and sent here in refrigerated trucks or trains. Within seven to ten days after the meat has been shipped from the packer, it is on sale in the meat cases at your supermarket. Only carcasses and meat that has crossed state lines have to be federally inspected, but often large chain stores will insist on making a grading inspection for themselves.

Think of the kinds of businesses involved in the food business, such as those for special machinery, butchering devices, refrigeration, paper and plastic packaging materials, grocery stores and supermarkets, advertising, and so on that go on before you carry your groceries home.


Baked Goods

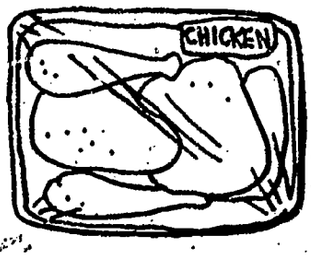
Although there has been a resurgence of interest in home-baked bread in the past few years and there are still small local bakeries that do a good business in their neighborhoods, most of the bread eaten today comes from large, mechanized bakeries.

The process of breadmaking in that kind of bakery can be described as follows:

- Flour reaches the bakery by rail or tank truck and is held in separate storage silos for rye, white, or whole wheat flour.
- The flour is pumped by air into smaller bins.
- Other bins hold yeast, sugar, salt and shortening.
- A large mixing bowl is filled with the proper amounts of ingredients to make a batch of bread.
- Dough mixers with huge stainless steel arms beat and stretch the ingredients into a smooth dough.

- The dough is cut into loaf-sized portions and shaped into balls.
- After another rest, the dough is kneaded and dropped into the lightly greased pans.
- These loaves rise to final loaf size.
- When ready to bake, the loaves are moved automatically to an oven.
- When the bread leaves the oven, it is set on a conveyor belt which takes it to the cooling room
- When cool, it is sliced, wrapped in moisture-proof materials, and labeled.
- Next it is boxed.
- Finally, the bread is sent by truck to your store.

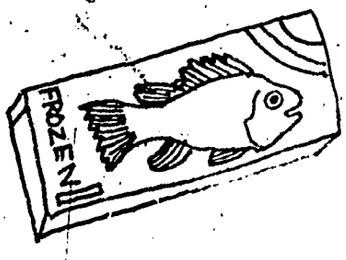
If bread or baked goods are to be marketed a long distance away, they are frozen and shipped by specialized freezer trucks or railroad cars. Lake County has the nation's largest automated frozen baked goods producer, which has about 80 retail items and 50 food service products used by institutions and airlines.




Poultry

Much has changed from the time of chickens in the back yard to the present bird at your market. There are only a few large poultry farms in our area, most chickens now being raised in the east central states, shipped here frozen and handled at three wholesale poultry houses.

Eggs reach the stores by refrigerated trucks from poultry farms, where huge buildings house the laying hens.




Fish and Seafood

The fresh fish available from Lake Michigan - mainly coho salmon, trout, perch, smelt, and whitefish - is processed by a few Chicago fish markets.

In many parts of our country there are fresh fish farms which commercially raise fish, such as catfish and trout, for consumption. The United States, with less than 7 per cent of the world's population, uses over 10 per cent of the tuna and about 35 per cent of the world's shrimp. About 70 per cent of all our fish and shellfish is imported.


Most fish is transported frozen. The advent of frozen fish (and frozen produce) greatly increased the variety of foods available to us.

Fruit and Produce (see also Food Production in the Six-County Area below)

In addition to produce grown locally and sold in

roadside stands, we have access by way of the Chicago marketing facilities to a wide variety of fruits and vegetables produced not only in the rest of our country but around the world. Fruit and produce grown where soil, climate and water availability are best suited to particular crops reach us not only in the fresh form, but dried, frozen, and canned.

The South Water Market at 14th and Racine in Chicago is the largest wholesale produce market in the world. After buyers from the supermarkets select their produce at 3:00 - 4:00 a.m., it is immediately shipped to the store or warehouse to await distribution. These fresh fruits and vegetables may be in the grocery stores by 9:00 a.m. the same morning.

## Imported Foods


Food comes to the United States from 150 countries around the globe. Certain products are available only through importing, such as coffee, tea, cocoa, bananas, pineapples, and certain spices and olives. The amounts of some other foods grown in this country must be augmented by imports. These foods include rice, citrus fruits, tomatoes, some spices, melons, and nuts.

## Food Production in the Six-County Area

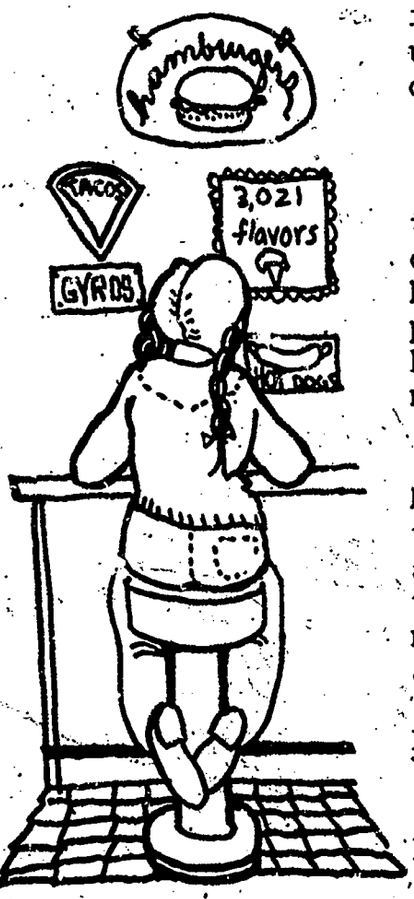
How much food is produced in our six-county area? It is a small percentage of the total amount we consume here, but considering the nature of the metropolitan area, a surprising amount of land is still in agricultural production. Agricultural land ranges from 15-16 percent in Cook County, to 20 percent in DuPage, 35 percent in Lake, 60-70 percent in Will, 80 percent in Kane, and 80-90 percent in McHenry County.

Chief grain products are wheat, corn and soy beans. Truck gardens are on the wane, but there are still some which market their produce in roadside stands. Some large crops, such as tomatoes and sweet corn are contracted for by supermarkets or soup manufacturers. Produce, such as cabbage, green onions and onion sets, as well as tomatoes, is sent to eastern cities.

The raw milk produced by dairy farms in this area is processed by local plants, and then distributed by large dairies and supermarkets for sale, primarily in the six-county area. Dairying is heaviest in Lake and McHenry counties and is still a factor in Kane County. Will County has dairying, but most of the production goes to Indianapolis. Cook and DuPage counties, which have the heaviest urban population, have practically no dairying.

*Did You Know?*

*The largest fluid milk processing plant in the world is located in McHenry County?*




*Something to Think About:*

*The amount of plastic and paper goods used in the take-out french fries, hamburger, and other fast foods; does it end up as litter? how much does it add to the solid waste load?*

Beef and other livestock production that remains in this area is limited and handled by small farm units with feed lots in Will, Kane, and McHenry counties.

Poultry is produced in the form of laying hens for the large egg farms, chiefly in Will, McHenry, and Lake counties where a number of operations of up to 200,000 birds each raise hens in cages. As the laying hens pass their peak of production, they are sold as stewing hens, a few of which appear in our markets. However, most of them are contracted for by large soup companies.

There are some orchards, mainly in Lake and McHenry counties; and a few of these encourage customers to come and pick their own fruit. There are even some strawberry farms left in the area. Tours are not usually offered by such orchards and farms, but you might inquire about a pick-it-yourself orchard in your area, or watch the newspapers for advertisement..

Eating Out

As you see, most food is grown, processed, packaged, and often prepared outside the home and neighborhood. A growing aspect of the food industry is the practice of eating outside the home. Look around you, especially on arterial streets. Notice the various fast food places offering ice cream, ethnic foods, chicken, hot dogs, hamburgers, and steak - to be eaten in your car, in the restaurant, or to be taken to your home. Many of these places are chain operations with branches so numerous that it has been said that it is possible to eat one's way across nation consuming exactly the same menu each day! The chain headquarters offer varying degrees of supervision, management techniques, purchasing, advertising, and ingredients or recipes. Often the sameness of the architecture of the establishment acts as an advertisement.

You may be well aware of the great number of restaurants in many places. The size of the restaurant determines its buying procedures. Most rely on the food processors to supply them, but some have their own purchasers who visit local fish, produce, and food markets, as in Fulton and Market streets in Chicago. Restaurants often rely on partially processed foods such as various kinds of potatoes, some to the degree where an entree may be taken from freezer to oven to diner. Generally speaking, the better the restaurant, the more the food preparation is done on the premises.

THINGS TO DO:

- Pick one of your favorite foods; trace it from its source to you.
- Keep a record of the foods you eat; divide the food into categories of meat and fish, dairy products, bread and cereals, fruits and vegetables, candy, soft drinks, and snack foods.
- After keeping a record of what you eat, you may want to learn more about nutrition.
- Visit the farm and Food for Life exhibits, see chicks and ducks hatching at the Museum of Science and Industry, 57th Street and South Lake Shore Drive; open during Daylight Savings Time 9:30-5:30 weekdays and Saturdays, open during Central Standard Time 9:30-4:00; Sundays and holidays 10:00-6:00. Admission and parking are free. Phone 684-1414.
- Ask your grocery store manager about product dating.
- Learn about the advantages and disadvantages of food additives.
- Learn about the advantages and damage to the environment of pesticides and herbicides.
- Learn about farmers' cooperatives.
- Take a tour of a large bakery:
  Pepperidge Farm, just east of Fairview Ave. Burlington Northern Railroad station. Downers Grove. Tours on Sunday afternoons. Phone 968-4000, public relations department.
  Kitchens of Sara Lee, 500 Waukegan Rd., Deerfield. Tours Monday through Friday at 9:30, 10:15 and 1:00. Advance notice required. No children under 12. Phone 945-2525.
- Visit Chicago-Joliet Livestock Marketing Association. For group tours phone (815) 423-5005.
- Arrange for a class to visit:
  a local bakery - contact store manager
  a supermarket - contact store manager
- Write Milk Foundation, 150 N. Wacker, Chicago 60606, for classroom materials.
- Visit a farm.
  Children's Farm, 127th and Southwest Highway, Palos Park 60464 - one of the few working farms close to Chicago; guides to tell the story of the farm, crops, livestock, and machinery in one hour tour. Animals to pet. 45¢ donation. Reservations required. Phone (312) 448-2056.
  Farm-in-the-Zoo at Lincoln Park, between North Avenue and Fullerton, west of Lake Shore Drive -- farm animals and farm equipment. Open 7 days a week, 9:45 - 5:00. Milking of the cows at 10:00, 12:00 and 2:00.

The Lambs, Inc. P.O. Box 520, Libertyville, Ill. 60048; (312) 362-4636; located at the corner of I-94 and Route 176. A non-profit sheltered workshop. Visitors can tour Pet Shop, Farmer's Market, Children's Farmyard, Silk Screen Art Shop. No picnic area. Sack lunches available for $1.00; dinners for $2.50.

BOOKS TO ENJOY:

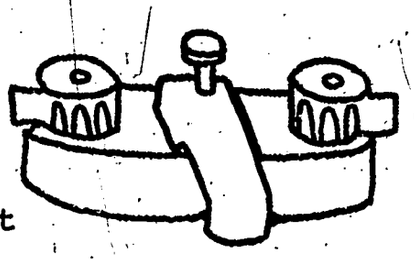
Graham, Ada; The Great American Shopping Cart: How America Gets Its Food Today. Simon & Schuster, 1969. Intermediate - adult. $5.00

Tannenbaum, Beulah; Feeding the City. McGraw-Hill, 1971. Intermediate - adult. over $4

U.S. Department of Agriculture; Food for Us All. 1969 Yearbook. (see other years for food sections). U.S. Govt. Printing Office, Supt. of Documents, Washington, D.C. 20402. Intermediate - adult. $3.50.

This chapter was researched and written by Alaire B. Shields.

# Do You Take Water for Granted ?



Have you ever really considered water and its importance in your environment? Did you think about any of the following uses?

- People must have water for body processes.
- People use water in many ways--for cooking, washing, growing crops, manufacturing, transportation and recreation.
- Plant and animal life need water to grow and to provide food, clothing, and shelter for people.
- Some species of animals need water for breeding places and/or homes.

Once you begin to get involved, you notice water is all around--in faucets; running through pipes; in your refrigerator in the form of ice and frost; in fountains; in creeks, marshes, ponds and lakes; in puddles and gutters, as rain, hail, sleet and snow; as dew, mist, and fog; in retention ponds and flooded area.

You need water to live. In northern Illinois clean water fit to drink cannot be used directly from a lake or river. The taking has to be carefully planned for by specially trained engineers and others. Most of us take water for granted. When we turn on a faucet, we expect water to come out. But what has gone before so that water flows from that faucet?

Do you know that the water cycle is one of the most massive physical events that takes place on earth? The heat from the sun changes the tiny water particles on the surface of the ocean, lakes, or land into invisible water vapor, which rises into the air. When warm, moist air comes into contact with cool air, it is cooled and unable to hold its moisture. The moisture is then dropped as rain or snow.

When rain falls on a forest, the drops go from the tall trees to the shrubs or young trees to growing grasses and herbs. Finally, the water drips onto the decaying plant material on the ground and easily soaks into soil openings.

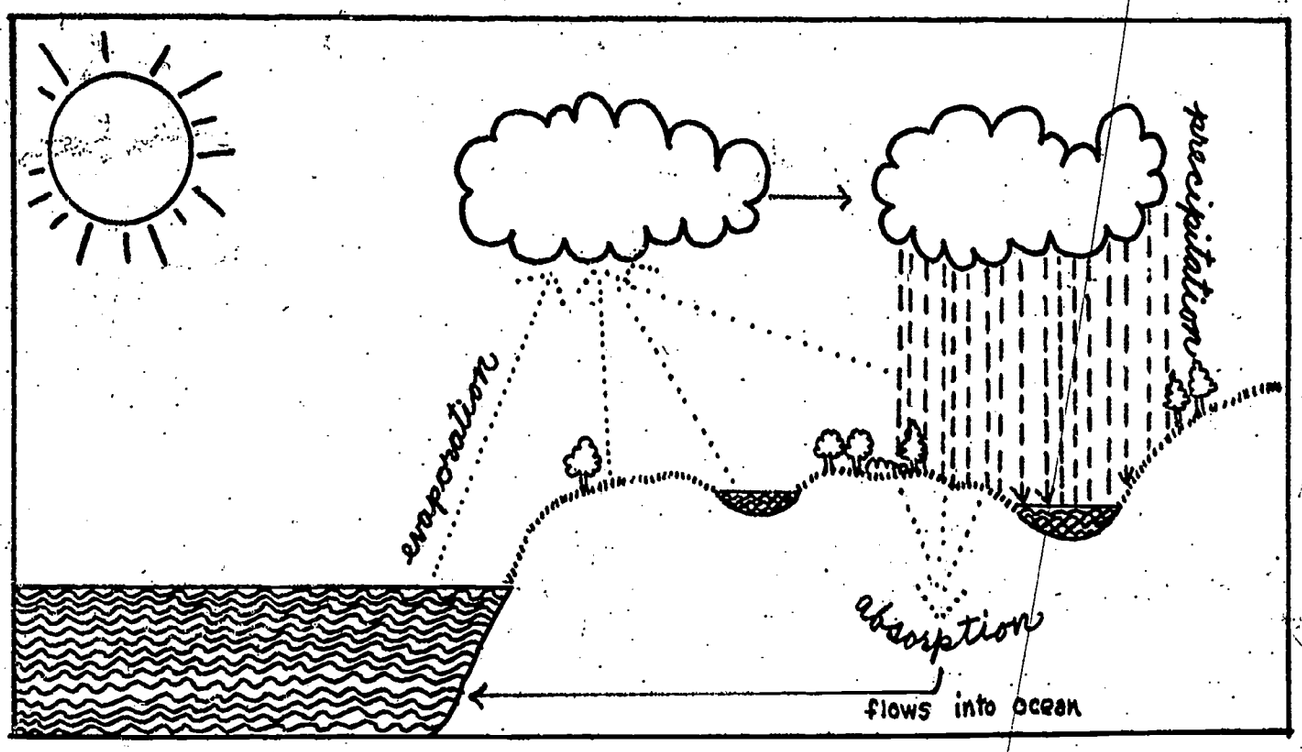
Where water runs over bare soil, little water filters into the earth. When the rain hits the soil, it splashes up, taking a bit of the soil The muddy splashes close the surface openings of the soil. The harder it rains, the faster the openings are sealed. On bare slopes, the water rushes downhill, carrying away the soil and becoming muddier. Streams become higher and silted, and whatever is nearby--fields, homes, highways, factories--may be flooded.

*Do You Know:*

*That the average use of water per person per day in the Chicago area in 1973 was 255 gallons, including home, agricultural and industrial uses. (Chicago Department of Water & Sewers Annual Report, 1973)*

*The making of steel requires as many as 65,000 gallons of water; almost 1 ton of water is used to make 1 ton of paper; 6 gallons of water are used in oil refineries for every gallon of gasoline produced. (from educational reprint "Water--What Would We Do Without It?" from Ranger Rick's Nature Magazine, October, 1970, published by National Wildlife Federation, 1412 - 16th St.,N.W. Washington,D.C. 20036.*

the Water Cycle




*Have you noticed?*

*In cities, tiny streams of rain or melted snow trickle or rush down sidewalks, driveways, and other paths to the streets, into storm sewers, and on to a stream or lake.*

*In the country, the rivulets may follow rows in the fields or small ravines or they may make their own paths, perhaps eroding away topsoil as they flow.*

Rain may fall directly into a lake or river, or it may drain into ponds and marshes from which it gradually sinks into the ground, replenishing the underground water supply.

Can you trace various paths the rain may take when it falls in the city?

Water that soaks into the ground goes down until it reaches hard layers of rock it cannot easily penetrate. Then it fills up the spaces of the earth above the rock. This water is called ground water, and the top of the ground water level is called the water table. When the ground stays saturated with water up to the surface, there is generally a marsh, pond or lake, and the water table is at the surface.

Deep underground there are porous rocks that hold water. Municipal wells are drilled into these rocks. When water is pumped from wells faster than it can seep down or if the water table decreases in an area, what may happen to the wells?

Drinking Water

Have you wondered where your drinking water comes from? You may know that Chicago and numerous communities in Cook and Lake Counties get their water from Lake Michigan. Most of the communities in our six-county area, however, have wells. Why do you think the most recent wells are deeper than older wells? Might it be partly because of increased covering of

the land surface with blacktop, concrete, and buildings, causing rain and melted snow to run off rather than soak in? And also due to increased use of washing machines, dishwashers, and other machines by an increasing population, as well as rising industrial water use?

After water is pumped from a well, what happens? It is treated with chlorine to kill germs and perhaps with other chemicals such as fluoride. Then it is pumped to homes, stores, businesses, and factories through miles of pipes under the streets. Water from Lake Michigan goes to water purification plants. What do you think happens there?

*Do you know that children who drink water containing fluoride have fewer cavities than children whose drinking water does not contain fluoride?*

Will it always be so easy to turn a faucet and get a generous supply of water? During the last few years newspaper articles have quoted hydrologists (water scientists) who urge municipal and regional planning for water resources. With reserves of water being used faster than nature replenishes them, the hydrologists say the time will come in our six-county area when the water supply will be limited to that produced by rainfall and snow, or even piped all the way from Lake Superior. If planning is not done and development limited, some of these experts say, our lives could be drastically affected by a reduced water supply.

THINGS TO DO:

- ▶Visit your town's water purification plant or well. Find out what goes on there.
- ▶Visit the water purification plant in Chicago at 100 E. Ohio Street, 744-3692; one-hour tours given every Tuesday and Thursday from 9:00-12:00 and 1:00 - 3:00; limited to 60 persons; junior high and older.

## Waste Water

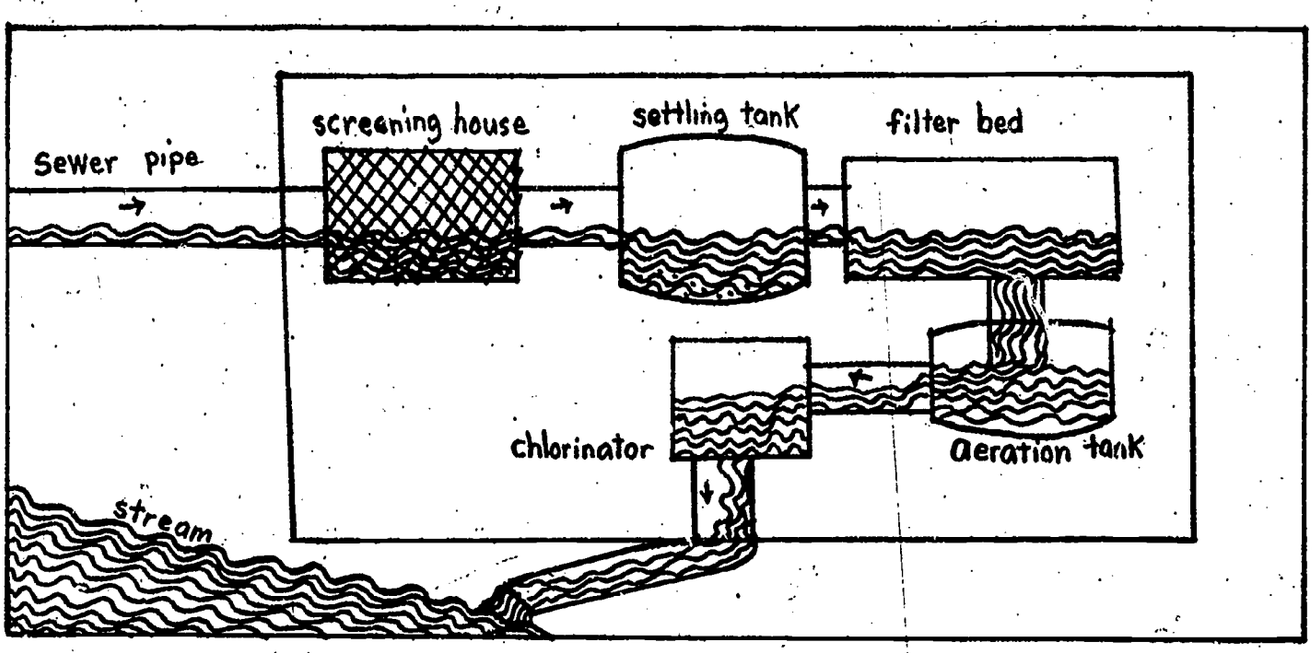
Where does waste water--from washing your hands or the dishes, from bathtubs and toilets--go after it drains from your home? First, it enters sewer pipes. Then it goes to a waste water treatment plant. In the treatment plant, the waste water is screened, solids and liquids separated by settling in sedimentation tanks. The water is filtered, chlorinated to kill certain germs, and released to a stream. Then during secondary treatment, bacteria act on the organic solid parts of the waste. A few treatment plants have tertiary treatment, which filters out extremely tiny particles, perhaps new forms of pollutants, including radioactive wastes.

*Special Research:*

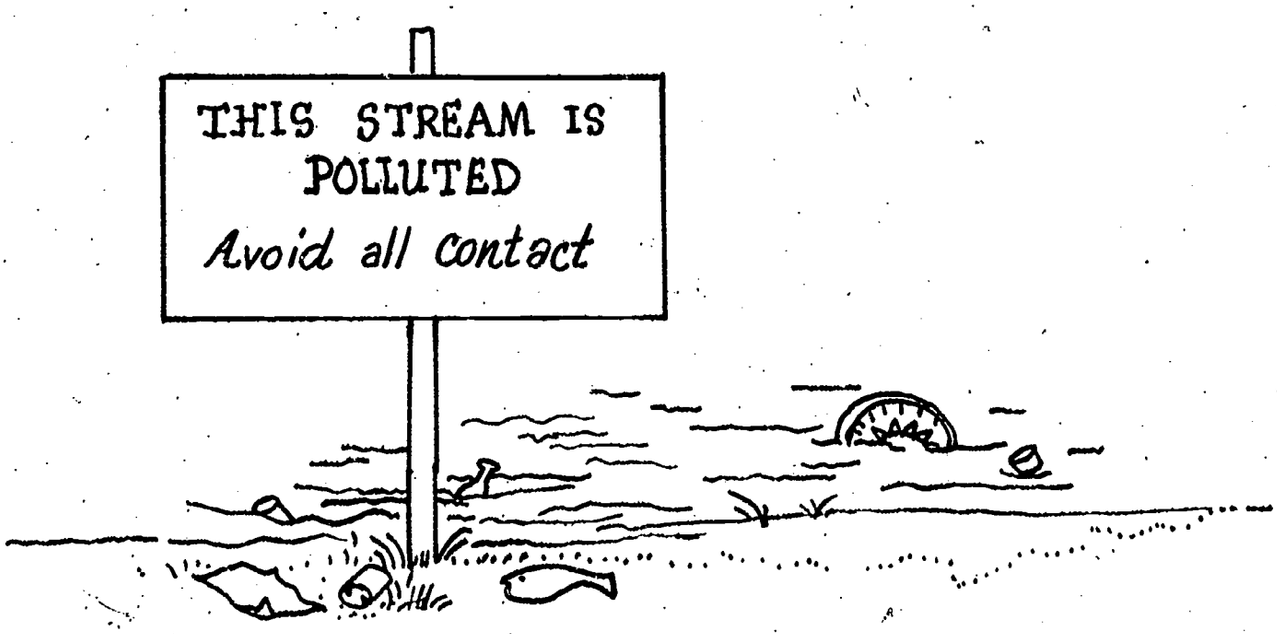
*Find out if water can be treated so that it can be reused; so that it is potable (fit to drink).*

## Waste Water Treatment






In the past small amounts of wastes could be dumped directly into a stream without danger to health because streams were able to purify themselves. The natural action of the oxygen in the water plus the action of bacteria and other microscopic plants and animals broke down organic impurities into harmless substances. But today, most streams, if not all, have more organic material, along with industrial wastes, than they can handle and have become polluted. Pollution, of course, endangers health and interferes with the stream as a source of water, as well as causes death to fish, wildlife and plants and makes a stream unusable for recreation. Have you seen a sign like this, perhaps in a forest preserve?



THINGS TO DO:

- ▶Visit your local waste treatment plant. Does it have 1st, 2nd, or 3rd stage treatment?
- ▶Take a tour of one of the Metropolitan Sanitary District of Greater Chicago plants--Calumet plant at 400 E. 130th; Skokie plant at 35 W. Howard; Stickney plant at 5901 W. Pershing Rd. (500 acres so latter has to be a bus tour); time 9:00-9:30 and 1:00-1:30 Monday to Friday; arrangements should be made at least three weeks in advance by letter or phone, 100 East Erie Street, Chicago 60611, (312) 751-5898; junior high and older.
- ▶Learn about the Fulton County project of the Metropolitan Sanitary District, where digested sludge is transported to a rural area and sprayed on strip-mined land or other land with poor soil. For a booklet, write to the Metropolitan Sanitary District, see address immediately above.
- ▶Arrange a group tour of the Metropolitan Sanitary District's Fulton County Reclamation Project, which in April, 1974, was given the "Outstanding Engineering Achievement Award of 1974" by the American Society of Civil Engineers. Address and phone of District given above.
- ▶Arrange for a speaker from the Sanitary District for an organization by writing to 100 East Erie Street, Chicago 60611 or phoning (312) 751-5600.

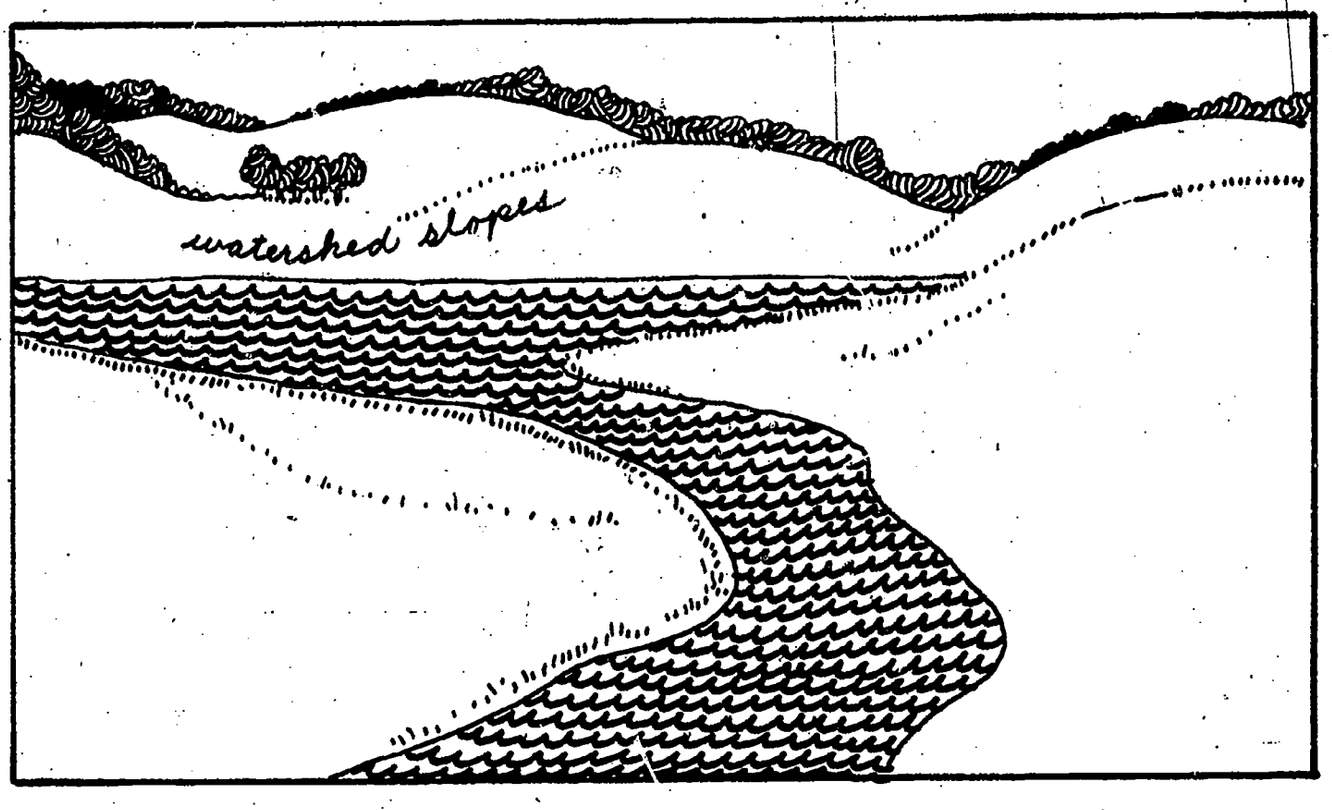
## Watersheds

Do you know that you live in a watershed? Everyone does. Perhaps you have heard the word but are not certain of its meaning. Graham and Van Dersal in their book Water for America define watershed as an "area of land from which all runoff water flows into the same stream". When rain and melted snow are not absorbed by soil, they may run off the land into creeks that flow into larger streams. All areas then, whether urban, suburban, or rural, are in watersheds.

A watershed may be as small as the land which drains into a small creek, or it may be several miles long, including the land draining into several streams that all drain into one river.

The speed of runoff water may vary considerably depending on the amount of rainfall, degree of saturation of the ground, the slope of the land, and the condition of the surface of the land (whether the latter

is vegetation which may soak up moisture, or little vegetation, concrete, black topped areas, or roofs which cause fast runoff).




Flooding is a serious problem in some areas. What causes it? What can be done to alleviate or prevent it? Flooding occurs, of course, during or after heavy rainstorms or when considerable snow suddenly melts. If the streams cannot carry away the load quickly enough, the water floods nearby low-lying areas. About 10 percent of a watershed is considered floodplain, an area that will flood at some time. As distressed and angry homeowners in flooded areas have asked for help, village or county officials have realized the consequences of building on floodplains. It has been said that the floodplain belongs to the river, a truism some officials and homeowners have learned too late to avoid problems.

In some areas watershed associations have been formed to deal with water problems of flooding, pollution, and water supply. In the past a problem might be "solved" in one area, only to arise somewhere else. Flooding problems can be solved, but it is rarely easy. Recent state laws set standards for building in a flood plain. Water detention areas of various kinds--artificial lakes, reservoirs, and forest preserve floodplains, for example--are being used for flood control. As the value of swamps and marshes in flood control and renewal of ground water supplies are being increasingly understood, efforts are being made to retain such areas. Can you think of more solutions?

Regional, watershed-wide planning is a necessity if future water problems are to be avoided. Watershed management includes the consideration of a number of complex interrelated factors. To adequately project effects of land use changes, soil and vegetative cover conditions, channel capacities, and economic pressures must be taken into account. Preservation of vegetation cover, for example, will maintain a watershed's ability to function naturally. Planners must also consider off-site (downstream) effects as well as on-site effects to minimize future flood problems.

R. D. Murphy
Soil Conservationist, River Basin Planning Staff
U.S. Department of Agriculture

THINGS TO DO:

- ▶When it rains, study a given area to see what happens to the rain water:
  - ●a heavily-wooded park or preserve which has thick leaf litter; watch the rain falling and notice the size of drops that fall from the larger trees; compare them with those that fall directly from the sky;
  - ●a heavily grazed woods or pasture; notice how the ground feels to your feet, how the water moves over the surface;
  - ●an area of bare ground;
  - ●a grassy yard
  - ● streets and concrete or black-topped driveways
- ▶In which areas does the rain soak in? Where does it run off? If there is runoff, where does it go? Might it go to the Gulf of Mexico without having a chance to soak into the ground? Look for a "model" of a small watershed in a vacant lot or on a schoolground.
- ▶Arrange with park personnel to work on conservation projects, such as planting trees or grass on a gullied slope or planting ground cover or shrubs on the banks of a small creek which may be eroding its banks.
- ▶Make a diagram of the water cycle--as complex as possible.

BOOKS TO ENJOY:

Bloome, Enid; Water We Drink. Doubleday, 1971. Primary. $3.50.

Laycock, George; Water Pollution. Grosset and Dunlap, 1972. Intermediate - adult. $5.

Lefkowitz, R.J.; Water for Today and Tomorrow. Parents Magazine Press, 1973.

Radlauer, Edward and Ruth; Water for Your Community. Elk Grove Press, 1968.

U.S. Environmental Protection Agency: A Primer on Waste Water Treatment. Available from U.S. Environmental Protection Agency, Midwest Environmental Information Center, 1 N. Wacker Drive, Chicago 60606.

U.S. Geological Survey; the following primers are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402.

Primer on Ground Water by Helene L. Baldwin and C.L. McGuinness. 1963. High intermediate - up. $1.50.

Primer on Water by Luna B. Leopold and Walter B. Langbein. 1966. High intermediate - up. $1.50.

Primer on Water Quality by H.A.Swenson and H. L. Baldwin. 1965. High intermediate - up. $1.55.

Van Dersal, William R.; The Land Renewed:The Story of Soil Conservation (includes water). H. Z. Walck, 1968. Intermediate - up. $5.

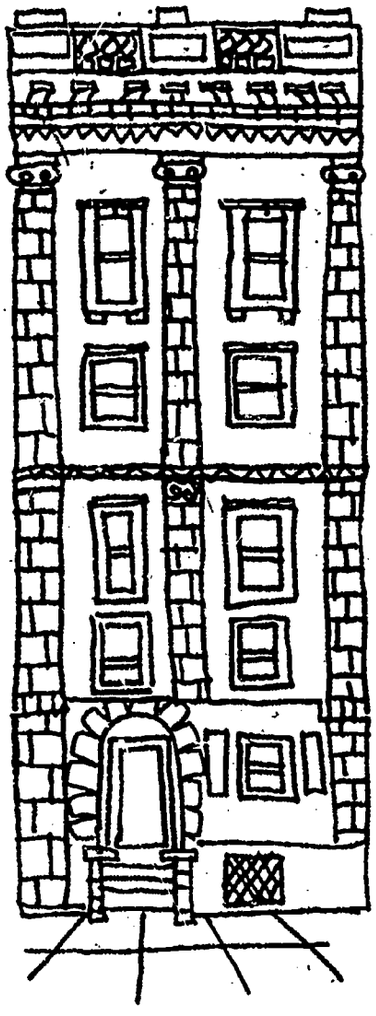
Van Dersal, William R. and Edward H. Graham. Water for America. Walck, 1956. Grade 7-up.

# IN YOUR NEIGHBORHOOD

# Getting More Acquainted with Your Neighborhood

As you walk around your neighborhood, look closely at what is there. Work to increase your awareness. Remember to look overhead, too. First, concentrate on the housing. Is there a mixture of housing types that provide people with a choice as to space, cost, and style? Is the housing generally pleasing to look at? Is it located near parks, schools, stores and transportation? Is it reasonably free of traffic, noise and other nuisances?

What about stores? Do you find that they are within easy reach of residential areas? Are the stores convenient to public transportation, or do you have to rely on a car to reach them? Do they fill basic shopping needs, or are there some things you have to go a long way to obtain?



Are jobs available near workers' homes? Are there factories which create traffic, noise or odor problems for residential areas? Are there sources of pollution in the neighborhood?

Do residents of the neighborhood have quick and easy access to necessary services of all kinds? Especially medical, fire and police?

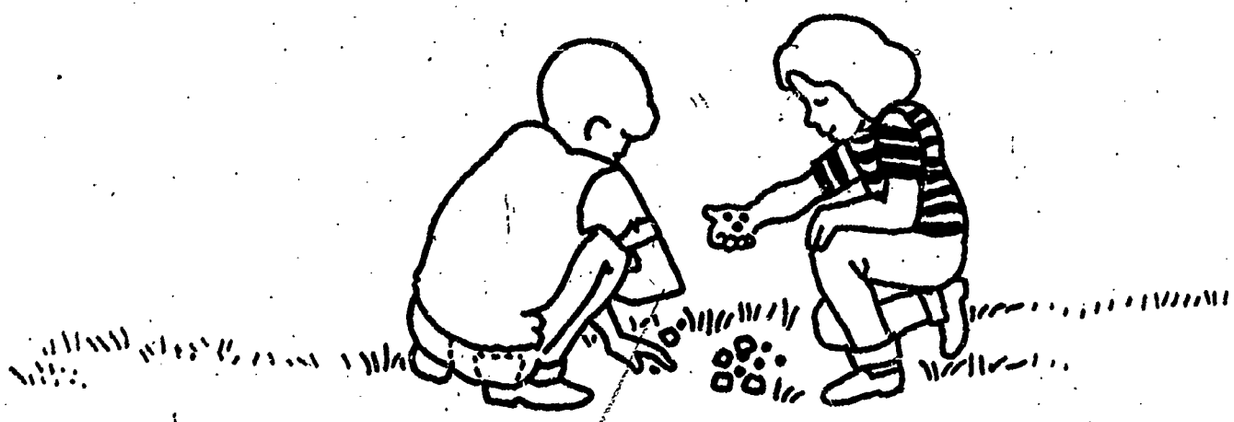
Are there enough parks, playgrounds, or other open space for the people in the community? Are the areas easy to reach? Does your neighborhood have trees, shrubs and flowers around the buildings?

Have you considered the effect of such aspects of your environment as noise, trees, highrise buildings, air pollution--or the absence of any of these things--on the quality of your life?

Have you thought seriously about what you value in life, and how much of what you value you have in your life? Such thinking may lead you to decide to do one of more of the following:

- learn more about various aspects of the environment--perhaps with the help of this Sampler
- try to improve the quality of some of the aspects, perhaps by joining with others who have the same interest or are working toward similar environmental goals
- change some of the things you do or the way you do them
- learn more about "values clarification".

Activities to increase your awareness of what is around you, to develop the use of all your senses, can be as simple as taking a listening walk or looking for timy or rough objects in a natural or man made environment. Such activities can be brief, used in a yard or on a school ground--as the Ten Minute Field Trips in Helen Ross Russell's book (see list below). Or they can be more complex activities as suggested here.



Environmental Awareness Activity

Try to create a mental picture of your home block. Be as complete as possible. Include the homes, stores, garages, trees, signs, sewers, sidewalks, fences, pools; whatever you can possibly remember.

Then take an awareness walk and compare your mental picture with what you discover on your awareness walk.

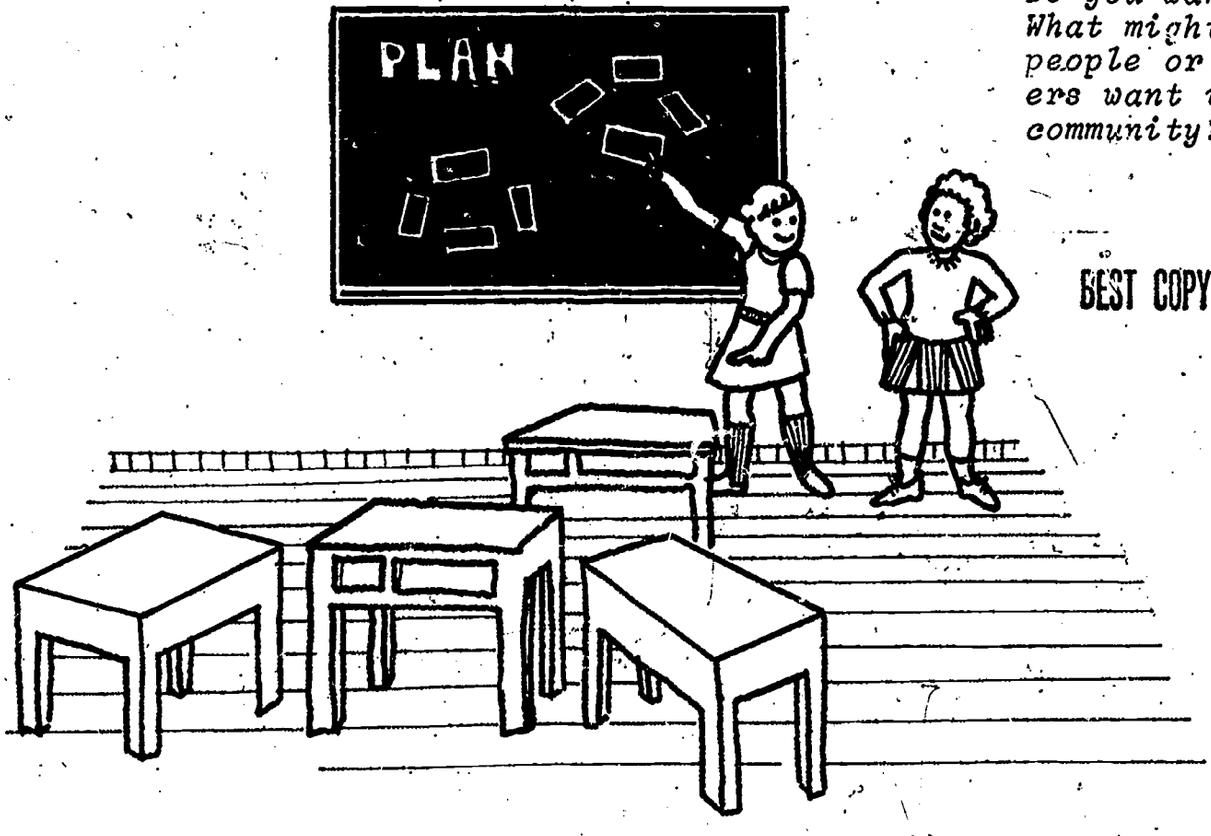
Adapted from an activity on neighborhood investigation taken from "INVESTIGATION:Urbs, Burbs, and Out in the Sticks" by Nick Rodes and B.J.Amundson (from KNOCK THE FOUR WALLS DOWN series by P.A. Schiller and Assoc., P.O. Box 307, Chicago 60690).

Maps are an excellent way to organize information:
- map a room, your home or your schoolroom or place or work (perhaps using scale); indicate activities in the various areas

- do the same for a yard or a schoolground
- then do the same for your neighborhood
- map the route you take to school or to a store --perhaps beginning with pictures drawn for houses, trees, churches, ect. on to more complex maps with a small scale and many symbols
- make a land use map for your neighborhood or your town, using different colors for different uses: residential, public, commercial or business, industrial, open space (differentiate for parks, schoolgrounds, farms...)

During the exploration of your neighborhood, you could discuss what a neighborhood (or city) needs; what you like about yours; what you would change. Occasionally there are groups working on problems in a neighborhood: you could contact a member of such a group and learn about what they are doing. Perhaps they would talk to a class or other group about their activities.

A classroom is an important environment where students and teachers spend a great deal of time, so, if you are a teacher, you may be willing to have the students try to plan a better way to arrange the classroom and then try out their plan.




- Would a different physical set-up of the room be better?
- Are books, materials, science equipment, and supplies easily accessible?

*Special Project:*

*In a class, one or several small groups might like to plan their own neighborhood or town--perhaps first with no restrictions; then a second time being more realistic about what might be possible. Include considerable discussion about what they value and about the quality of life they would like. Have you included people of different ages in your neighborhood? Do you want to? What might retired people or pre-schoolers want in a community?*

- Could the room be better arranged for small group work?
- Are some of the values that are important in the classroom the same as those people may have for their lives outside the classroom?

You will find that in order to get one thing the group wants, another might have to be given up. The plans should reflect values and priorities and allow for change if something does not work as expected.

Parents may be willing to try the foregoing planning with certain space in their homes or yards, planning it with their children and carrying what results.

You may want to look at your neighborhood from the point of view of what is changing; how it is changing; what is causing the change; how you feel about it; what might you do about it.

THINGS TO DO:

- Keep a sketch book record of your neighborhood.
- Keep a log or diary of your exploration; see how clearly you can describe what you see and how you feel about it.
- Remember that photography can be a great tool and hobby. Plan a photo exhibit of what you like in your neighborhood; what you consider problems; or simply record "Our Neighborhood".

Many environments contribute to the make-up of a community. Every individual has a responsibility to know his community through observation of the needs of the individuals who live there and understanding that cultural background and life styles influence the community, adding or detracting in different ways from the total community. After identifying community services, e.g., schools, medical care, police and fire protection, safe drinking water, sanitary sewage disposal, and so on, the individual can understand better the changes that occur. He can take a more informed, active part in community affairs in order to try to effect change, recognizing, however, that changes should be made carefully with recognition of the consequences of environmental changes on people and the rest of the physical environment.

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Math-Science-Environmental
Education Consultant
River Trails Public Schools
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BOOKS TO ENJOY:

Brennan, Matthew T. (ed.); People and Their Environment: Teacher's Curriculum Guide to Conservation Education. J. G. Ferguson Pub. Co., 6 N. Michigan Ave., Chicago. (312) 782-8284. Phone or write for information on guides for different grade levels.

National Audubon Society; A Place to Live. Urban ecology unit for 4th-5th grades. Student manual - 75¢, teacher's manual - $1.50. Write: Educational Services, National Audubon Society, 1130 Fifth Ave., New York, N.Y. 10028.

Radlauer, Edward and Ruth Shaw Radlauer; What Is a Community? Elk Grove Press, 1967.

Russel, Helen Ross; Ten-Minute Field Trips. J.G. Ferguson Pub. Co., Chicago, 1973.

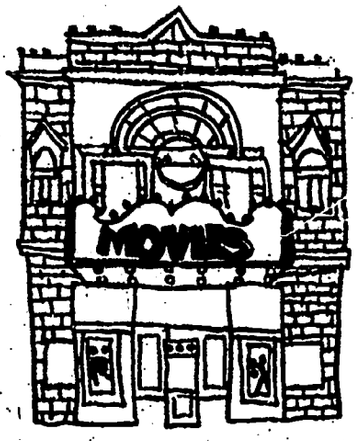
Scholastic's Earth Corp. study units on Ecology/ Conservation and Environmental Awareness. Scholastic Book Services, Inc. 904 Sylvan Ave., Englewood Cliffs, N.J. 07632.

Simon, Sidney, et al.; Values Clarification. A Handbook of Practical Suggestions for Teachers and Students. Hart, 1972. $7.50 and $3.95

U.S. Dept. of the Interior, Bureau of Land Management; All Around You: An Environmental Study Guide. For late elementary and junior high but adaptable to other grade levels. Available from Supt. of Documents, U.S. Govt. Printing Office, Washington, D.C. 20402. Stock No. 2411-0035. $1.50

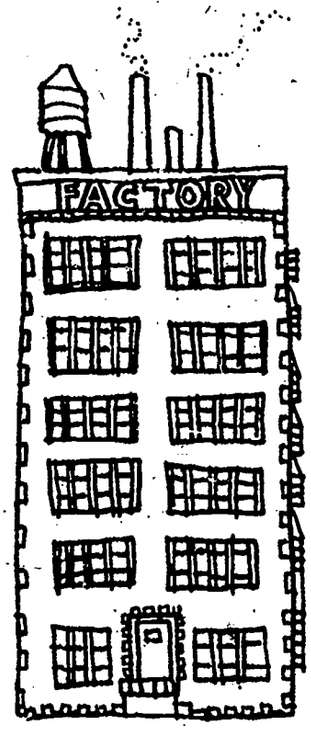
Wurman, Richard Saul (ed.); Yellow Pages of Learning Resources. MIT Press, 1972. $1.95

# A Close Look at Buildings




Individual Buildings

Take a close look at the buildings around you. Notice the materials used. Brick, wood, glass, stone, marble, concrete, aluminum or steel or several of these materials may have been used. You may see bricks held together by mortar. Perhaps you see concrete buildings erected by the use of molds, called forms, into which the concrete is poured. Then when the concrete hardens, the forms are removed. Because of the molds, concrete can be formed into a curved wall more easily than some of the other materials. Steel, a very strong material which does not take up much space, makes it possible to build tall structures. With the rather recent production of large sheets of glass at reasonable cost, many buildings have "picture windows", floor to ceiling glass doors, and window walls. This gives a light and airy feeling to the rooms, but it also presents problems of glare, heat loss in winter, and heat absorption in summer. How do these large window areas, then, affect the heating and cooling of the buildings and the consumption of electricity?




Choose a building. Think about whether you find it pleasing. If you do, can you tell why? Is it because of its variety? Notice its form, color, and the patterns in its design. Now look at patterns made by the windows and doors and other parts, such as balconies, of other buildings--houses, apartments, stores, commercial structures and factories. Do you find the regularity of spacing of windows pleasing or monotonous, or are you indifferent? Notice how the shape and form (the design) of an individual building indicate its use. You would probably not confuse a factory, for example, with a movie theater, even without their signs. Think about whether the build- is comfortable and functional inside.

Perhaps you can watch a building near you as it is built. You might check, perhaps every week, to see what changes occur. Learn about the complicated operations involved. Consider taking pictures of the progress of the building. Learn what was on the site before. Find out if another building was torn down. See if you can learn what has been on the site over the years since the land was covered with forest or prairie.

THINGS TO DO:

- If people were comfortable at 20 degrees F. below zero, how might their homes be different?
- What kind of "home" might you need on the moon?
- Design a home you would like--floor plan, outside design; include the space around your home.

In looking at the materials used in your building, you may find the following check list helpful:

Check all materials in list #1 that you see around the building.
Draw a line from the materials checked in list #1 to the places they appear in list #2.

| #1 | #2 |
|---|---|
| __ wood | window |
| __brick | window sill |
| __glass | door |
| __granite | floor |
| __marble | wall |
| __slate | ceiling |
| __tile | roof |
| __concrete | stairs |
| __limestone | sink |
| __iron | chalk board |
| __steel | _____ |
| __aluminum | _____ |
| __plastic | |
| __ _____ | |
| __ _____ | |

Buildings in the Center of Town (or in a City Neighborhood)

If you have never given it much thought, you may be intrigued by the suggestion to look closely at the buildings in the center of your town or your city neighborhood. This area may vary considerably from community to community: it may be around a town square, along a wide main street, on streets bordering railroad tracks, or in some other pattern.

Walk around. Look closely. What do you see? Is there a relaxed atmosphere? Are retired citizens and others able to pause for a while on benches? Is it a place you like to be? Do you feel that the people who live near here have pride in the area? Consider the reasons for your answer to the previous question.

Some communities have preserved buildings for historic reasons or because the buildings are well-designed. Do you see such buildings? If older buildings have been preserved, you may notice that such buildings give identity to this area. You get a sense of place, a feeling that this area means something to you, that this is a special area because these particular buildings occur only here.

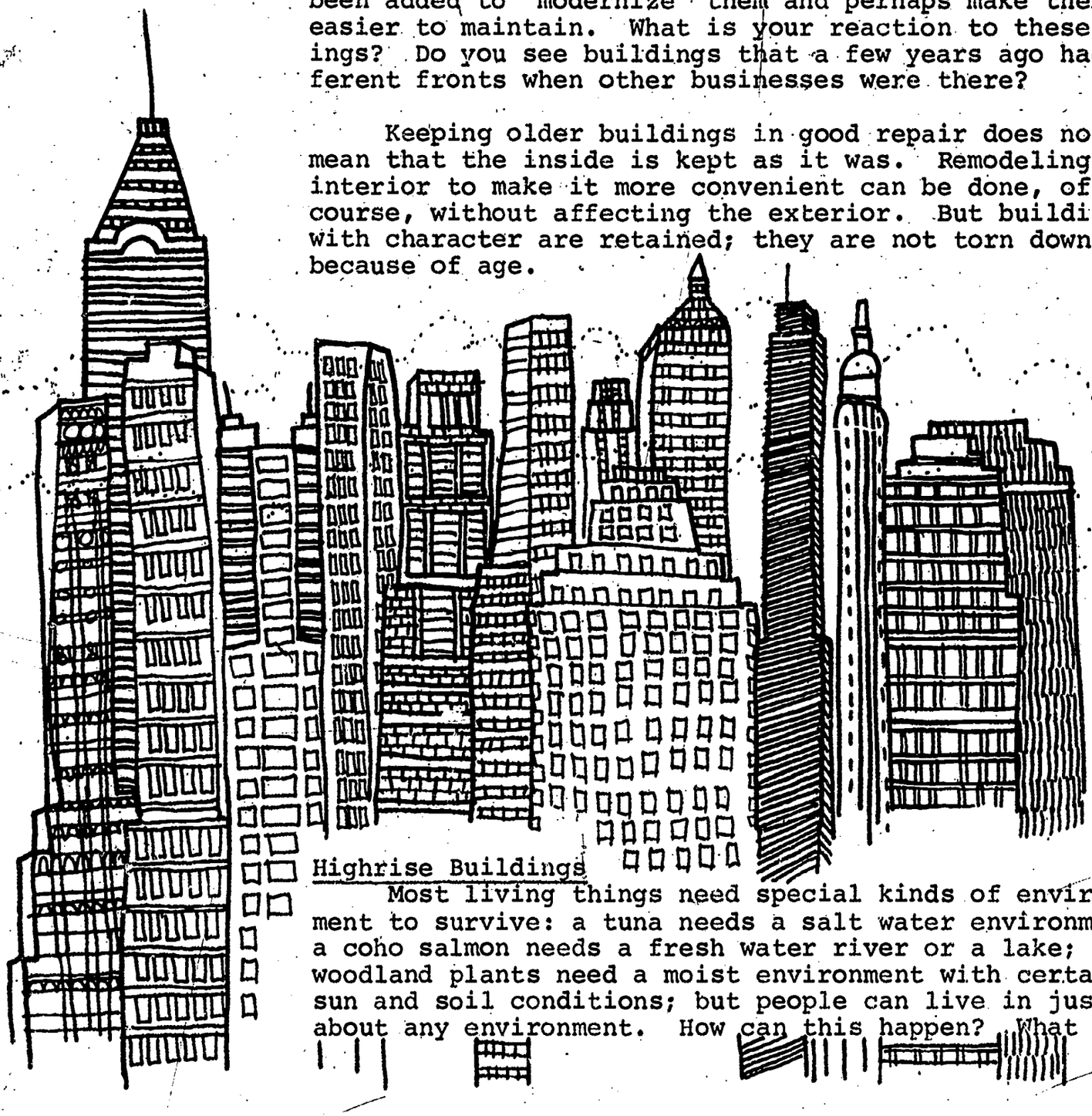
Perhaps older buildings have been kept and are in good repair, but no attempt has been made to keep continuity in

design and building materials when newer buildings were added.

Perhaps the older buildings have been replaced completely by newer buildings. There may be chain stores, franchise businesses, and/or fast-food places with specific architecture which advertise the business. When there are many, or perhaps even only a few, of such buildings, distinctive features which identify this particular area may be lost. It may become Anywhere,USA.

Perhaps you see buildings to which false fronts have been added to "modernize" them and perhaps make them easier to maintain. What is your reaction to these buildings? Do you see buildings that a few years ago had different fronts when other businesses were there?

Keeping older buildings in good repair does not mean that the inside is kept as it was. Remodeling the interior to make it more convenient can be done, of course, without affecting the exterior. But buildings with character are retained; they are not torn down just because of age.



Highrise Buildings

Most living things need special kinds of environment to survive: a tuna needs a salt water environment; a coho salmon needs a fresh water river or a lake; woodland plants need a moist environment with certain sun and soil conditions; but people can live in just about any environment. How can this happen? What

do people do if:

- it is too hot? They may use air conditioning.
- there is too much water? They may drain the area.
- there is too little water? They may pipe in water.
- the area is too wooded? They cut down trees.

In other words, people control their environment, they control the buildings in which they live and work.

It would seem to be obvious that buildings are for people. Would you say that most buildings are designed with people in mind? How do you determine the success of a building, for example, a highrise? By the awards it has won for its design? By its massive size? By the income it produces for its owners? For its use of new materials? Perhaps you agree with people who say a building's success should be judged by whether the people who live or work in that building are pleased with it.

Let's picture (or go to look at) some of the new highrise buildings in Chicago. Let's do some wondering:

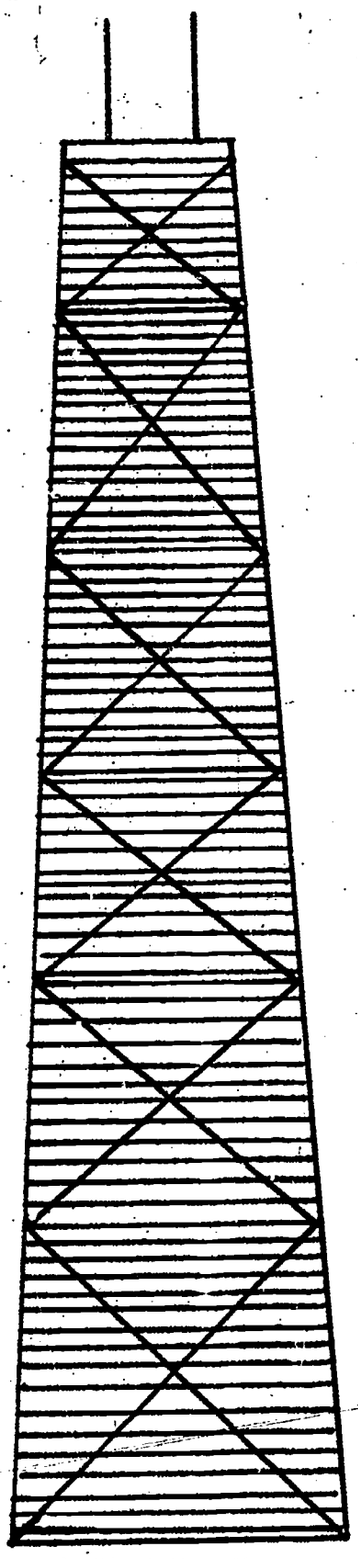
In some of our structures have we cut ourselves off too much from the natural environment? (Psychologists and behavioral scientists remind us, if we need to be, that contact with nature is good for people's mental health.) When windows are sealed shut, we are cut off from the air and sunlight. When artificial light is used continuously, we are cut off from sunlight.

In many buildings it is possible to use more natural light and thus less electricity. When large window areas are used, which extend to the floor, people may be uncomfortable and keep themselves and their furniture back from the window walls.

Is it not especially important today for architects and engineers to have an energy awareness? It seems quite possible that unlimited, cheap energy is a thing of the past. Our buildings use over one third of the total energy consumed in the United States. This seems surprising when you consider the energy used for transportation and for our factories. Energy-sapping, huge mechanical systems are used to make cheap construction comfortable. Smaller modular installations that operate closer to capacity than centralized systems will decrease energy demands. These smaller installations can be

adjusted to differences in the way space is utilized for variations in activity and degree of occupancy. Another way, of course, is to have better construction.

Could more thought be given to site orientation and architectural features of the building to employ more efficiently such natural energy sources as sunlight and prevailing breezes? This would reduce heating and cooling loads. Does the design include recessed glass? roof overhangs? Was placement of trees and shrubbery planned when the building was designed?



JOHN HANCOCK CENTER

Is it not possible to have the design of buildings vary with the climate, the distance north of the equator (taking into account the angle of the sun's rays), and the topography? Does it seem reasonable that buildings in Miami, Florida, resemble some in Chicago?

The inclusion of better materials would help as well as a better design: heat-absorbing glass, instead of clear glass, used with overhangs and recessed areas on the exterior, can reduce sunlight by 75 percent. The amount of glass might vary with the orientation. Is it not possible to design a building with less glass surface on the side which gets cold north wind and more glass area on the south? On the southern exposure, carefully planned recesses and overhangs can catch the sun at the best angles for winter warmth.

Is constant, uniform lighting needed? An alternative of such lighting is using less overhead lighting and what is called "task lighting", individual lights that can be turned off when not needed.

Would not better soundproofing and insulation seem to be a basic essential in all structures used by people and requiring heating or cooling?

Of course, the problem may be cost. It would be more expensive to design better buildings and install better quality mechanical systems, a combination of overhead and "task" lighting, and better insulation. But it would seem that costs would be made up over the years in lower heating, cooling and lighting bills.

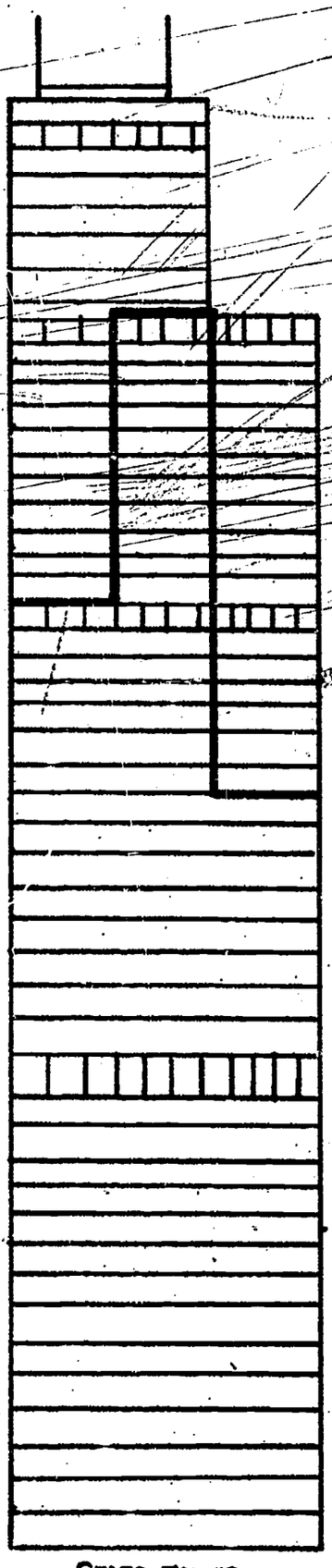
What about the size of some of our tallest buildings? How do the buildings fit into their surroundings--both nearby and over a larger area? They may appeal to you because of their size. Some people, however, consider them out of human scale and feel that they affront human dignity. These people ask if these

buildings are ignoring people. Some architects say that the massive highrise is under increasing attack. Even knowing that we can build tall buildings, the question is :SHOULD WE?

What happens in these "skyscrapers" when some of the mechanical equipment, including elevators, breaks down? Perhaps it does not happen often, but when it does, how do people react? Or what if there should be an electric power brownout or blackout?

Statements have been made that the John Hancock Center contributes to urban life with its multi-use design: a combination of condominiums, offices, shops, banking facilities, recreation, and more. Nevertheless, some people believe it is so out-of-scale, so overpowering on its site, its effect on traffic in the area so great, that its overall impact is negative.

The Sears Tower (all 110 stories; 1,450 feet, and 9 towers of it) has had both praise and criticism. If you have not yet been init, go see it, and look at it from various vantage points outside. Think about the impact on the surrounding area of its more than 16,000 workers, plus others who come to the building for various purposes. Sears Tower is a commercial building, not multi-use. Perhaps you want to be outside the Sears Tower from 4:15 - 5:30 p.m. some working day to see what happens. How different would it be if the Tower had first of all been smaller and had been a multi-use building? Much is said and written these days about bringing more life 24 hours of each day to the downtown area of cities. Think how this building could have helped do this.



SEARS TOWER

THINGS TO DO:

- ▶Read a short history of the skyscraper in Jory Graham's Chicago.
- ▶Look in your public library for books on the Chicago School of architecture.
- ▶If you go to look at the Sears Tower, ask some people who work there how they feel about the building. At the John Hancock, ask someone who lives or works there how they feel about the building.
- ▶When you go to the plazas, take along one of the books on the list for this chapter and take a walking tour of the downtown area. See some of the buildings which are important in Chicago's architectural history.
- ▶Take one or more of the tours by foot, bike, or bus offered by the Chicago School of Architecture

Foundation. For information on these tours and on slide lectures on Architecture In and Around Chicago, write or phone Chicago School of Architecture Foundation, Glessner House, 1800 S. Prairie Avenue, Chicago 60616, (312) 326-1393.

Space around Buildings

Outdoor space is part of the environment and should be considered in relation to the surrounding buildings. People live in outdoor space and use it. Think of such spaces as yards, schoolgrounds, parks, plazas, and malls and how they are used. Go to an area with many tall buildings and see if there is space between them. Look for plazas or malls and consider whether they are attractive to you. Do others find them attractive?

If you want to see the importance of open space to people in the center of a city, visit, for example, the "corridor" (the block between Dearborn and Clark from Randolph Street to Jackson Boulevard). The plaza space in this area has been said to be "one of the most important progressions of plaza space in America". When you see the people who use these areas, especially the plaza of the First National Bank, you may well agree with this statement. The reactions of people to these plazas ought to be a strong message to architects and engineers and their clients about how to help cities be people-oriented. The three major plazas in the corridor are:

The Civic Center plaza - between Randolph and Washington; dignified, designed for ceremonial functions; with fountain, trees, and the Picasso statue.

The First National Bank plaza - between Madison and Monroe; brings life to the area with its restaurants, bars, shops; has benches, fountain, trees, shrubbery, and flowers; has a mosaic wall by Chagall.

Federal Center plaza - between Adams and Jackson; with trees, flowers, and benches; has a Calder stabile.

Look for other plazas along Michigan Boulevard, along the river, and here and there in the center of the city. See how much they are used.

In other cities you may have seen multi-level shopping arcades, streets closed off for malls, promenades, shopping connectors on several levels--all of which have made the city centers livelier and more attractive to people.

BOOKS TO ENJOY:

Bach, Ira; Chicago on Foot. Follett, 1969. Adults. $8.95; paperback, $6.95.

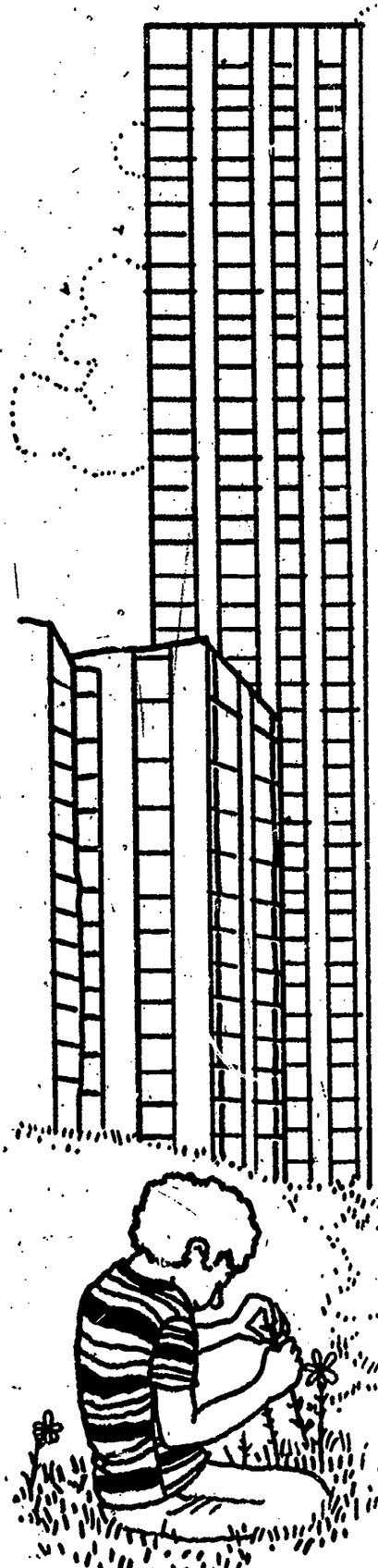
Graham, Jory; Chicago: An Extraordinary Guide. Rand, McNally, 1969. Adults. $8.95.

Rudofsky, Bernard; Streets for People: A Primer for Americans. Doubleday, 1969.

Siegel, Arthur (editor); Chicago's Famous Buildings. University of Chicago Press, 1970. Adults. $2.45.

MAGAZINE:

The Architectural Forum, Section 1, January-February, 1974. Many articles on Chicago. Published by Whitney Publications, 130 E. 59th Street, New York 10022.



# Living Things around You

Long before people were on this earth, there were natural ecosystems, a term used to describe relationships of living things and their surroundings; and then, as now, the interconnections of organisms were complex. Today we also talk about the interrelationships in cities--the urban ecosystems. No matter how urbanized our lives become, however, we are still dependent on the natural ecosystems for life and health--upon sunlight, soil, air, water, plants and animals.

Most of us do not understand thoroughly enough the dependence of all people on natural ecosystems. We may not realize the importance of clean air, unpolluted water, or fertile soil for our survival, as well as for the survival of other living things. Many people are not sufficiently aware of how many of their activities have been and are being destructive to parts of the natural environment. How does air pollution caused by people, for example, interfere with the natural workings of the carbon dioxide and oxygen cycles? Why is it important to save and plant trees in our environment or to understand the vast oxygen input from the oceans of the world and what is happening when oceans are polluted?

Many of us know bits and pieces about the world around us but have not put them all together. It is hoped that this Sampler is helping you to fit them together and that this topic on living things, because of information on photosynthesis and soil, will be especially useful in this regard.

What living things are around you? If you are in a heavily urbanized area, you may think that few living things are there--but is this true? Let's take a close look.

Earlier you considered green growing things in pots, window boxes and yards. Not let's look at other places. Do you see a park, vacant lot, or some green space surrounding a factory or other building, or a school ground? Be aware of your feelings when you see these green islands or visit them. Let the colors of flowers or flowering shrubs lift your spirits. Enjoy the shade of a tree on a hot summer day. Watch birds, squirrels, or insects in and around trees and flowers.

## Trees

Have yo ever stopped to think of the many ways a tree affects the surrounding area?

"According to a forester friend, not only are trees beautiful, but they deaden sound, produce oxygen, consume carbon dioxide, filter chemical contaminants from the air, trap solid contaminants on their leaves, shade streets, and through the process of evaporation, can cool as much as 20 degrees the air beneath their canopies."

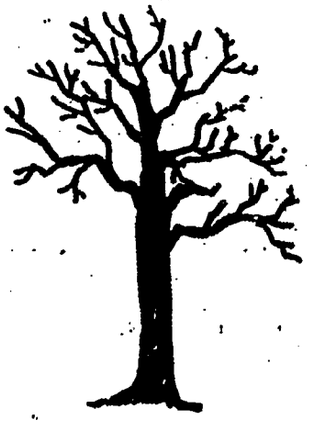
June, 1971, Urban Affairs Newsletter

*Did You Know:*

*"A moderate-sized tree cools the summer air of a city as much as 20 average room air conditioners running 20 hours a day."*

*National Wildlife magazine, April-May 1973*

Trees do all this? Perhaps we should respect them more. You may want to "adopt" a tree and observe it more closely all year round, perhaps keeping a diary of what you see. While you may have appreciated the shade in summer, have you looked at the beauty of your tree's bare branches in winter? Watch the tree each week from perhaps February on to see when the buds begin to swell, when it begins to have color. Observe ants and other insects on the tree. Watch birds fly to it--to look for insects or eat its seeds, to build a nest and feed their young. Do you know what happens to these birds, insects, and other animals in the fall and winter?



In many city vacant lots and yards the seeds of trees have dropped or blown in--were planted by nature. In city parks, however, most trees were planted. What kinds of trees grow in the various places?

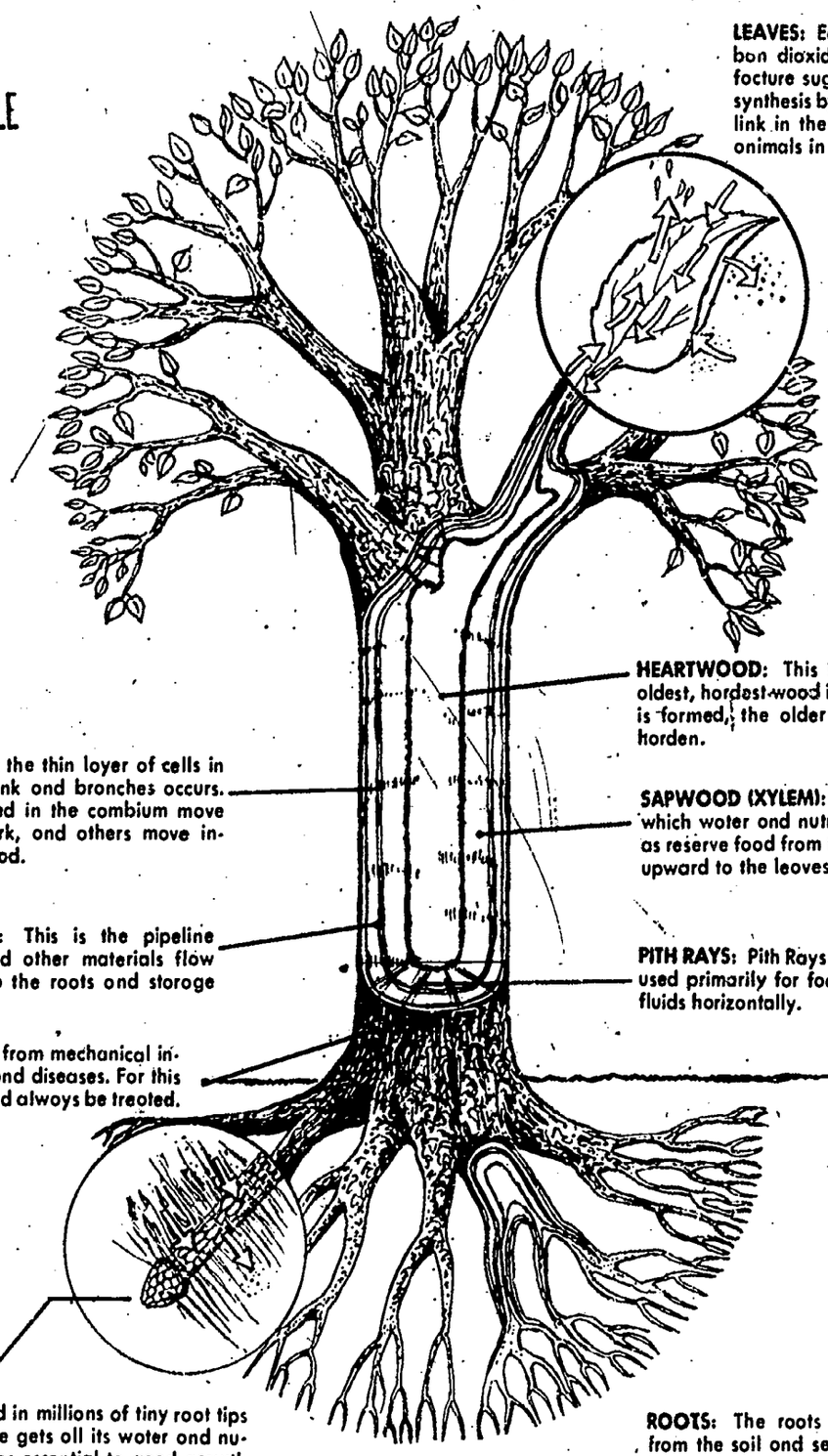
In suburbs and small towns trees have generally been planted, not seeded naturally. You may be interested in learning about the many ornamental, fruit, and other trees you see around you. Are they the same as city trees?

In a forest, arboretum, or nature preserve, you may see many kinds of trees. Some may be in a climax community, which is the final group of plants and animals in an area that go on reproducing themselves instead of being replaced by other species. In prairie areas certain trees may grow, such as the bur oak.

Let's take time here to consider that great process--photosynthesis--which takes place in all green plants. It is one of the great chemical processes on earth, whereby hundreds of tons of carbon from the waste products of carbon dioxide combine with hydrogen from water to form basic food carbohydrates, at the same time releasing part of the oxygen to the air. This cycle, like the water cycle, is set in motion by energy from the sun. The exact processes by which plants manufacture food are still

# HOW A TREE WORKS





**LEAVES:** Each leaf is a food factory that uses carbon dioxide, water and solar energy to manufacture sugar, the basic food for the tree. Photosynthesis by green plants is the basic, fundamental link in the food chain that feeds all plants and animals in the world.

**HEARTWOOD:** This supports the tree. It is the oldest, hardest wood in the tree. As new sapwood is formed, the older sapwood cells fill in and harden.

**CAMBIUM:** Cambium is the thin layer of cells in which all growth of trunk and branches occurs. Some of the cells formed in the cambium move outward to become bark, and others move inwards to become sapwood.

**SAPWOOD (XYLEM):** This is the pipeline through which water and nutrients from the roots as well as reserve food from the tree's storage cells travel upward to the leaves and branches.

**INNER BARK (PHLOEM):** This is the pipeline through which sugar and other materials flow down from the leaves to the roots and storage cells below.

**PITH RAYS:** Pith Rays are the areas of special cells used primarily for food storage and to transport fluids horizontally.

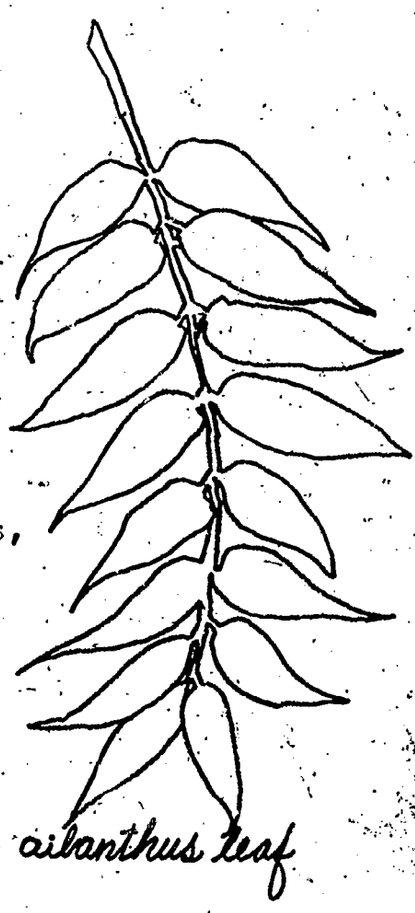
**BARK:** Bark protects the tree from mechanical injury and the entry of insects and diseases. For this reason, damage to bark should always be treated.

**ROOT TIPS:** Roots end in millions of tiny root tips through which the tree gets all its water and nutrients. Root tips are as essential to good growth as healthy leaves.

**ROOTS:** The roots collect water and nutrients from the soil and send them up the trunk to the leaves. They contain cells to store sugars, and also act as an anchor and support to hold the tree upright. The root system of a tree is usually longer and more branched than its top.

from Garden Talk, April - May, 1974
published by the Chicago Horticultural Society.

not known. We do know that without this process there would be no life on earth. We know that leaves use sunlight as energy and that leaves take in carbon dioxide and combine it with oxygen, which is supplied by water from the root system to produce food. This entire process is made possible by chlorophyll in the leaves of the plant. (See diagram of How a Tree Works, on preceeding page.)

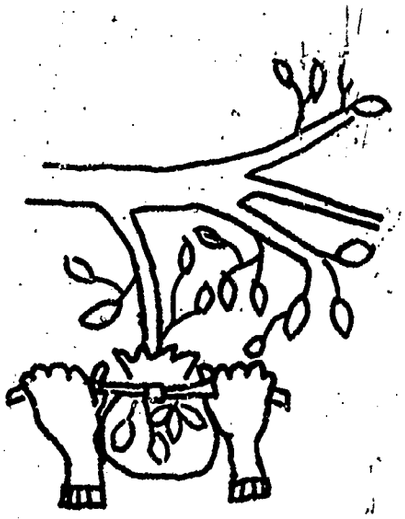



Plant identification, as such, may not seem particularly relevant to you, but learning which plants have adapted to a particular environment may be. For example, which trees have adapted to city air, usually containing more pollutants than air elsewhere? Perhaps you have seen a tree with long, fern-like leaves which grows rapidly in the spring and thrives in city backyards and vacant lots. It is the Ailanthus, or tree-of-heaven, one of the more common city trees seen in our six-county area. Look for its clusters of seeds. Another city tree easy to recognize is the sycamore, or plane tree. It has a unique bark pattern of large brown sheets and lighter areas, giving it a mottled appearance. It is also easy to see the sycamores' "buttonballs" of seeds high in the tree. How many seeds do you think one of these balls contains? With all these seeds, why are there not more sycamores in the city? Can you find other trees that are common in your city?

THINGS TO DO:

(See also the THINGS TO DO under the sections "Are Green Growing Things Nearby?", page 8, and "Open Spaces/Green Areas", page 125.)

- On a hot summer day, take the temperature in the sun a few inches off the ground, and in the shade of the tree, if possible sheltered from the wind. How much difference is there?
- Choose a shrub, tree, or small plant, on which the leaves are easily reached; cut out several squares of heavy paper and attach to several leaves; remove after about four days; discuss the lighter-colored spot where the heavy paper deprived the leaf of sunlight.
- Choose a woody plant to observe over several seasons; note the changes in early fall; does anything happen during the winter? What takes place in spring and summer?
- To learn about evaporation (respiration), tie a plastic bag around a few leaves of a tree; leave it for 20-30 minutes; remove the bag; what did the bag collect? As this water evaporated from the tree, the water took up heat, thus cooling the surrounding area.



- To see if trees absorb noise, compare noise on a treelined street to that on a street without trees but with about the same amount of traffic.
- If you see an up-rooted tree, examine the roots; think how the roots held the tree in the ground and how the root system absorbed minerals and moisture from the soil.

## Plants

It is often difficult to remember that there is soil under the buildings and streets of a town or city, but we are reminded of the soil when we see growing things. What plants have you seen on your city walk? Some plants are unbelievably hardy. You might see dandelions, plantain, ragweed, asters, or goldenrod sprouting up in the smallest of cracks. They remind us that there is indeed soil beneath the cement or blacktop and that somehow the plant has been able to get the water and sun and soil nutrients it needs for growth.

You may want to grow your own plants from seeds, bulbs, and roots. You might try them in different kinds of soil, give them different amounts of water, put identical plants in sun and shade to see how they react.

THINGS TO DO:

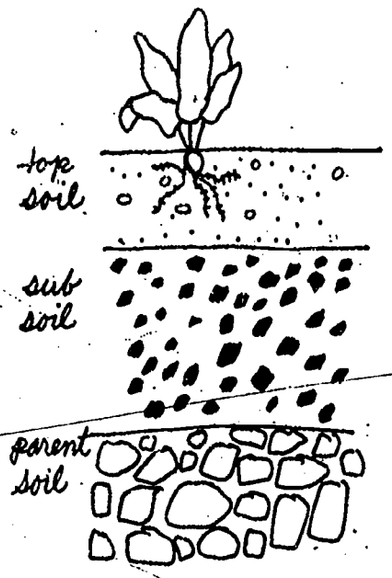
*Grow Your Own Plants:*

*From seeds, bulbs, and roots.*

- Examine cracks in a paved school yard; do you find moss? If so, notice the low, even growth and the velvet-like surface (remember, you can see much better with a magnifying glass); what else is growing in the cracks? How did they get there?
- Look along the edges of the school yard where there might be a wall or fence; do you see little piles of soil, leaves, seeds, and other debris that was carried there by the wind, or deposited into middens by earthworms? Are any plants growing there?
- Early in the spring take some soil, with nothing growing in it yet, into the house or classroom; keep it moist; what happens?
- Make a survey of a vacant lot or other site or part of it to learn what kinds of plants are predominant; if different kinds of plants grow in different parts of the lot, what conditions affect where the plants grow.

## Soil

As we have become a more urbanized nation, many of us seem to have lost or never had an understanding of the importance of soil. It is vital for us to keep



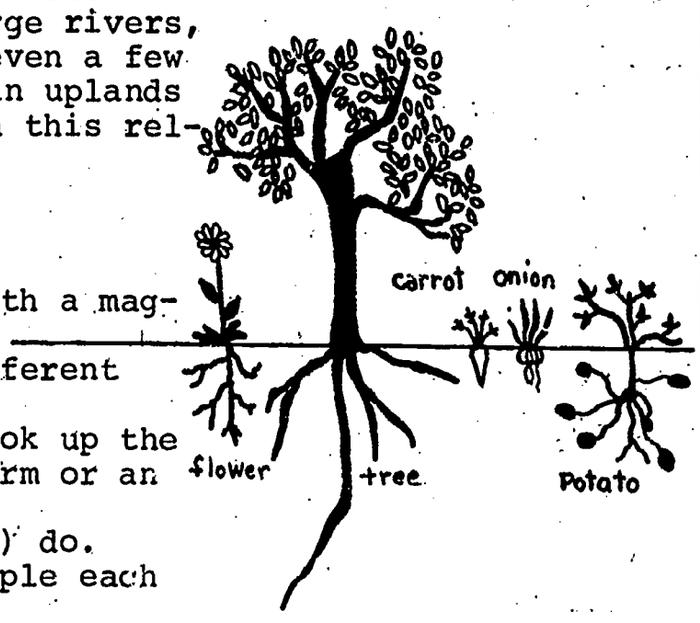

in mind that without soil, there would be no life. Food, of course, needs soil to grow, as well as sunlight and rain; and people, of course, need food for survival.

Let's think about soil. Soil is found in three layers (see illustration). Many midwestern states' soils were created by those vast ices masses, the glaciers. These masses wore down mountains and hills, breaking off rocks and grinding them into soil. When the last glaciers melted (perhaps 8,000 to 12,000 years ago), the soil, rocks and boulders they were carrying were deposited over the land. In the milleniums since the glaciers, lichens and other plants have helped change rocks to soil, the acids produced by these plants causing rocks to crumble. Changes in the climate and weather also cause rock particles to break loose. Soil and rock particles, as well as organic materials, have been worked up and down in the soil profiles by many animals, particularly ants and earthworms. Soil-making is a very slow process.

*Did You Know?*

*That it takes 500-700 years to build up one inch of topsoil?*

When we see plants struggling to grow where there are bare rocks or little top soil, we realize the importance of soil in holding plants in place and in providing water and minerals for the plant roots. While windblown topsoil may be hundreds of feet thick in some places, especially along large rivers, in other places it is only a few feet or even a few inches deep. The average depth on American uplands is seven inches. Think of our reliance on this relatively thin coating of our earth!




THINGS TO DO:

- Examine soil from different places with a magnifying glass; what do you see?
- Examine the roots and rootlets of different plants; compare what you see.
- Learn how earthworms loosen soil; look up the directions for making an earthworm farm or an ant colony box.
- Learn what soil bacteria (decomposers) do. Consider how plants, animals, and people each contribute organic matter to soil.
- Look for an excavation for a new house or a new cut along a highway or for a new road; try to find topsoil, subsoil, and parent soil.
- Learn about the conservation work performed by the Civilian Conservation Corps (CCC) in the 1930's.
- Examine a square foot of soil; what plants and animals and insects do you find? How are they interdependent?

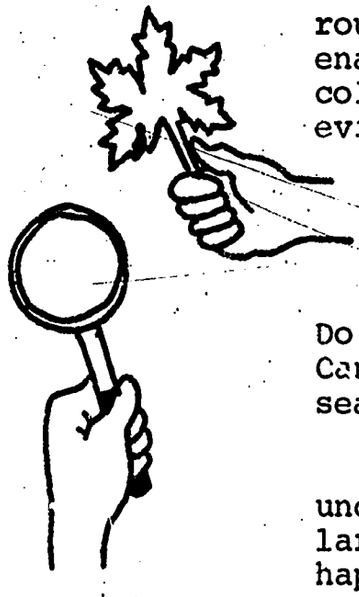
*Special Research:*

*Learn the advantages and disadvantages of one-crop agriculture (monoculture) compared to crop rotation and strip cropping.*

*Learn about contour cultivation.*

- Look for examples of erosion; consider the causes and possible remedies. (A school might get technical advice from the Soil Conservation Service of the U.S. Dept. of Agriculture or University of Illinois extension agents.) Make plans and carry them out to counteract effects of erosion.
- If you can scoop up a handful of forest soil (get permission to do this; then return the soil), you may see little life at first, perhaps an earthworm or a few ants. If you look more closely, you may see smaller creatures--ticks, spiders, and mites. And if you use a microscope, you open up a whole new world of living things! Most of the life of the forest floor is microscopic in size. The plants use the energy and basic substances that have been trapped in the decaying materials. Insect larvae, burrowing animals, earthworms, ants, and other creatures continuously tunnel in the soil, resulting in a gradual mixing of the topsoil and subsoil.
- Get a handful of soil from the edge of a pond and look at it as you did the forest soil.

Animals



Now let's look for signs that other animals are round and about. You may want a magnifying glass to enable you to see better the beauty, patterns, and color of tiny things. If you see any of the following evidence, what animal might have left it?

- hole in a leaf
- nut shells
- chewed branches of shrubs or trees
- web
- footprint
- leafy nest
- hole in ground
- feather
- casting

Do you find other signs that animals have been here? Can you think of evidence you might find in other seasons of the year?

If you see a tree whose leaves have holes, look under the leaf for inchworms, or measuring worms (the larvae of Geometrid moths). Are there nut shells, perhaps under an oak tree, or on a stump or log? You may see a squirrel's leafy nest in the oak or holes high in the tree which squirrels may use for a winter home. If you see a low branch of a tree or shrub that has been chewed, perhaps rabbits or mice nibbled here, dropping bits of twig on the ground. In the winter you may notice these bits of twigs on the snow. If you find a web, look for the spider waiting for its prey.

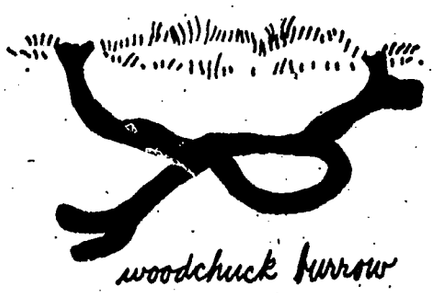
If you want to investigate animal signs, especially footprints, you will need a good reference book.

Try the public library. What made the footprints? A dog? cat? rabbit? squirrel? bird? In the winter, if there is snow, do you see evidence that one animal caught another? There may be signs of a struggle. Or you may see footprints leading to a tree with holes that can be animal homes. Can you make up a story to explain the footprints?


Where would you look for animal homes in the city? If you are not sure, try in trees, under eaves, on window sills, in vacant lots--and then try to think of more places to look. In trees you may find birds nests and holes that may be homes. You may find nests of birds and wasps on eaves and sills; spider webs can be found almost anywhere, even inside a building.


If you go to the woods in a forest preserve or nature preserve, look for holes of various sizes:

- a hole 8-10 inches in diameter may lead to the underground home of a woodchuck
- large holes up in trees may be used by raccoons
- nests high in trees may be made by birds or squirrels
- snakes do not dig holes, but some of them go into holes dug by other animals or into cracks or may burrow under soil or logs or rocky ledges to hibernate
- tall, dead trees may become "apartments" where red-headed woodpeckers chiseled out holes for homes and often taken over by starlings
- a 2-3 inch hole might be one of the entrances to a chipmunk's burrow
- a large hole at the base of a tree or around the roots of an uprooted tree may be a raccoon's home.




Cottontail rabbits build nests or "forms" in tall grass in a hollow in the ground in a brushy thicket.

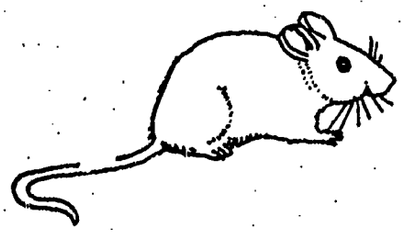
Mice make a variety of homes. Some make burrows in the ground while others live in holes high up in trees or may take over a bird's nest.

You may see a large paper wasp's nest attached to a branch or a small one fastened to a telephone pole.

Instead of just clues that animals are nearby, you may see the animals themselves. If you see a squirrel in a woods or suburban yard, what does it eat? Is a city squirrel able to find the same food? If not, try to discover what it does eat. (Does this remind you of the Aesop's fable, "The Town Mouse and

the Country Mouse"?)

## Mammals Adapted to the City Environment



house mouse

The house mouse is disliked and feared because it carries disease and does damage, especially to packaged grains and cereals and to fabrics and paper.

The rat is even more feared because of the many diseases it may carry and damage it does to stored food.

Bats are common city animals that are rarely seen or rarely recognized at a distance. They fly at dusk or dark and because they are small, with a wingspan of 10 inches or less, they are often mistaken for a large moth. Most bats migrate southward in the fall, but some over-winter in buildings, hollow trees and caves.

chipmunk

Chipmunks and rabbits may live in city parks and other green areas. Along streams, muskrats, minks and even beaver are still found, even within urban areas.

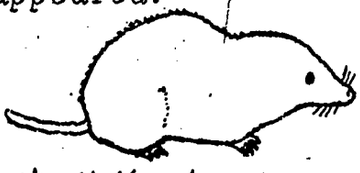
Raccoons and opossums may occasionally be seen, though they are more common in wooded suburban areas and forest preserves.

*Something to Think About:*

*What mammals were in your area 150 or more years ago? Why have some disappeared?*

Deer (the white tail) are still present in most Illinois counties.

Moles and shrews may live in the city but remain well hidden. They may be discovered only when a cat catches one and brings it home, or you spot the pushup tunnels of the mole in a lawn or garden.

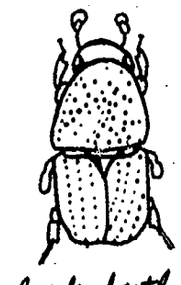


shorttail shrew

## Insects and Bugs

Now let's consider the living things that are among the more numerous on earth: insects. You may be well aware of flies and mosquitoes, but what other insects can you find?

Insects can be found everywhere--below ground, under rocks, on top of and below the water, in leaf litter, in the air, on animals, fruits and trees and in buildings. Insects occupy particular niches in our environment. You may want to learn what these niches are. As you look around you may be aware of insects as food for birds and as decomposers. What other roles do they perform?



bark beetle

It is often easier to find insect signs than to find the insects, in spite of their numbers. If you are examining a dead tree or a rotting log, notice the tunnels under the bark. These may have been made by bark beetles and other beetles as they look for food

and place to lay their eggs. (Too many tunnels and holes, of course, will cause a tree to die if they cut the tree's food supply.) You may also find sow bugs, snails and slugs here as well as ticks, spiders, grubs, and eggs. Some of these animals can also be found under a rock or log or board. What are they doing?


sowbug


slug


snail

A dead tree which is still upright is a good place to search for insects. Do you see beetles making small holes in the bark? Or evidence that they were there? Perhaps you find carpenter ants making tunnels in the wood.

You may observe those busy creatures, the ants. Or are you attracted by a buzzing sound? Bees are as busy as ants. Many people are afraid of bees, and while their sting can be painful, especially for people allergic to the sting, it is important to understand the essential role of bees and other insects in the pollinization of flowers.

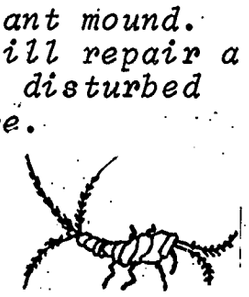
*Be An Ant Watcher:*

*Watch those busy creatures carry sand grains or heavy insects. Look up a diagram of the underground parts of an ant hill. See what happens if the hill is disturbed very lightly on the surface - don't be unduly destructive of an ant mound. Ants will repair a mildly disturbed surface.*

Look for ladybird beetles (ladybugs) which are easy to see because of their red or yellow color. They help plants (and thus humans) by eating aphids, those minute insects that suck plant juices. Can you see any aphids on plants?

Common to city dwellers are cockroaches, silverfish and clothes moths, all found in homes and other buildings. Cockroaches also live in barns and fields. They eat all kinds of food and destroy rugs, clothing, and books. Silverfish, which especially like warm places, eat clothing and starch and glue from bookbindings and wallpaper.


ground spider


silverfish

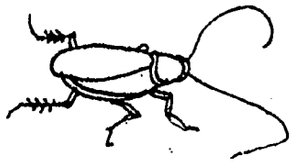
Spiders, too, are often feared--but such fears are unfounded because few, if any, spiders in this area are poisonous. Do some reading about the Black Widow spider and the Brown Recluse--these may be found over most of Illinois and are included in the "poisonous"list. To be safe, though, avoid touching spiders. Actually, spiders will usually run from you. Think how helpful they are in catching flies and mosquitoes in their webs. Daddy-long-legs (harvestmen) are relatives of spiders and should be given protection and understanding.

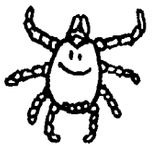
*Special Research:*

*On... caterpillars, butterflies, moths, fireflies (lightning bugs)*

THINGS TO DO:

- ▸Look for ways insects use camouflage as a means of protection.
- ▸Under a low-power microscope, examine the mouths of different insects; can you determine how they eat? (suck, chew, and so on?)
- ▸Prepare oral reports or written papers about


Cockroach

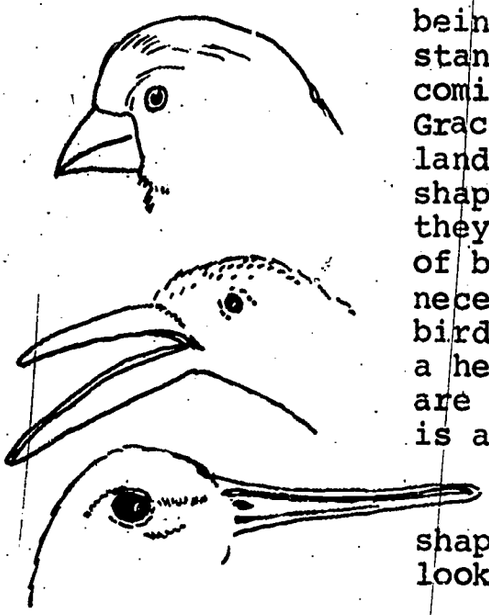


tick

some of the insects and spiders and other creatures we seem to dislike: mosquitoes, flies, ticks, spiders, chiggers.

Birds

Perhaps you would like to concentrate on birds in your area. Are you a bird watcher? If not, you will be amazed how much pleasure these feathered beings can give you once you begin to watch and understand them. Listen to their songs, too. Unbelievable coming from some of the tiny birds? Watch their flight. Graceful? Fascinating to watch as they come in for a landing? You might like to learn to recognize them by shape, outline or flight; to learn what they eat; where they nest; what kind of nest they make. A good pair of binoculars, while expensive and not absolutely necessary, is a great help in seeing a distant songbird or a treetop visitor. A bird guide book is also a help in checking what you see. Pocket size guides are most convenient. An inexpensive 8x10 telescope is a good substitute for more expensive binoculars.

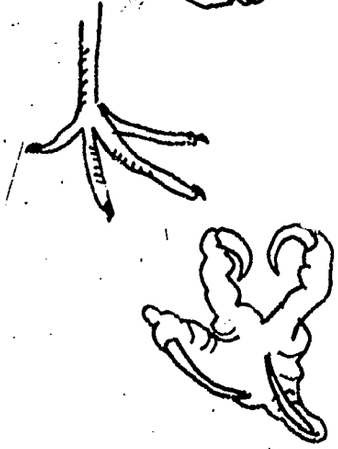


Do you know you can tell what a bird eats by the shape of its beak? And where and how birds live by looking at the feet and claws?

You may want to keep a record of what kinds of birds you see, where you see them, and the dates. This kind of record gets more interesting year by year.

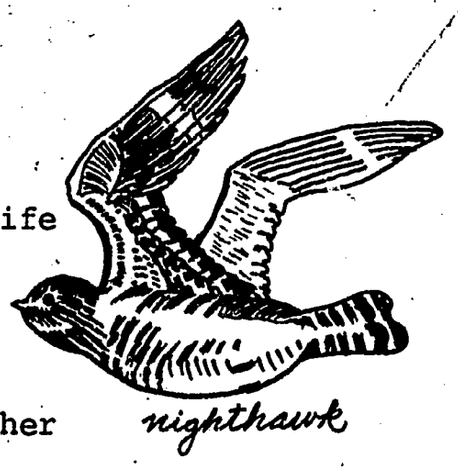
You may want to attract birds to your yard by planting shrubs that bear fruit, by putting out birdseed in fall, winter and spring, by tempting them with a bird bath. A record of just the birds you see in your yard is fun to compare from year to year.

If you become interested in bird watching, you may want to join with others to hike in forest and field, in nature preserves and wildlife refuges to enjoy this hobby.



Some birds have adapted well to the city. While many suburban and country birds build nests in trees, city birds are not always able to find a tree. They have accepted window sills and ledges, roofs, gutters and eaves of buildings as nesting places. Can you find nests in other places? Country birds use twigs, leaves, and grass for nest construction. City birds use these materials when available, but also use other materials like string, candy wrappers, sandwich bags, long dog hair, or even nails and other bits of metal.

You may have seen pigeons, starlings, sparrows and robins in the city. Look for nighthawks. Learn



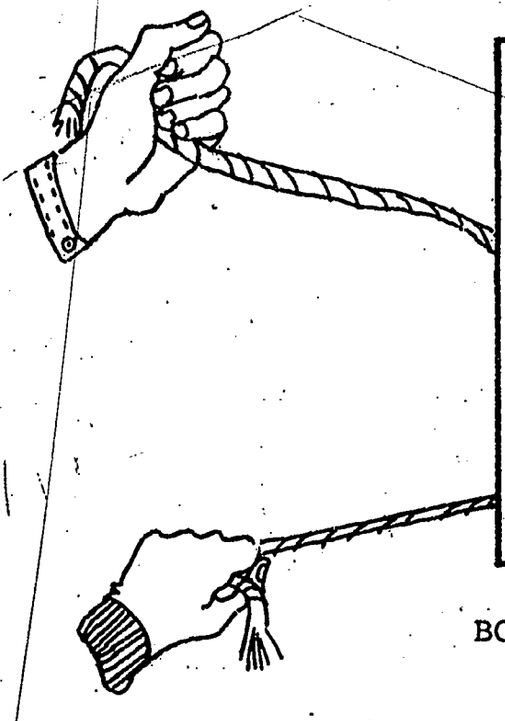

how these "wild" things have become accustomed to life in a busy, noisy city.

THINGS TO DO:

- ▶Learn about the programs of some organizations whose main purpose to to preserve birds and other wildlife.
- ▶Consider what effects on the environment a decrease in bird population would have--on plants, insects, worms, people, and so on.
- ▶Learn under what conditions some birds and other animals have become extinct or endangered; what can be done to prevent this?
- ▶Visit a bird or wildlife refuge.
- ▶See the geological and ecological exhibits of the Chicago area at the Chicago Academy of Sciences, 2001 N. Clark St. Open 10:00 - 5:00 daily; free admission. Phone (312) 549-0606. Learn about free nature films and travelogs.
- ▶Learn about the environmental education program for children and adults at the Field Museum of Natural History, Roosevelt Road and Lake Shore Drive. The program includes workshops, field trips and courses--for adults, young people, and family groups. An exhibit called "Man and His Environment" will open in 1975; watch for special programs in connection with this exhibit. For information on the programs, write to the Coordinator, Special Services, Department of Education, Field Museum of Natural History, Roosevelt Road and Lake Shore Drive, Chicago 60605.
- ▶Teachers already undoubtedly know about the Field Museum's Foundation programs for school groups; especially pertinent to the topic in this chapter are the Science Workshops on Ecology and the Science-Tour-Programs on Plants and Animals of the Chicago Region, Relationships between Living Things (on ecology), and Vanishing Animals. For information write: The Raymond Foundation, Field Museum of Natural History, Roosevelt Road and Lake Shore Dirve, Chicago 60605.
- ▶In a classroom learn about food chains, food webs, and food pyramids. Then try these games.

WEB OF LIFE GAME

Individuals act the part of a certain living or non-living thing in a specific environment, as sun, tree, rocks; each one discusses his relationship to other things. Consider what they would like, what they would stay away from, what they might help, what would help them, what they would be indifferent to.



## ANOTHER WEB OF LIFE GAME

Start with one thing in nature, for example, a tree. Have one child represent the tree and hold the end of a string. Have children suggest things the tree needs and represent them; i.e. sun, soil, water, each child taking one end of a piece of string and the "tree" holding the other end. Discuss things that depend on the tree. Have students represent them, always connecting with the string. After a time, depending upon the age of the students, cut the string in one place and discuss what might happen if the web were broken at that point for some reason.

BOOKS TO ENJOY:

Blough, Glenn; Discovering Insects. McGraw-Hill, 1967. intermediate. $4

Busch, Phyllis; At Home in Its Habitat. World, 1970. intermediate. over $5.

Busch, Phyllis; City Lots: Living Things in Vacant Spots. World, 1970. primary.

Busch, Phyllis; Exploring As You Walk in the City. Lippincott, 1972. primary. $4

Busch, Phyllis; Exploring As You Walk in the Meadow. Lippincott, 1972. primary. $4

Busch, Phyllis; Once There Was A Tree. World, 1972. grades 3-5.

Cohen, Daniel; Animals of the City. McGraw-Hill, 1969. intermediate $4

Ferguson, Grace F.; The How and Why Wonder Book of Wild Flowers. Grosset & Dunlop, 1962. $1.50.

Fox, Charles P.; When Autumn Comes. Reilly and Lee, 1966. primary $5

Fox, Charles P.; When Spring Comes. Reilly and Lee, 1964. $5

Fox, Charles P.; When Summer Comes. Reilly and Lee, 1966. $5

Fox, Charles P.; When Winter Comes. Reilly and Lee, 1962. $5

Gannon, Robert; What's Under a Rock? Dutton, 1971. intermediate - up $5

George, Jean; All Upon a Stone. Crowell, 1971. $4

George, Jean; The Hole in the Tree. Dutton, 1957. intermediate.

George, Jean; Lives of an Oak Tree.

George, Jean; My Side of the Mountain. Dutton, 1959. intermediate

George, Jean; Who Really Killed Cock Robin? Dutton, 1971. intermediate-adult. $5

Graham, E. H.; The Land Renewed. Walck, 1968. intermediate-adult. $5

Lubell, W.; See Through the Forest. Harper & Row, 1956. Primary. $4

Lubell, W.; Tall Grass Zoo. Rand-McNally, 1960. primary. $4

Mason, George; Animal Homes. Morrow, 1947. Grades 5-9. $4

Mason, George; Animal Tracks. Morrow, 1943. Grades 5-9. $4.

May, Julian; Why Plants Are Green Instead of Pink. Publication Associates, 1970. Grades 6-9. $5

Polgreen, John and Cathleen; Backyard Safari. Doubleday, 1971. Grades 1-7. $5

Pringle, Laurence; Discovering the Outdoors. Doubleday, 1969. Grades 3-8. $5

Pringle, Laurence; From Field to Forest: How Plants and Animals Change the Land (ecology) World, 1970. Intermediate-adult. $5

Russell, Helen Ross; City Critters. Meredith Press, 1969. Intermediate-adult. under $3

Schwartz, George I. and Bernice S.; Life in a Log. Natural History Press, 1972. $5.95

Selsam, Millicent; Birth of a Forest. Harper and Row, 1964. Intermediate-up $4

Wasson, Isabel B.; Birds. Follett, 1963. Grades 2-4. $1.50.

CURRICULUM MATERIALS:

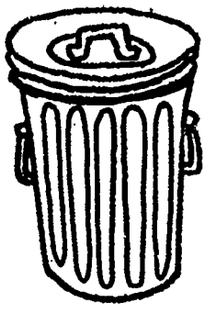
National Audubon Society; A Place to Live. Urban ecology unit for 4-5 grades. student manual 75¢, teacher's munual $1.50. Write Educational Services, National Audubon Society, 1130 Fifth Avenue, New York, N.Y. 10028.

Russell, Helen Ross; Soil: A Field Trip Guide. Little, Brown, 1972. primary. $4

Russell, Helen Ross; Ten Minute Field Trips. J. A. Ferguson, 1973. for teachers. $7

Russell, Helen Ross; Winter: A Field Trip Guide. Little, Brown, 1972. primary. $4

Swan, Malcolm D. (editor) Tips and Tricks in Outdoor Education. 1970. Available from The Interstate Printers and Publishers, Inc. Danville, Ill. 61832.



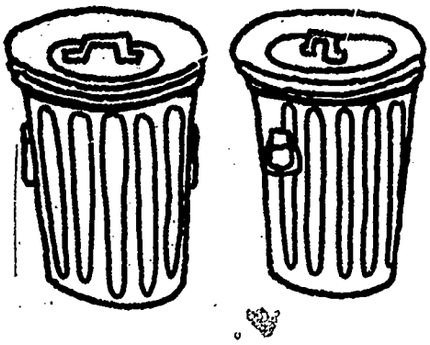
# All That Garbage and Trash

For many Americans the solid waste problem begins and ends with the large container beside their back door--but in reality the problem is much greater. People have always had to get rid of wastes. The trouble now is that more people than ever before are throwing away much more than ever before.

*Did You Know?*

*In 1920, 2.7 lbs. of solid wastes per person per day were produced; in 1970, the figure was 5.3; it is estimated that it will be 8.0 lbs. by 1980.*

First of all, how is the disposal of solid wastes handled in your community? (You might call the city hall to ask these questions.) How often is the pick-up? Where are the garbage and trash taken? (To a sanitary landfill? an incinerator? somewhere else?) How far is it taken? How heavy are the trucks? You might discuss the impact of these heavy vehicles on residential streets and on highways. What might happen in the future as the nearby sites are filled, for example? How do people feel about living near a sanitary landfill or incinerator?



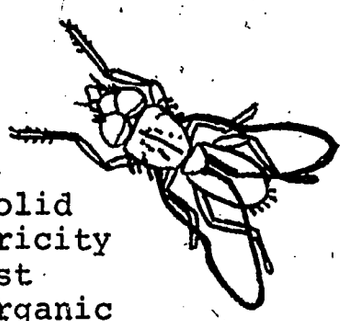
Now, let's remind ourselves of the following vital fact stated in the preface of a 1969 National Academy of Sciences Study, Policies for Solid Waste Management:

> Matter can neither be created nor destroyed. Man processes and uses matter. In so doing he may change its chemical form or alter its physical state; but in some combination of gases, liquids, or solids, all of the original material continues to be part of the world about us.

With this in mind, what about the materials that are buried in the landfill? Do they quickly enrich the soil? According to a mini-editorial in the Chicago Daily News, October 28-29, 1972:

a thin aluminum can will break into dust in 500 yrs.
an old-fashioned "tin" can will do this in 100 yrs.
a container of commonly used plastic disintegrates 95%, if it is buried, in 350 yrs.
a container of commonly used plastic disintegrates 95%, on top of the ground, in over 350 yr
glass containers probably last indefinitely

What are reasonable alternatives to sanitary landfills? Instead of being buried, can solid wastes be put to use? First of all, it cannot be too strongly stressed that recycling is very complex. Mechanical processes for recycling still must be perfected. Labor costs are high. Ready, dependable markets need to be developed. But people who think in terms of the concept of Spaceship Earth--a closed system whose only resource being replenished from outside is sunlight--urge that we think and plan for reuse and recycling of materials. While it is common to recycle paper, what

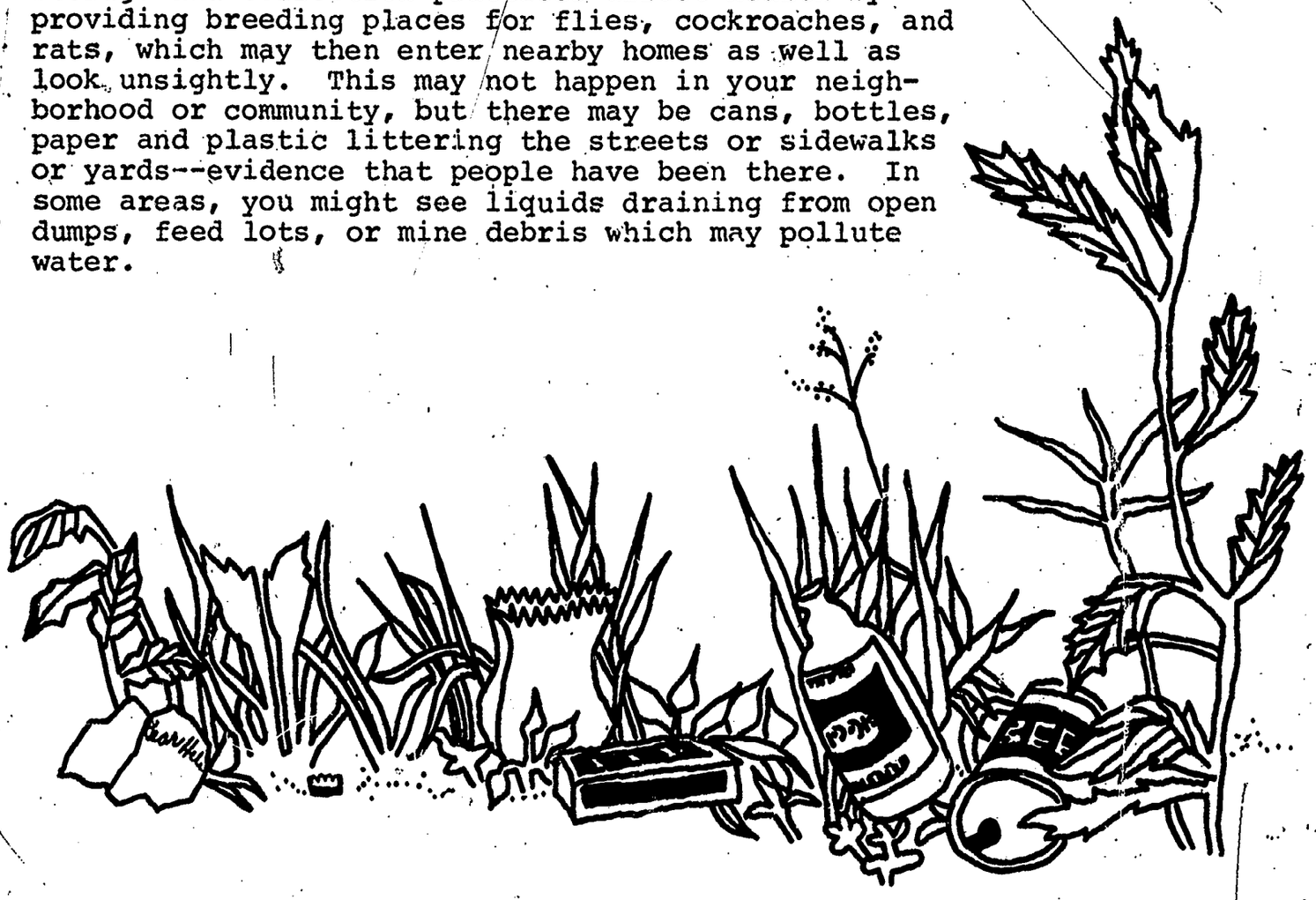


about metals and other resources that are in solid wastes? Some European cities are making electricity and heat from refuse, and the Dutch have compost factories which produce fertilizers from the organic content of garbage.

*Special Research:*

*Ways materials are being recycled.*

Besides problems of disposal and of wasted resources in solid waste, do you see such wastes polluting land or water? You may see that inadequate storage and collection practices affect health by providing breeding places for flies, cockroaches, and rats, which may then enter nearby homes as well as look unsightly. This may not happen in your neighborhood or community, but there may be cans, bottles, paper and plastic littering the streets or sidewalks or yards--evidence that people have been there. In some areas, you might see liquids draining from open dumps, feed lots, or mine debris which may pollute water.



THINGS TO DO:


Recycling and Disposal

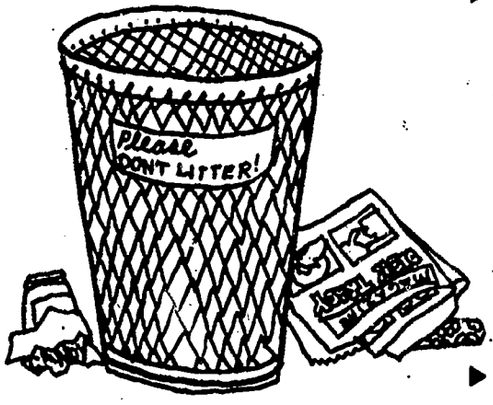
- What about returnable bottles? Check into Oregon's tough beverage container law that outlaws snap-top cans, and throw away bottles, requires 5¢ refunds on all carbonated beverage containers except for short-necked 12-oz. beer bottles, on which 2¢ is paid. (A "Bottle Bill Progress Report" is available from the Oregon Environmental Council, 2637 SW Water Street, Portland, Oregon 97201 for $1.50.)
- Check to see if one-way bottles have been perfected which, when burned, will have little or

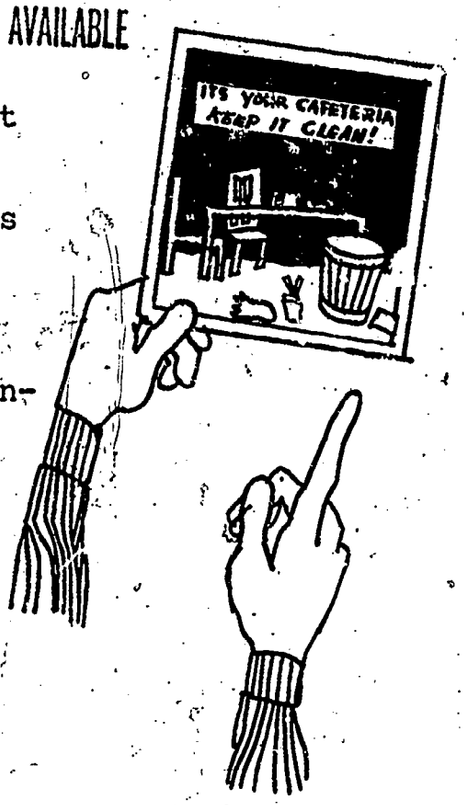
no residue and release no pollution to the air; what happens to them in a landfill?

- Learn about the way garbage and trash were used to make a recreation area with a "mountain" and lakes in the Blackwell Forest Preserve. For a kit, call 629-5700 or write Forest Preserve District of DuPage County, 881 W. St. Charles Road, Lombard 60148.
- Find out whether shipping costs are still higher for used materials than for raw materials; how does this affect recycling costs?
- Check into recycling centers in or near your town; is this done on a large enough scale to save appreciable amounts of resources?
- Observe the solid waste your family is throwing away; could some objects be repaired and reused by your family or by others?
- At school a team of volunteers might sort one day's trash (after being dumped together) into such piles as garbage, paper, metal, glass, plastic; what difficulties do they find in sorting the trash? Should there be containers for the different wastes? Should students be asked to sort as they throw away? What difficulties might this entail? What difficulties might you see in sorting trash for a city? What about difficulties of sorting after waste is compacted?

Land Pollution

- Learn what litter is, where it is, how it affects an area, and what can be done about it; what is an individual's responsibility?
- A teacher may take a class to pick up litter out of doors, perhaps making three-dimensional posters using some of the litter. This might be done on a regular basis, alternating with other classes. NOTE: if done too often, children are turned off.
- If a stream near you needs to be cleaned up, individuals may want to contact community organizations to get them interested. A teacher may want to get interested students involved. Careful planning is required. Equipment, such as high boots, rakes, shovels and gloves, is important. In some communities arrangements can be made with the town for trucks to pick up the junk cleared from the stream. Some of the trash might be saved for a display at your school or local library and/or to make into a sculpture!
- After looking at areas between home and school or work or stores, discuss where litter often accumulates. Is there a litter basket or barrel there? If not, is one needed? Why not call the Street Department to ask for one? Or contact a service organization to work on the problem.






- ▶For a class project, a nearby area might be kept clean (flowers and trees planted, too). Check out liability before beginning.
- ▶Use camera to take pictures of litter and wastes in various areas: along streets, at school in a school cafeteria, etc. and in school yards before and after clean-up.
- ▶If you see inadequate storage and collection practices, why not try to locate community organizations which are working on this problem and work with them? Could a member of such an organization speak to your class or a group you belong to?

Have you heard that some people think that waste or destruction of natural resources is stealing --from future generations?

- ▶For tours of an incinerator, contact Department of Streets and Sanitation, City of Chicago, City Hall, 121 N. LaSalle Street, Chicago 60602. Contact the Metropolitan Sanitary District of Greater Chicago, 100 E. Erie, Chicago 60611; (312) 751-5600 -
  - ●to arrange a tour to the Fulton County Land Reclamation Project (In April, 1974, this Project was given the "Outstanding Engineering Achievement Award of 1974" by the American Society of Civil Engineers)
  - ●to request a guest speaker for an organization.

BOOKS TO ENJOY:

Blake, Peter; God's Own Junkyard. Holt, Reinhart and Winston, 1964.

Hilton, Suzanne; How Do They Get Rid of It?. Westminster, 1970.

Illinois Institute for Environmental Quality, 309 W. Washington, Chicago 60606, 793-3870.
Directory of Markets for Recyclable Materials and Directory of Neighborhood Recycling Centers in Illinois.

Keep America Beautiful, Inc., 99 Park Ave., New York, N.Y. 10016.
Environmental Action Starts Here. A Youth Group Leader's Guide.
Litter Prevention: An Aid to Conservation.
Organizing an Anti-Litter Project With Steel and Pails
Establishing a Citizen-Sponsored Reclamation Center.

Leaf, Munro; Who Cares? I Do! Lippincott, 1971. primary. $1.99

Rodale Press; Recycling. Educational Services Division, Emmaus, Pa. 18049. $1.50

Schatz, Albert and Vivian; Teaching Science With Garbage. Rodale Press, Emmaus, Pa. 18049. for teachers. $1.50

Shanks, Ann Zane; About Garbage and Stuff. Viking, 1973. primary $5.95

Smaridge, Norah; Litterbugs Come in Every Size. Golden Press, 1972. primary. $1.00

# What Do You Hear ?

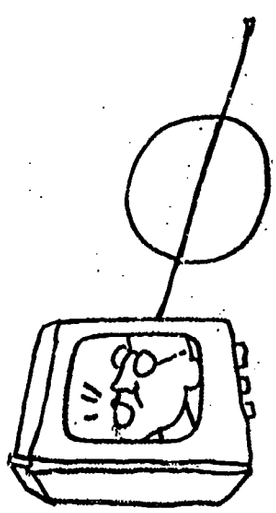
Walk around your neighborhood and concentrate on listening. What do you hear? Did you say "sounds" or "noise"? Is there a difference? Noise can be called unwanted sound and is usually excessive. Sounds below 50 decibels are hardly ever called noise. But people differ about what is "wanted". Some of today's music, for example, may be noise to older people but the right "sound" for young people. People also differ in their reactions to the pitch of sounds.

The characteristics of pitch, irregularity, and intensity (loudness), which is measured in decibels, are what make sounds most annoying. As you listen, be aware of the pitch, irregularity, and intensity of the noises you hear. (For simplification from now on the term noise will be used without distinction as to decibel level.) At some point you may want to classify the noises into the categories of: Home or Inside/ School/ Community or Out-of-Doors/ Industrial.

The following questions may help you think about the noises.

- ▶Define "decibel" and prepare or copy a rating chart form. (See page 67.)
- ▶Are any noises natural, or are they all man-made?
- ▶Are some noises more pleasant than others? Are any particularly unpleasant?
- ▶Are some irregular? Are they more irritating than regular noises? Why?
- ▶Which noises are necessary? Which unnecessary?
- ▶What types of areas are near the major sources of noise?
- ▶Do you think the noises you hear would be different at different times of the day?

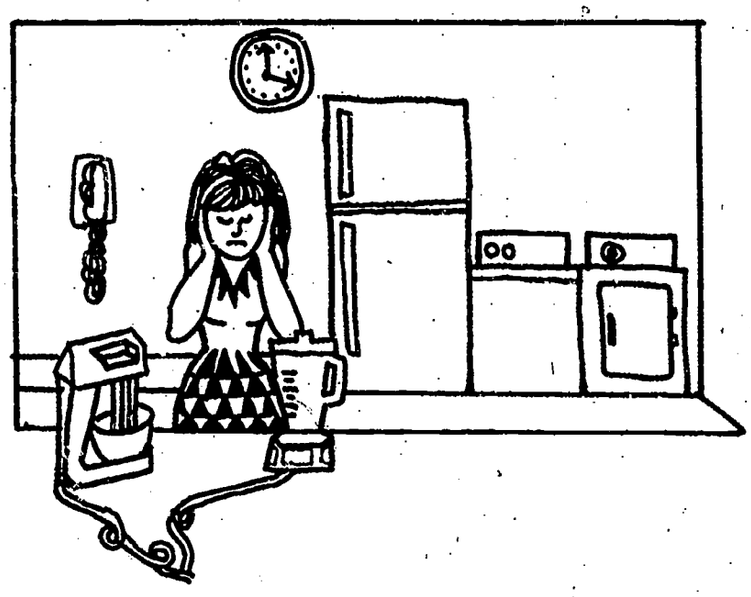
You may want to draw a map of your community and locate residential areas and recreation areas. (If you are including a large area, you might get a map of your community from the Chamber of Commerce or a local bank.) Color code the areas of greatest noise (red-very noisy; yellow-noisy; green-quieter). How close are these areas to the residential and recreation areas? What are the problems of various noises to people who are nearby?



Noises in the Home

Pictures of noisy objects in homes might be collected or drawn and grouped by level of noise, as faint, moderate, loud, etc., using the table of sound levels on page  in this section. You might discuss questions like those above. As more and more

appliances have appeared in our homes to make work easier, the noise level has become greater. The kitchen is the noisiest room in the house because it is so mechanized and its walls and cabinets have hard surfaces off which noise bounces easily to cause reverberations. It would be a challenge to design kitchens which cut down noise.



Noises in Your School or Place of Work

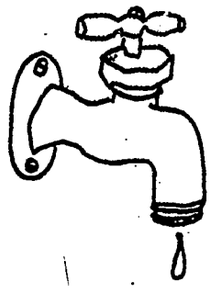
Questions and suggestions from the preceding part of this section may apply, or add your own.

Why Is Anyone Concerned About Noise?

A teacher might make a sudden loud, unpleasant noise--crashing a ruler or book on a desk, dropping a metal object, etc.--and then discuss how the students feel, perhaps listing their physical and emotional reactions. When hearing any sudden noise over 70 decibels, people react as if to danger and can experience:

- a faster heartbeat
- drying of mouth and tongue
- dilation of pupils
- loss of skin color
- muscles that tighten or contract
- constriction of small blood vessels
- upset stomach
- increase in sweating
- anger, anxiety, and irritability.

With older or more mature students, there might be discussions of possible consequences of the above reactions, such as the eyestrain and headaches suffered by people who do exacting work, i.e., watchmakers and surgeons, when noise causes their eyes to constantly change focus. Research has shown that although people think they become used to a noise, their bodies do

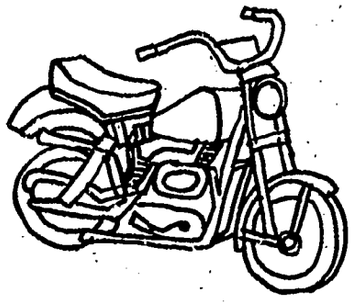


not, and in time muscles, nervous system, and heart are taking a strain as well as hearing acuity becoming affected. Furthermore, it has been found that noises which did not awaken sleepers did, however, produce fatigue.

You might explore possible consequences of irritable people at school, at work, at home, driving a car, bus or train. You may want to discuss the following facts:

- people suffering from heart disease, asthma, ulcers, or stomach trouble can become sicker because of noise
- noise causes mistakes in work
- noise-interrupted sleep can have a damaging effect on sick or old people
- noise over a period of time can cause deafness--up to 16 million Americans were estimated to be working under literally deafening conditions.

You may want to examine with young people a statement that loud music may be hazardous to your hearing.



Some people say that during our private time when both our bodies and souls would benefit from peace and quiet, we are still surrounded by noise--perhaps background music, traffic noise, power mowers, and so on. What do you think?

What Can Be Done to Eliminate or Cut Down Major Sources of Noise?

Make a list, perhaps using the aforementioned categories of Home or Indoor/ School/ Community or Our-of-Doors/ Industrial noises. Many people know that:

- drapes, carpeting and upholstery are used in homes, schools, and offices to muffle noise.
- special (acoustical) tile in ceilings and walls is used to absorb noise
- ear plugs, ear muffs, and even helmets are worn to protect hearing by workers in noisy jobs (as at construction-demolition sites and airports, both particularly noisy areas).

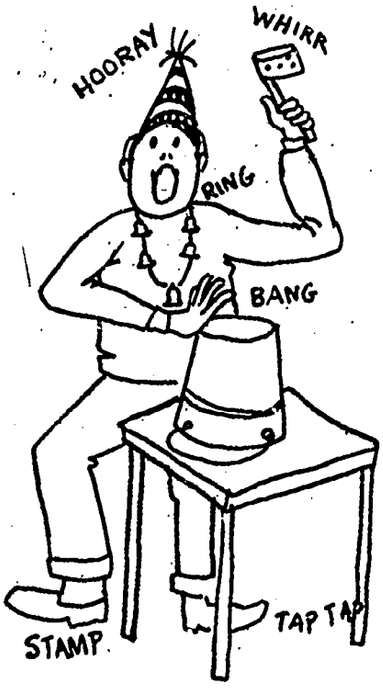
But did you know that:

- trees and shrubs can be planted to absorb both the noise and carbon dioxide from traffic
- busy streets, highways and even railroads can be sunk between earth embankments, reducing traffic noise up to 15 decibels in the immediate area
- buildings can be well-insulated when they are built (Although it adds two to ten percent to the total cost of the building, it also increases the value of the property.)


- quiet steel garbage cans are being made that make a dull thud instead of a sharp clang when dropped
- mufflers can be put on riveters, pneumatic drills, air compressors, pile drivers, and all kinds of excavation and demolition equipment, which are among our noisiest machines
- noisy machines can be walled in so their noise does not bother the entire factory, and the operators can wear plugs, muffs, and/or helmets
- noisy industries can be confined to one part of town
- airports can be placed far from towns and air traffic routed so planes do not pass over residences when they take off and land
- zoning laws can be passed to maintain an industrial buffer zone between airports and residential areas?

Further questions can be asked regarding eliminating or cutting down noise, such as--

- Which sources have to be tolerated?
- Which sources can be reduced through tehcnological advances or planning procedures?
- Which sources can be eliminated only by removal of the source?




One source of noise problems that is often overlooked is that of the individual noisemaker. Thoughtfulness or just plain courtesy to other people will help cut down this problem.

Noise seems to be much more serious than most people realize. It may encourage you to know that there is presently a developing technology to bring noise under control or eliminate it, at not excessive costs. Noise prevention can be marketed, as with quieter apartments and noiseless kitchen equipment. In New York, Chicago, and elsewhere, citizen groups have worked for anti-noise laws. Does your community have an anti-noise law? Do you think there is the need for one? What could you do to interest others in working to get such a law or ordinance passed?

How would our environment change if most of us began to

THINK QUIET

*Did You Know:*

*That in Europe some countries have set a noise limit of 30 decibels for residential areas at night?*

"In July, 1971, the Northeast Illinois Planning Commission published its study* of the impact of aircraft noise upon communities surrounging O'Hare Airport... By 1975, if current trends continue, half a million persons will live in homes seriously impacted by noise around O'Hare. Quieter aircraft engines and changes in approach and take-off altitude would reduce the noise impact much more than any land use change, NIPC showed."

*a digest of this Metropolitan Aircraft Noise Abatement Policy Study: O'Hare International Airport, September, 1971, is available from the Northeastern Illinois Planning Commission, 10 S. Riverside Plaza, Chicago 60606.

The organization N.O.I.S.E. (National Organization in Insure a Sound-Controlled Environment) was established "to combat the growing menace of noise pollution caused by jet airplanes." For information on its purposes, accomplishments, and cost of membership, write: N.O.I.S.E., P.O. Box F, College Park, Georgia 30337.

BOOKS TO ENJOY:

Aylesworth, Thomas G.; This Vital Air; This Vital Water; Man's Environmental Crisis Rand, McNally, 1968. intermediate-up. contains two chapters on noise.

Elkin, Benjamin; Loudest Noise in the World. Viking, 1954. fiction for young children, but anyone can enjoy. $3-5

Hutchins, Carleen Maley; Who Will Drown the Sound? Coward, McCann and Geoghegan, Inc., 1972. primary

Jones, Claire et all; Pollution: the Noise We Hear. Lerner, 1972. Jr. high - up.

McGovern, Ann; Too Much Noise. Houghton-Mifflin, 1967. primary $3-4.

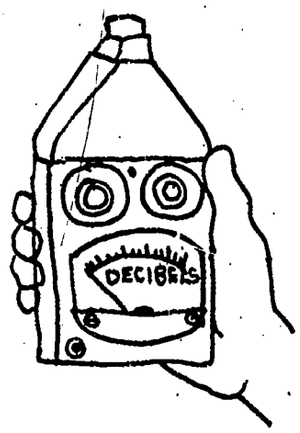
Navarra, John Gabriel; Our Noisy World. Doubleday, 1969. intermediate - up.

Perera, Thomas & Gretchen; Louder and Louder: The Dangers of Noise Pollution. Franklin, Watts, 1973. about grades 3-4.

U. S. Dept. of Transportation. Transportation Noise and Its Control. 1972. available from Supt. of Documents, U.S. Printing Office, Washington, D.C. 20402. 85¢ postpaid.

# SOUND LEVELS

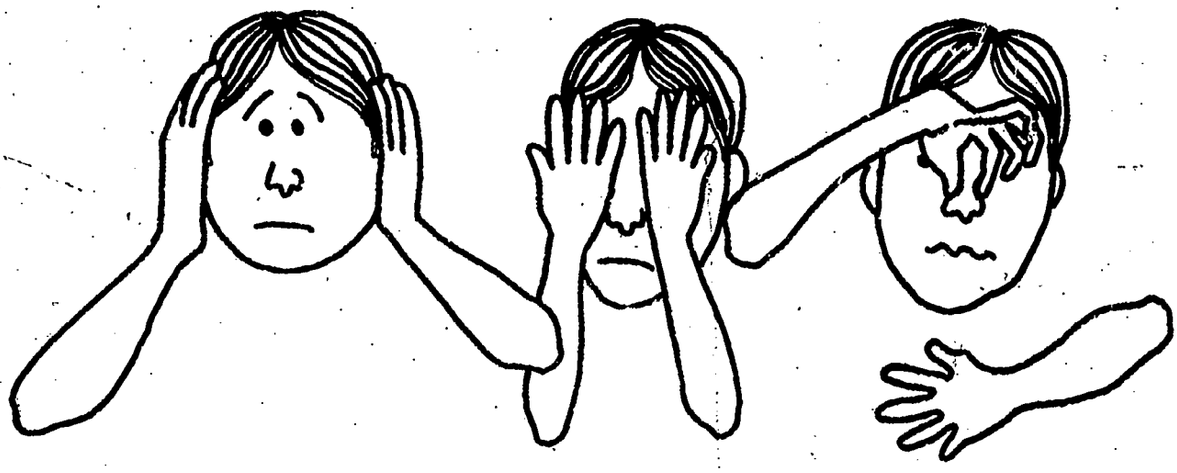
(taken at distances you usually hear them)




| Decibels | | | Common Sources |
|---|---|---|---|
| 180 | | | electric shovel |
| 170 | | | drill |
| 160 | | | |
| 150 | | | |
| 140 | ear drum may rupture<br>strong ringing sensation in ear | physical damage | jet plane taking off<br>shot gun blast<br>riveting on steel plates<br>air raid siren |
| 130 | | | |
| 120 | | | |
| 110 | perceptible ear discomfort | deafening | amplified rock band<br>jet airport<br>accelerating motorcycle<br>loud auto horn<br>siren<br>circular saw |
| 100 | | | |
| 90 | very annoying<br>work efficiency decreases; errors increase<br>continued exposure causes a loss of hearing | very loud | heavy street traffic<br>freight train<br>heavy truck<br>power lawn mower<br>inside subway train<br>baby crying in same room<br>garbage collection |
| 80 | | | |
| 70 | | loud | average radio<br>vacuum cleaner<br>alarm clock<br>washing machine<br>city school playground<br>toilet flushing<br>air conditioning |
| 60 | | | |
| 50 | normal conversation | moderate | quiet home<br>quiet street<br>refrigerator<br>suburban playground<br>air conditioning |
| 40 | | | |
| 30 | whisper | faint | watch ticking<br>library |
| 20 | | | |
| 10 | | | |
| 0 | just audible | very faint | sound-proof room<br>breathing<br>rustling leaves |

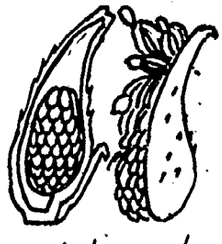
# Beauty Around You

As we learn more about environmental problems it is often easy to be aware of the degraded parts of our environment. Noise assaults our ears, litter offends our eyes, air pollution annoys our noses and perhaps eyes, and so on; we should not overlook these aspects of environment and just accept them.



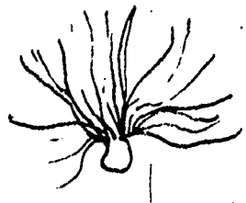
However, somehow in the rush of our lives many of us have ignored the beauty in everyday things. We do not seem to realize that while beauty adds to our enjoyment, it is often needed for our survival. We seem to need help in learning to observe thoughtfully and sensitively, both the natural and man-made aspects of our world. What colors do you see around you that you like? What shapes? What patterns? Spaces? Sounds? How are they pleasing to you?

Do you enjoy the different seasons and their changes? Do you marvel at the reawakening of nature in the spring? Observe the buds swelling and opening into leaves or flowers. Notice the various shades of green and other colors and how the colors in nature complement each other. Has your heart been gladdened by a splash of color from one small plant?



milkweed

In summer do you notice the play of light and shadow caused by trees and shrubs? Texture of buildings? In autumn do you search out areas that have the colors of gold, brown, scarlet and crimson? In winter do you watch the snow for drifts, animal tracks, a deadening of the noises in the streets and observe the bare branches and the patterns they make? Have you seen delicate weeds? And dried seed pods? Perhaps you have been fascinated by the fast changing colors of sunsets, but have you also been up to watch



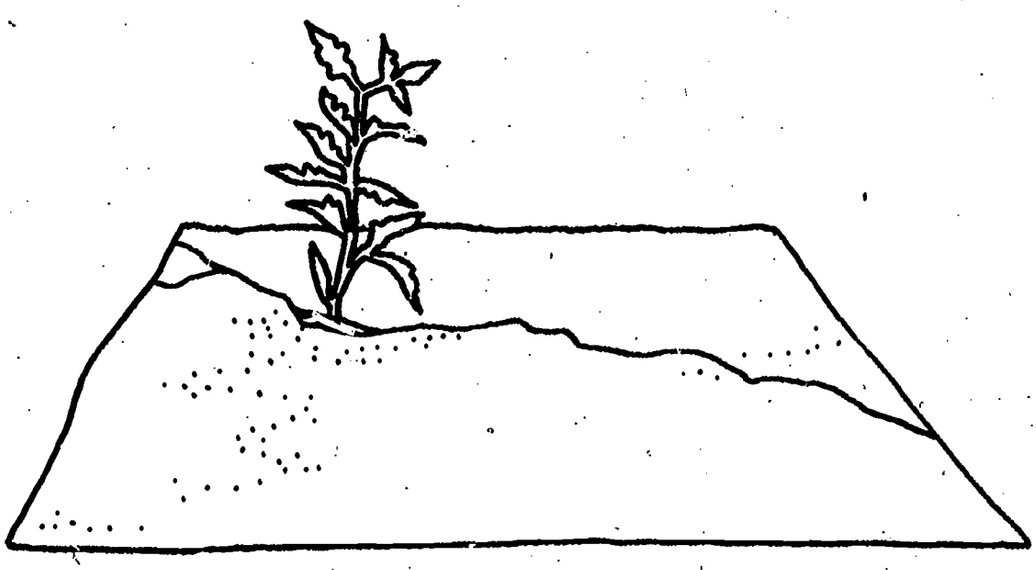
milkweed seed

the sun rise ( and hear the early morning sounds)?

Have you watched the endless variety of clouds? Puffy, billowy clouds. Vast thunderheads that attract and threaten at the same time.

Search the sky beginning at dusk--looking at a skyline against the darkening sky in city, suburb or country. Watch the moon and stars gradually appear, filling you with awe as you ponder how far away they are. See low-hanging clouds covering the lighted tops of skyscrapers. Watch the fog or mist swirl in from Lake Michigan or from a low area, like the "cat's feet" described by Carl Sandburg in his poem, "Fog".

Have you seen birds soaring and moving with wind drafts, or going through their mating dances, or feeding their young? Have you seen plants growing in cracks so tiny you would never have thought there was any soil there? Have you watched ant hills and their busy occupants? Look at spiderwebs festooned with dew or raindrops.



There is also the beauty and variety in man-made structures--as well as monotony and drabness. If there is monotony, can you do anything to change the situation? "This topic is expanded under "A Close Look at Buildings Nearby")

When you see unsightly litter, do you pick it up? Do you look for litter baskets? Do you urge others to gather up what they find or not to throw it down in the first place? Are the waste containers in your park emptied regularly? If not, why not? What do your local officials say about this problem? Certainly

people feel less like picking up litter or not throwing it down if the trash barrels are overflowing.

Think of one way you would like to add to the beauty around you. Can you do it alone? If not, can you find a group that is working on the problem?

Once you become more attuned to beauty around you, you may be surprised at what you had been missing.


THINGS TO DO:

- ▶Keep a sketch record of tiny things, colorful things, things whose shape you like, and so on.
- ▶Keep a record of new things you notice, perhaps year-round.
- ▶Jot down a few words or phrases or perhaps a poem or Haiku about some of the things you see.
- ▶Compare littering to throwing money out of a pocket (taxes) to pay people to pick up trash and litter.

IT IS NOT FAR
by
Sara Teasdale

Stars over snow,
  And in the west a planet
Swinging below a star--
  Look for a lovely thing and you will find it,
It is not far--
  It never will be far.

# In a Vacant Lot


There are riches to be found in a vacant lot. Whether the lot is narrow, small, and shaded, large, bright and sunny, or something in between, it can be worth exploring if you know what to look for. A vacant lot is not really empty at all, but is full of fascinating things. It contains many plants and animals and all the things that they need to live: space, food, air, water, and sunlight. (NOTE: It would be wise to get permission from the owner of the lot if you want to dig in the earth or if there are more than a few people in your visiting group.)

Why not try at least several of the following activities--and you may find that you do not want to stop! Many of these activities may also be suitable for exploration of a yard, school site, forest preserve, or park. Digging, of course, should not be done on any public land. You may want to check your public or school library for books to help you identify what you find.

- Learn the history of the lot; what was there before? How was it used over the years? If there were buildings, why were they torn down? How many owners have there been? How did the first white owner get it from the Indians?

Soil

- Find a path that has been trampled by people. Why did people select this path? (Note the presence or absence of plants where the soil is packed down, and in low spots where the soil has not been compacted.)

- Look for signs of erosion. Has rain washed topsoil from high spots to lower ones? Are there gullies where running water carried soil down a slope? Do you see stones that stand on little mounds of soil which they have protected from the force of raindrops while the bare earth around them has washed away? Have any tree roots been exposed as soil washed away? On a breezy day, do you see dry, powdery soil that may be compared with dust storms? Sometimes a dust-devil will swirl across the lot.

- (After getting permission) dig a hole with a spade to determine the depth of the topsoil Use a hand lens to see that it is composed of mineral particles mixed with bits of plant and animal remains. Compare the topsoil with the subsoil.

Can you see that the latter consists mostly of mineral particles? Find leaves and stems that are disintegrating to become part of the soil. Consider the importance of conserving topsoil. You may find fill placed over the original topsoil; you can interpret this.

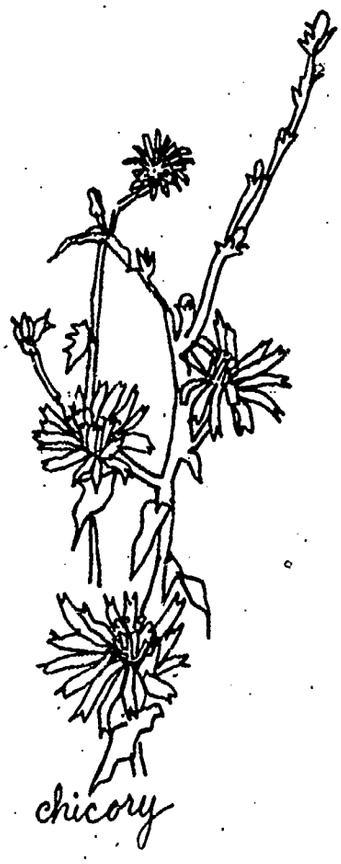

Plants

- Notice the variety of common wild plants and that each kind (species) has certain characteristics which help identify it. It is not necessary to learn the names of plants, though it is wise to learn to recognize poison ivy as it looks in all seasons. And you may want to learn to recognize asters, chickory, goldenrods, ragweeds, thistles, docks, dandelions, plaintains, daisies, Queen Anne's lace, wild mustard, clover and wild strawberries.


- In autumn make a display of seeds. Pick one of each of any seedheads that are plentiful. Note the hitchhikers (seeds that catch onto clothing) and those scattered by the wind, some with parachutes, as well as those that attract birds.

- If common milkweed is being examined, observe the flower shape and odor and that the milky juice is rubbery; it is latex and similar in make up to that which is tapped from rubber trees; look at the beautiful pods, either open or closed; notice how many winged seeds one pod contains; learn about the relationship of the milkweeds and the monarch butterfly. Some milkweeds are becoming quite rare.

- Examine the trees in the lot; is there evidence that any of them grew from the seeds of nearby trees? Look for other young trees and shrubs that may have grown from seeds that were dropped by birds or blown by the wind. Are any of the trees spreading by root runners, such as chokecherry? If this is a city lot, you may find the ailanthus, a tree which produces many seeds which are carried by the wind and germinate under a wide variety of conditions. You may also find the sycamore, the tree with the mottled bark.

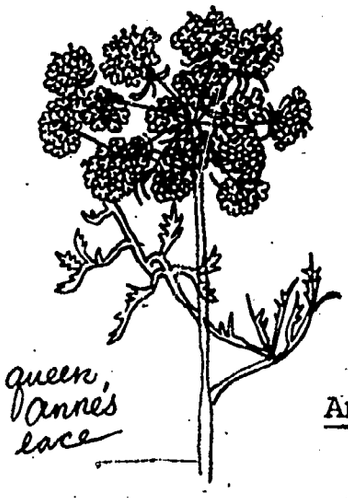



- Feel the temperature of the air under the tree; is it different from the air temperature in the sunlight?

- If you are in the lot during a light rainfall in the summer or autumn, notice how the rain strikes leaves and rush down stems of plants and into the


soil. See tiny streams and lakes form in the cracks and hollows of the soil.

▶ If you find a stump or a tree that has been cut down, can you count the rings in the wood (one to a year) to determine how many years the tree had been growing? If the tree is newly cut, which rings were formed in different important years in your life?




▶ Observe the roots of a tree that was blown down; note the mass of smaller roots that absorbed moisture and minerals from the soil and the larger roots which anchored the tree in the ground.

▶ Examine old logs or pieces of wood that are being decomposed by fungi and insects, thus freeing the materials for a return to the soil in what is an ever-repeating cycle of nature. Can you find woodpecker holes in the logs?

Animals

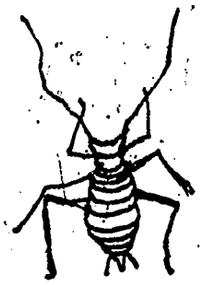
▶ Look for earthworm castings (fecal remnants), little piles (nodules) or earth left on the surface as the earthworm casted off digested soils while making its tunnels and eating. Earthworms are valuable to soil as they set up conditions for movement of decayed plant material down into the earth, where it enriches the soil, and they open up tunnels which admit air and moisture to the soil.

▶ Look for signs of mammals: holes, burrows, food paths, droppings, feedings or trails. Learn more about the kinds of homes animals make.

▶ Do you see any birds feeding, resting, nestling, bathing, drinking or singing? Can you see house sparrows, starlings, pigeons, or robins, the most common city birds? What do they eat? Where do they nest?


▶ Use an insect net to catch insects, put them in a wire cage or a jar with a perforated top, to observe for a short time, and then release them. You may find a surprising variety of insects in a few minutes if you brush (sweep) the tops of the grasses and weeds with a net.

▶ Turn over large stones or boards to observe animals living under them. You may find pill bugs, snails, slugs, centipedes, ants and others. Carefully replace the stone or board. Discuss how these animals adapted to living in such a dark, moist place.



aphid

- Look for insects on plants; small green plant lice (aphids) may be feeding on the juices of leaves or stems; a praying mantis may be eating the lice and other insects; lady bugs (ladybird beetles) may be devouring plant lice.

Plot Study (especially for teachers)

- Assign a small group of children to a designated square foot of the lot. Have them report the plants, animals and earth forms they find in this very limited area. Can they graph the information they find?

- Dig up (with the owner's permission) a six-inch cube, or less, of soil and put it in a bag. Let the children spread the soil on sheets of paper. Notice the decayed plant and mineral particles. Examine the plants and animals that are living in the soil. Can you tell what the animals were doing? Work out a definition of "humus". (Compare this project with the one on soil profile - you could do both at the same time.)

- Dig out a block of soil (again with the owner's permission). Take it back to the classroom and place it in an unused aquarium. Keep it moist but not wet. Lay a piece of glass over the top to prevent evaporation; if water condenses on the glass, allow a little air to enter by temporarily removing the glass or leaving an opening. Do not disturb this soil, but observe it daily for signs of animal and plant life. Can you return it to the lot?

praying mantis

lady bug

Miscellaneous

- Examine any rocks that are breaking up into soil.

- Watch a certain plant or tree at intervals over a year; a milkweed plant would be a good choice; what else might you enjoy observing?

- Discuss the possibility of making a vest pocket or mini-park on the lot; children could plan what they might like in such a park: construction-type blocks; climbing ropes; railroad ties for balance beams, pipes for play - things other than conventional playground equipment. Get other individuals or groups to work with you. First of all, of course, contact the owner, perhaps going to city hall and checking the deed records to find out who it is. Have ideas ready to present to the owner. What might you do next?


▶ After getting well acquainted with what lives in a vacant lot, you may want to visit the Morton Arboretum on Route 53 north of Lisle in DuPage County to see some of the plants, birds, and insects in their restored prairie. Compare the living things in the two environments - your lot and the Arboretum prairie: of course, at the Arboretum you will just look at things by staying on the paths and do no digging or collecting.

BOOKS TO ENJOY:

Blough, Glenn; Discovering Insects. McGraw-Hill, 1967. intermediate grades. $4

Busch, Phyllis; City Lots: Living Things in Vacant Spots. World Publishing Co., 1970

Gannon, Robert; What's Under a Rock. Dutton, 1971. intermediate - adult. about $4

Also see books listed in the sections "Living Things Around Us" and "Open Spaces/Green Areas".

# Under the City

Think what is needed to support human life and to make people comfortable. Many of the supporting services for these necessities and comforts may be hidden--gas lines, electric wires, cold and hot water pipes, sewer pipes, telephone lines. In most cities and towns you walk by dozens of manholes every day and unless a cover blows off you scarcely notice them. Have you looked down manholes and wondered what is there? Or watched as sidewalks are chipped away so that workmen can dig a trench to lay electric cables, gas mains, or telephone lines, doing the work with as little inconvenience as possible to the rest of us?

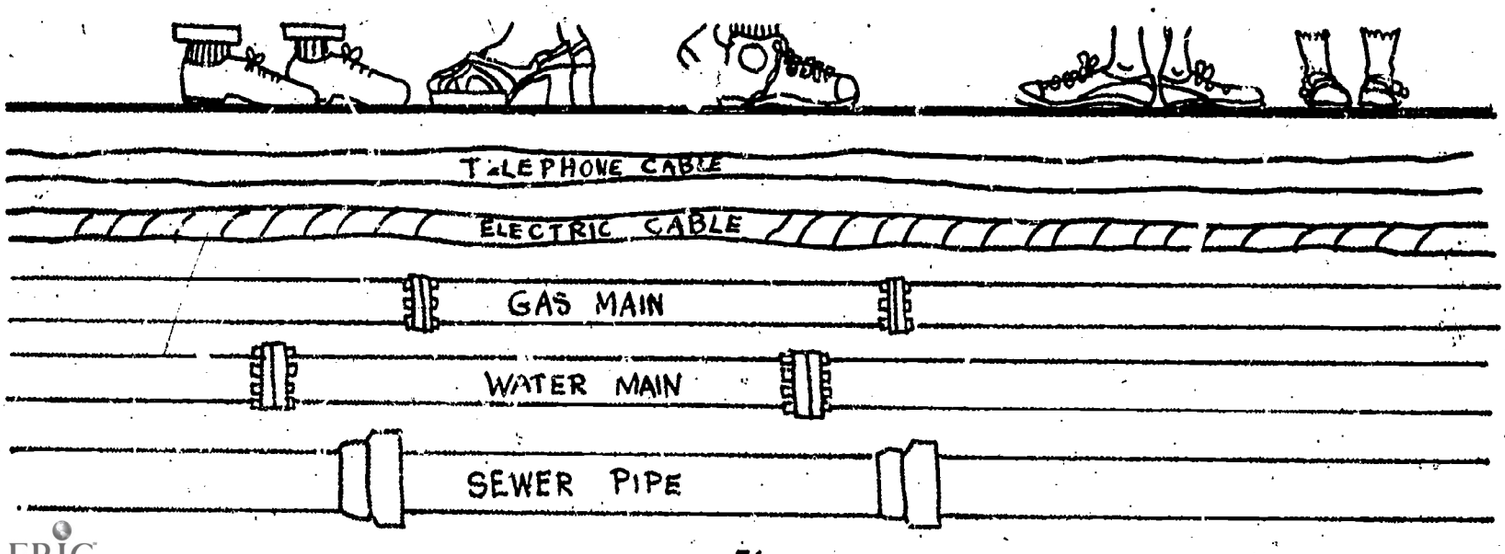
In the big cities there is a vast network that is under the pavement--miles of transportation lines, water mains, underground gas lines, sewers, telephone and TV cables, electric cables and even heat tunnels. In some places the tunnels are so crowded that it is difficult, if not impossible, to find spaces for additional pipes or wires.

*Stop and look if you see any workmen in a manhole. Sometimes a special "tent" is placed over an open manhole and air is pumped into the "underground" where the men are working.*

Water mains and smaller connections have to be deep enough--four feet in our northern climate--so that they will not freeze in the winter. Gas pipes must be located away from high voltage wires to cut down chances of an explosion even if there should be a leak. Shut-offs are mapped.

Where are the sewer lines which carry the community's waste water to the waste water treatment plant? They may be ten to twelve feet from the surface.

Do you know about the easements granted utilities to maintain their services? In the cities the easements may be in the alleys. Elsewhere they are in areas that people maintain as part of their yards. Water hydrants are made more visible by special color paints.



Think how carefully the workmen have to be so that they do not make a wrong move which might cut off telephone or electric service or cause a gas leak. How much we take for granted! Improvements are constantly being made in encasement materials for the vast underground system, but war explosives or severe earthquakes can be most disruptive.

BOOKS TO ENJOY:

Lavine, David; Under the City. Doubleday, 1967. intermediate grades - adult. $2.50

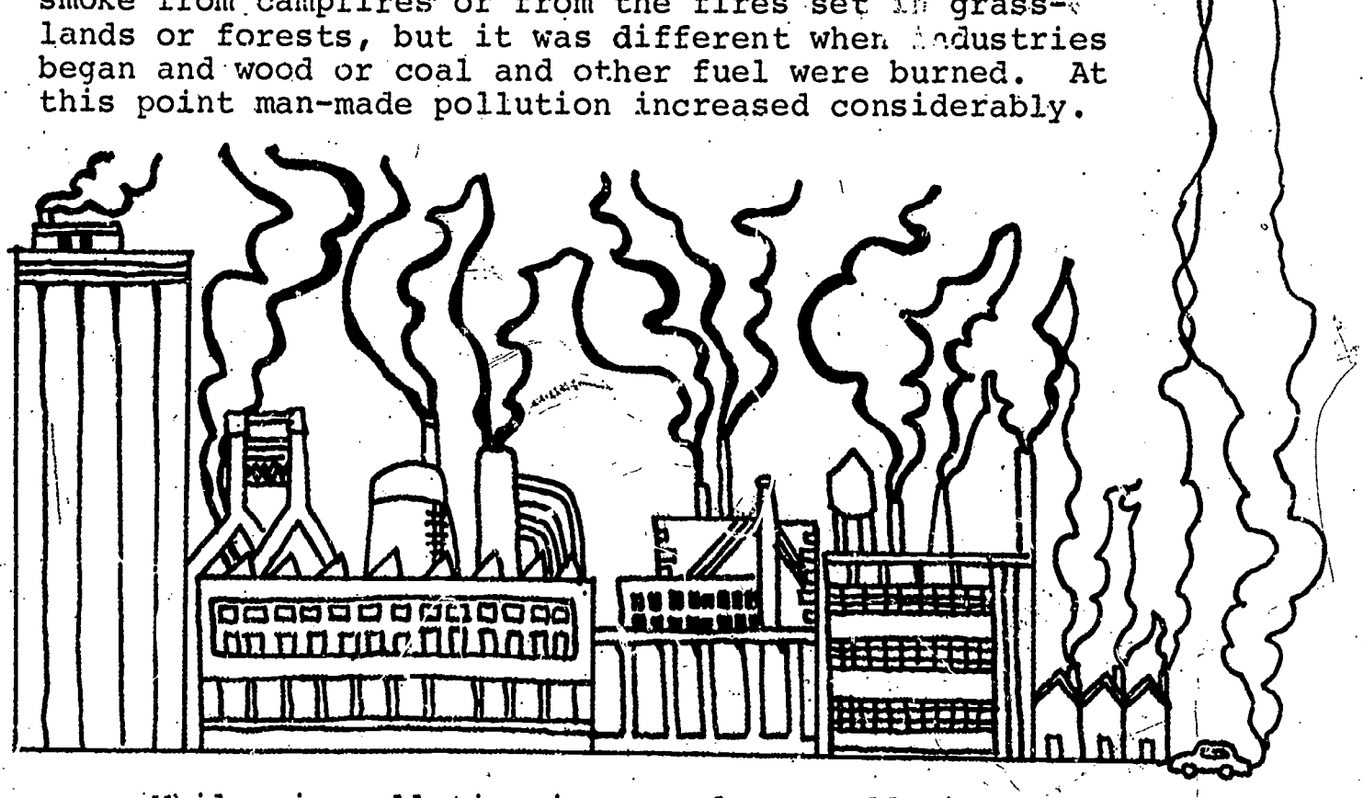
Schneider, Herman and Nina; Let's Look Under the City. William R. Scott, Inc., 1954. grades 1-5. $4

# Over the City

Most of us give little thought to the precious resource, air. We may realize that the layer of air around the earth is vital to us, that we need the oxygen in it to live. We may also know that it is composed of 78% nitrogen, 21% oxygen, and the other 1% hydrogen, carbon dioxide, and other gases. We may not be aware that this thin layer of usable air around the earth is only five miles wide. Beyond that the air gets thinner and thinner until airless space begins. THE AIR WE HAVE NOW IS ALL THERE IS. WE CANNOT MAKE OR GET ANY MORE.

Few of us think about what we are taking into our lungs along with the life-sustaining oxygen--the gases, tiny dust particles, germs, pollen from plants, spores, water vapor. At times we might be aware of ozone, a common gas in city air that hurts people's throats and lungs and makes them cough, but we might not know about or might forget about microscopic particles that can cause respiratory difficulties or invisible gases such as carbon monoxide from the exhaust of buses, trucks, and cars, which can cause dizziness and headaches. These pollutants are man-made wastes.

Long ago humans added little to the air, perhaps smoke from campfires or from the fires set in grasslands or forests, but it was different when industries began and wood or coal and other fuel were burned. At this point man-made pollution increased considerably.

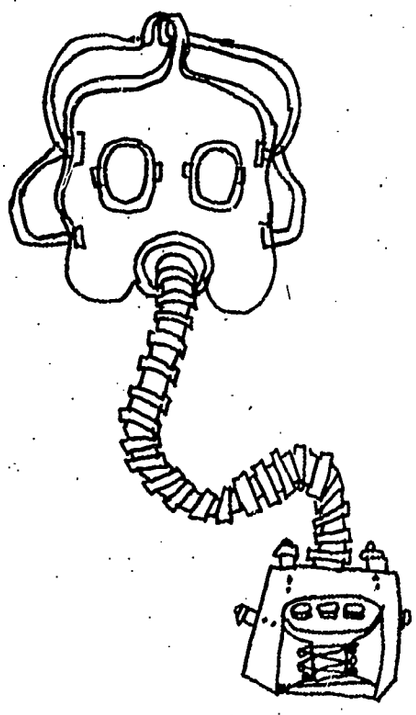


While air pollution is caused naturally by decaying vegetation, forest fires, and erupting volcanoes, this contributes only a small amount of the total pollution.

Today there are few, if any, smoky chimneys, but there are other problems, especially those caused by colorless invisible gases and by particulates in the air. Two gases that are produced when coal and oil are burned to make electric power and to heat buildings are sulfur dioxide and sulfur trioxide. They both cause damage to people's lungs.

Sometimes air pollutants concentrate, for example, when the lack of wind and topography prevent air movement. One type of smog caused in this way forms when sulfur-laden smoke, as from coal and oil fires, reacts with moisture in the air to produce sulfuric acid. Another type of smog is photochemical--hydrocarbons and nitrogen oxides from car exhaust and other sources interact, in the presence of strong sunlight, to produce secondary pollutants. One of these pollutants is ozone, mentioned earlier, which in natural, minute levels very high in the atmosphere shields the earth from ultraviolet radiation.

Many cities have these two chemical reactions. The first type of smog is common in eastern U.S. cities with frequent humidity and precipitation and many winter months of fuel-burning. The second type occurs in the dry, sunny climate of southwest U.S. cities.



People also breath in many tiny particles. Most are not harmful but some cause lung disease, such as bits of asbestos from the brake linings of cars and trucks. Tiny bits of lead which come from auto exhaust, can damage the nervous system and lungs.

There is a host of other environmental airborne contaminants which affect living and non-living systems; and some of the manufactured chemical compounds and their wastes pollute air and water and soils, as well as speed up deterioration of metals used in cars and other goods, pit concrete and marble used in roads or buildings, and slow down or destroy life functions of green plants; or change the genetic codes of living systems. (For an up-to-date discussion of a large number of air and water contaminants, the more serious readers are referred to: Chemical Villains: A Biology of Pollution by James W. Berry, David W. Osgood, and Philip A. St. John (Mosby, 1974) or Sourcebook on the Environment by Charles and Penelope Revelle (Houghton Mifflin, 1974).).

When air pollution occurs, people with lung ailments are hurt first, but others may also be affected. There is an annual increase in incidence of respiratory diseases such as bronchial asthma and emphysema, and doctors do not really know how many headaches and

sore throats are caused by the pollutants.

If air pollution can seriously affect the health of people, what effects must it have on other animals and on plants? Its immediate effect on plants concerns people as they use plants for food, but there is also the concern that a world with fewer plants is not as beautiful a world to live in.

What other effects does air pollution have?

- It causes paint to peel off houses and automobiles.
- It causes metal on cars, buildings, and bridges to disintegrate.
- It corrodes stone in statues and buildings.
- It causes clothing and buildings to need more frequent cleaning.

What can be done? In the short run, for example, a car owner can:

- try to cut down use of his car by planning errands and trips more efficiently
- keep his car in good shape
- try to arrange a car pool, if not in one already
- take public transportation to work or school or shopping, if at all possible
- operate the car properly--avoiding quick starts and stops, not letting the motor idle
- buy a low-powered car which uses less gasoline and causes less air pollution, if possible.

In the long run, with cars, trucks and buses producing more of the air pollution in cities than other sources put together, a long, hard look must be taken at the internal-combustion engine. New cars are required to have a device that adds more air to unburned wastes and burns them further. Many older cars on the road do not have such devices. Some people are annoyed because the devices seem to cut down on gas mileage and may not have been effective enough. Can the internal combustion engine be improved sufficiently to provide an acceptable pollution level, or should research on alternatives to this engine be vigorously pursued?

Improved mass transportation seems highly desirable, if not essential, by upgrading rail and bus systems and developing new facilities; we should give serious thought to the fact that one of the first comments made by many Americans who visit Europe is often about their efficient, attractive, reliable public transportation.

Discouraging auto traffic in the center of cities is a policy of some cities: with bans on parking in many areas, increased fees for day-long parking, and closing of streets to traffic to create malls. Traffic

can be speeded up in cities by creating more one-way streets, banning stopping and parking, setting aside express lanes for commuter buses. Fleets of trucks, buses and government cars can be converted to less-polluting fuel systems; this is already being done in some cases.

Factories can cut down harmful emissions so that they no longer pollute the air by making changes in processes, fuel substitutions, and using exhaust-control devices.

Some urban-based companies collect, process, and sell substances that formerly were discharged to the atmosphere, causing pollution.

▶ The individual citizen may want to join citizen groups which prod the government into action. Such participation has resulted in tougher air standards than were originally proposed and in pressure for adequate funds and staff for air pollution control agencies. Such citizen groups are especially important now when there have been, and probably will continue to be, strong attempts to weaken the Clean Air Act. These groups will also notice the amount of money spent on such campaigns with the amount of money actually spent on environmental research or on pollution control.

▶ The individual citizen can always write to area representatives at all governmental levels about environmental problems, especially if he or she is willing to pay a higher price for goods or higher taxes to improve or preserve environmental quality.

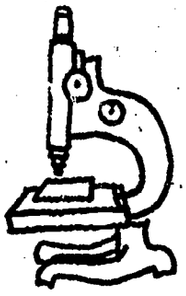
▶ The individual can also thoughtfully re-evaluate use of electricity--deciding whether to get along with fewer appliances and to cut back on use.

Trying to preserve quality air is a complex problem. The stakes are high, public health is precious. We must ask ourselves searching questions, if we wish to have air safe enough to breathe:

- Are we ready to change our life styles and values?
- Are we willing to pay higher prices for cars with emission controls or cars other than those with internal combustion engines?
- Are we willing to pay more for electricity that is less polluting to produce?
- Will we restrict our driving, accept bans on cars in city centers, and demand improved mass transportation?

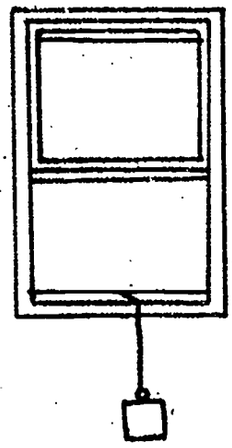
"Air pollution destroys health, degrades the environment, represents the loss of natural resources. There are ways to control air pollution; there are prices to pay, in terms of dollars and convenience, in order to reduce pollution. What quality of air do you want? What personal practices, public policies, and expenditures will you support in order to obtain that air quality?"

from Conclusion of "A Congregation of Vapors", League of Women Voters Facts and Issues. September, 1970.



THINGS TO DO:

- ▶ Talk to a garage mechanic about what can be done to keep cars in shape so they are less polluting. Ask about advantages and disadvantages of pollution-control devices.
- ▶ If you have not ridden a train for a long time, take a train ride; compare this form of transportation to the use of the auto.
- ▶ Make a list of things that are powered by gasoline engines; could you or your family do without those you own, or cut down your use?
- ▶ Compare the air pollution caused by various means of transportation in relation to the number of passengers carried: auto; airplane; bus; train; other.
- ▶ Make a list of the ways air pollution affects your life or the lives of people you know.
- ▶ Learn how polluted air affects other animals.
- ▶ Learn how dirty air affects plants.
- ▶ Look at houses or other buildings for damage caused by air pollutants.
- ▶ Select a place in your yard, near your home, on the school ground, etc. where you can be away from large objects; consider the following:
  - is the air moving?
  - from what direction is it coming?
  - is the air carrying an odor? If so, describe the odor.
  - Does the air have a taste? (inhale it deeply)
- ▶ Use a Ringelmann Smoke Chart to figure amount of pollution in smoky air (obtain chart from Chicago Lung Association--see information at the end of this chapter).
- ▶ Trap air pollutants:
  - ● Get a small tin can or glass that will fit into a larger fruit juice can or glass. Spread white petroleum jelly on the outside of the



small can or glass. Set it outside for a few days. The jelly picks up the dirt in the air. The big jar protects the smaller jar from dirt blowing from the ground.

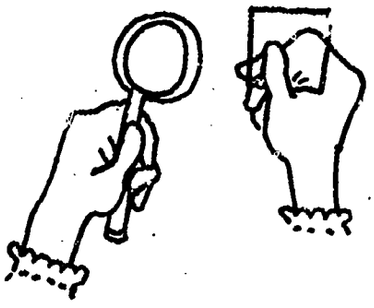
- Do the same thing, but use a piece of white cloth smeared with petroleum jelly; suspend it in a jar.

Examine the can or cloth with a magnifying glass. What do you see? Are the particles natural, man-made, or mixed?


▶Find out how much pollution there is in differen areas in your community. Take glass slides. Mark he location of each slide on masking tape before smearing with jelly. Coat one side with white petroleum jelly. Place a slide in such locations as school or home rooftop, a window ledge, in a shopping or commercial area. Hang slides from a rope or string or place it on a flat surface. Expose all the slides about the same length of time, and if possible, for the same time (1 day, 2 days, a week). After collecting the slides, place them on white paper, coated side up. Examine them under a microscope or under a strong light with a magnifying glass. Compare them with slides that were kept indoors in a closed container. Compare kind and amount of particles. Record what you see. What area had the cleanest slide? the dirtiest? Are the particles natural man-made, or mixed?

▶Learn whether your community has an environmental commission; if so, attend a meeting; learn what problems they handle and what powers they have.

BOOKS TO ENJOY:



Aylesworth, Thomas G.; This Vital Air; This Vital Water: Man's Environmental Cirsis. Rand McNally, 1968. Grades 6-up.

Bloome, Enid; Air We Breathe. Doubleday, 1971. primary. $4

Chester, M.; Let's Go to Stop Air Pollution. Putnam, 1968. intermediate-adult. $3

Elliott, S.M.; Our Dirty Air. Messner, 1971. Intermediate. $4

Kavaler, L.; Dangerous Air. Day, 1967. high intermediate. $4

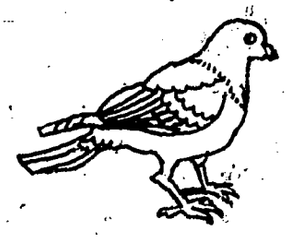
Shuttlesworth, Dorothy; Clean Air-Sparkling Water. Doubleday, 1968. Intermediate-adult.

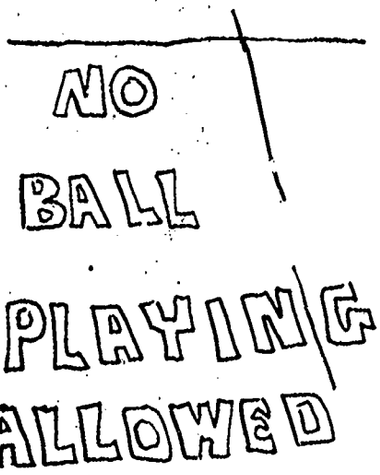
CURRICULUM MATERIALS:

The Chicago Lung Association (formerly Tuberculosis Institute of Chicago and Cook County), 1440 W. Washington Blvd., Chicago 60607; write for list of free materials, which include

Ringelmann Smoke Chart.
The League of Women Voters, Citizens Information Service, 67 E. Madison, Chicago 60603 --write for catalog of publications.
U.S. Environmental Protection Agency, Public Affairs Office, 1 N. Wacker Drive, Chicago 60606; write for list of publications on air.
U. S. Department of the Interior, Bureau of Land Management. All Around You: An Environmental Study Guide. 1971. Available from Supt. of Documents, U. S. Govt. Printing Office, Washington, D.C. 20402. For intermediate and junior high, but adaptable to other grade levels. Stock No. 2411-0035. $1.50.

# School Sites - Use and Development






NOTE: This topic is by its very nature oriented to teachers and administrators. Parents, youth group leaders and other individuals may well want to read it and perhaps investigate what their local school or school district is doing in environmental education. If there is a good program, you may want to commend the school. If little is done, here is an opportunity and a challenge to you to act.

Wherever a school is located, it is, of course, a kind of environment, and what has been done to make the school site good for environmental learning reveals much about the environmental attitudes of the teachers, administrators, and community.

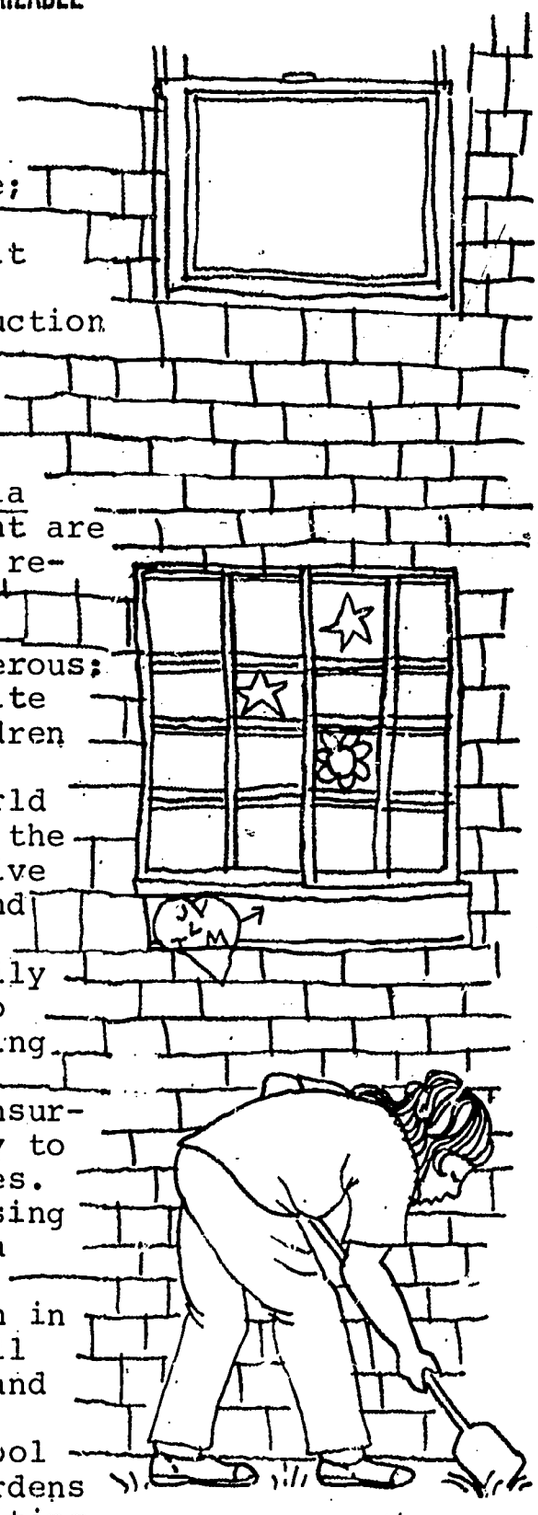
How can the school building and its site be used for more learning? Look closely at them. Describe them to yourself. In our six counties, schools vary from those in urban areas with several stories and perhaps a monotonous paved playground area, to spacious suburban one-storied buildings with great variety on the site, well developed for environmental learning--with many gradations and variations in between. No matter what kind of site you have, however, it can be developed for environmental learning. The approach used in this Sampler of looking closely at various aspects of the environment around you, is admirably suited to using school sites. While it may be exciting to have a site with creek, swamps, or woods, most school sites do not have these natural advantages. Therefore, it is important to consider what can be done on a school site. If it needs development, it will be a real challenge. Development will offer many advantages aside from a richer learning area--not the least of which will be learning more about community resources and further developing social skills of cooperation, problem-solving, and decision making. It will, of course, take planning, resourcefulness, dedication, and hard work. "But the results", so say those who have done it, "are well worth the effort".

You may say, however, "Why be concerned with using or developing a school site? There is enough to do in the classrooms." But, as many teachers recognize, first-hand experiences are exciting, and most of all, relevant. Many things are best learned in an outdoor environment. The list of what can be learned

in the school building and on the school site is almost endless. A few examples are:

- soil--its importance to plants and to people; need for soil conservation
- water--how plants and animals need it; how it erodes soil
- sunlight--relationship to plants' food production
- air--effect of air pollution on plants
- school water supply and wastes
- school solid wastes
- power generation and use
- environmental aspects of the school cafeteria

You can learn how these aspects of the environment are related to one another and to the community, the region, and the world.



Advantages of using the school site are numerous; plans for using the school building and school site can take these important characteristics of children into account:

- Children's natural curiosity about their world (too often this curiosity disappears during the educative process); children need to be active and to be actively involved in what is around them.
- The school building and site are there, easily reached, and because of their familiarity to students, students can concentrate on learning without being distracted by unfamiliarity.
- Using the site involves no bus or special insurance; plans can be changed relatively easily to adjust to the weather and other contingencies.
- Even if only one teacher is interested in using the school site, it can be done, even with a minimum of administrative support.
- With limited budgets, which is the situation in most school districts, the wise educator will make the best possible use of the building and site in the educational program.
- When students see what can be done on a school site, i.e., planting vegetable or flower gardens or trees, learning about growing things, halting erosion, making an area attractive--they learn about their responsibility to maintain and improve the quality of their environment.
- When students see that others consider their school environment important, their concerns may well broaden to their community and even further. Thus they develop an environmental conscience that can encompass the entire earth.

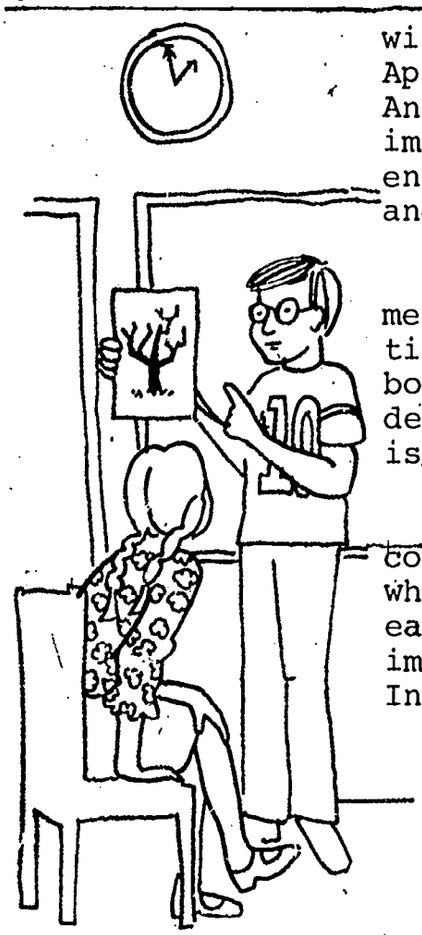
Invaluable to teachers and administrators interested in using or developing a school site is a book published in 1973 by the Open Lands Project in Chicago in cooperation with the Illinois Institute for Environ-

mental Quality. The exciting publication is: Envimental Education and Your School Site by Donn Paul Werling (1973). This book was sent to the superintendents of every elementary and unit district in the state, as well as to the superintendents of the Educational Service Regions. If you have not yet seen or heard about this book, check with your school administration about it. Also see Bibliography.

Werling, in the Rationale for his book, states:

> "In less than half a century our nation has changed from a predominantly rural to a predominantly urban society. At the same time, our technology and affluence have made us more comfortable at tremendous cost to the environment, upon which all life depends. If we are to respond to these conditions, we must cultivate a new set of attitudes towards our earth and its resources."

Environmental education works towards this new set of attitudes and using the school site helps provide a sound enviornmental education program.



One way to begin to make use of a school site is with an inventory of what is there. Of help is Appensix D of Werling's book, a 3 page "School Site Analysis Form Sheet". Werling also discusses the important environmental techniques of developing environmental sensitivity, using teaching stations, and planning environmental encounters.

He defines a "process approach" to the development of a school site for use in environmental education, i.e., an approach which involves the student body, school personnel, and community in the planning, development, and use of the school site as a "green island" for school and community use.

Parents and others in the community who might be concerned that "basic" subjects could be overlooked when there is emphasis on using the school site, can easily be reassured that reading, math, and writing improve with a good environmental education program. In addition children learn to :

- think more clearly about their immediate world
- develop skills of speaking, writing, recording, measuring, in ways that often are more relevant than classroom activities
- develop problem-solving and decision-making skills
- increase the creative aspects of their lives.

Through their interaction with their school site, students become knowledgeable about environment,

motivated to work on environmental problems, and skillful about dealing with problems. With citizens called upon to make more and more environmental and consumer decisions, experiences which students have through good environmental education programs will help them become more thoughtful, better informed, and action oriented citizens.

Several other points worth considering are:

- Involving the students and the community in the planning and development of the site helps cut down vandalism--an increasing concern to many school districts.

- Involving the community leads to their pride in the school site: Werling points out on page 1 in his book "A citizenry which feels a sense of ownership and stewardship of its public land (and among the most visible public land are our school sites) is a long way down the road toward a spaceship earth perspective in which everyone feels a part of, and thus a responsibility for, the total environment".

- The school site developed by and with the community, and used by the community, increases surrounding property values.

Werling stresses (page 7) the importance of youth and adults being participants in the solution of environmental problems:

> "Education's initial reflex response to the environmental crisis was to have students listen to speeches, watch movies focusing on clouds of billowing smoke, and make posters which berated pollution..." (Although these activities may have) "a definite place in environmental education, psychologists have stated that if people's anxiety level is raised, but action is delayed, the less likely it is that these people will ever act. What is needed, therefore, is a vehicle which can enable youths and adults to actively participate in solving environmental problems. A school site development project can be such a vehicle for action. It can open the door to problem-solving activities on the school site and in the community that will foster the building of confidence and problem-solving skills which our society so critically needs."

For information on good examples of school sites used for environmental education, write or phone:

Wayne H. Schimpff, Director of Environmental Education, Open Lands Project, 53 W. Jackson, Chicago 60604 (312) 427-4256.

Donn Werling, Director, Ecology Center, Evanston, Il. (312) 869-8030

# FARTHER FROM HOME

# Transportation

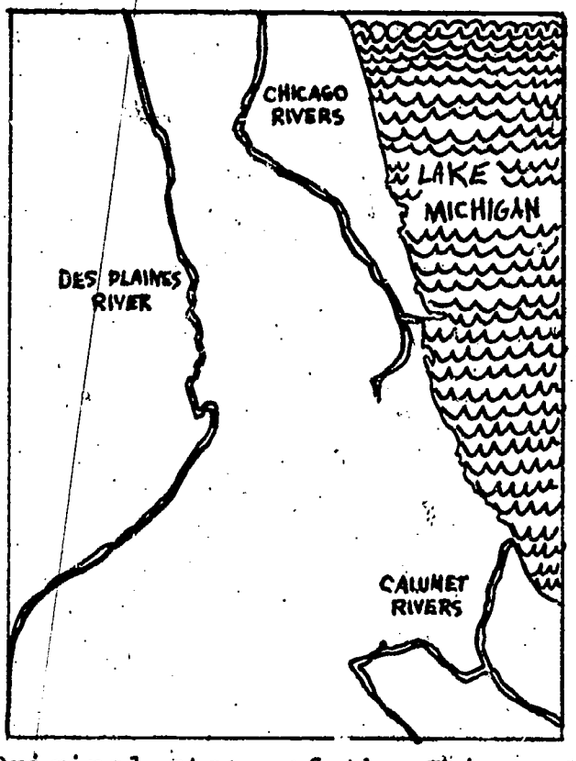
Chicago's history, and thus the history of Northeastern Illinois, has been intimately bound up with transportation of goods and people.

The opening of the Erie Canal in 1825 made it much easier for pioneers from New York and New England (the early settlers in this area) to cross New York state to the Great Lakes, then continue here by boat or covered wagon.

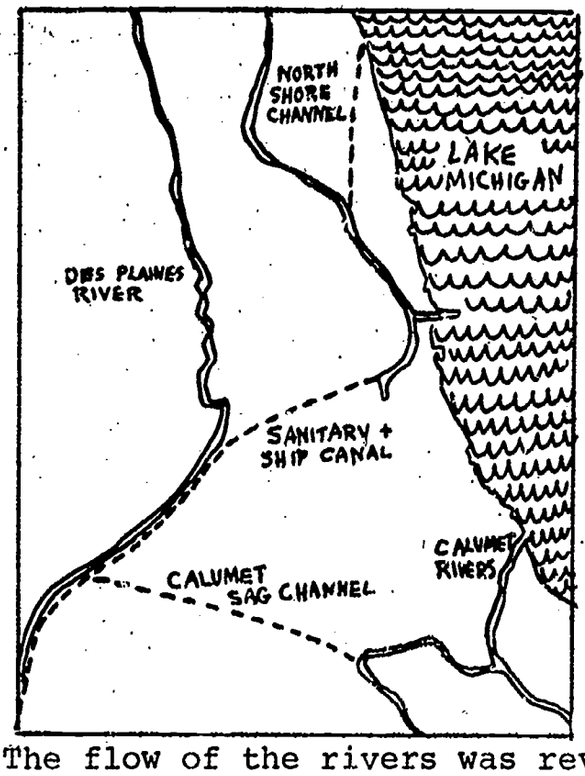
Indian trails had led to the confluence of the Des Plaines and Chicago Rivers, and the pioneers followed the same routes.

By 1848 the Illinois-Michigan Canal was built, which connected Lake Michigan to the Mississippi River; it was due largely to this canal that this part of Illinois became accessible to early settlers; this Canal was in commercial use until 1914. Parts of the Canal are still in recreational use.






Original state of the Chicago Waterways




The flow of the rivers was reversed by the Sanitary & Ship Canal - turned away from the Lake and into the Des Plaines River, a tributary of the Mississippi

The larger Sanitary and Ship Canal, built to supercede the Illinois-Michigan Canal, was completed in 1900; this canal plus two channels (see map)--quite an engineering feat--reversed the flow of the

Chicago River. Instead of emptying into Lake Michigan, the river carrying sewage flowed via the DesPlaines and Illinois Rivers to the Mississippi River. The moving water diluted and purified the sewage as it flowed through the canal and river systems. While this solved Chicago's sewage problem, neighboring states on the Great Lakes objected to the loss of water from the Lake. The diversion was consequently reduced and controlling locks were built at the inlets. In addition, sewage treatment plants were built to intercept and process sewage to alleviate contamination of the rivers and waterways. Until 1930 this Canal used Lake Michigan water to move ships and treat raw sewage; after sewage treatment plants were built, the waterway's use has been mostly commercial.

Today Chicago has a vast transportation network of rail, truck and air systems.

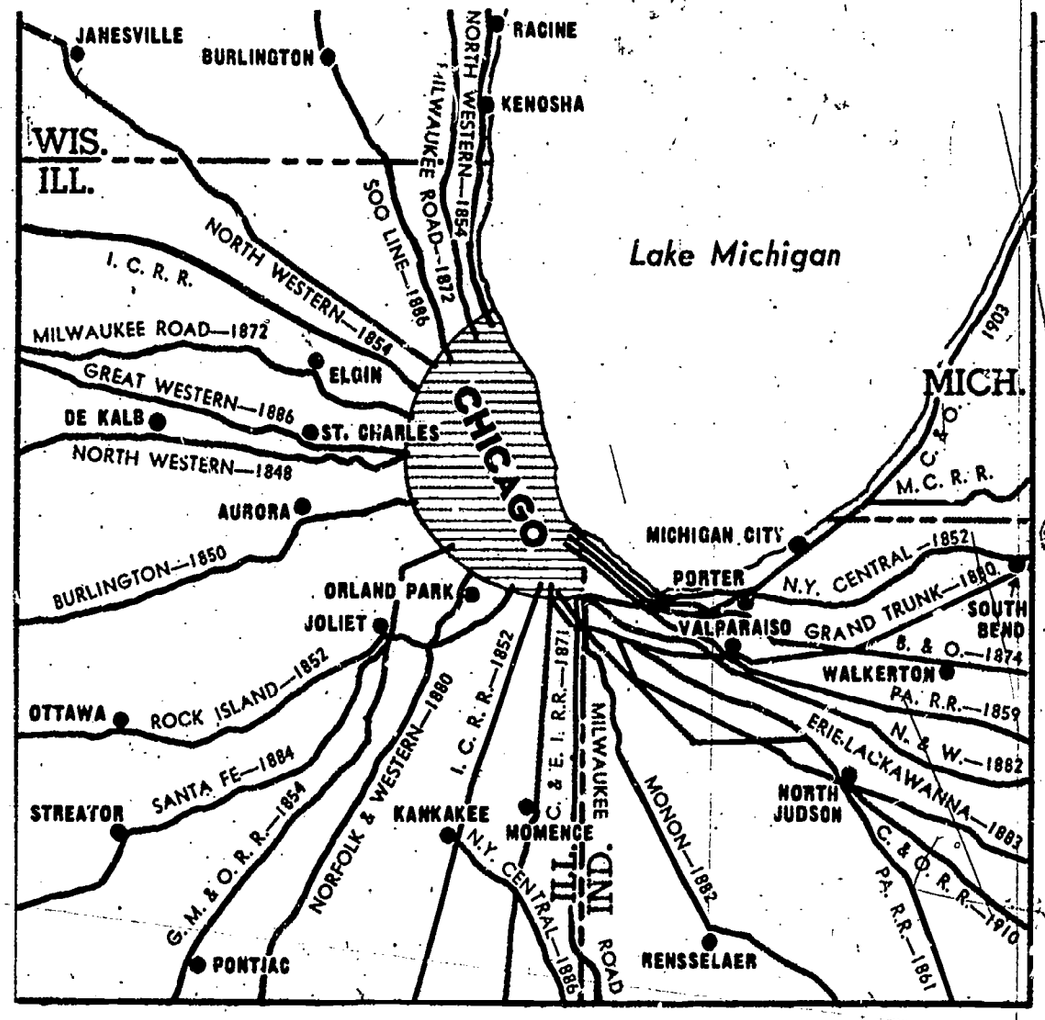
- Freight moves by barge down the Illinois waterway; this is the least expensive form of shipping for many types of cargo; in fact, some cargo is sent from Chicago, down the Illinois waterway to the Mississippi River, then south to New Orleans, across the Gulf of Mexico, through the Panama Canal, to the West Coast of the United States.

- The Seaport of Chicago handles shipping from other Great Lakes ports and from major seaports of the world: the opening of the St. Lawrence Seaway in 1959 opened the Great Lakes to ocean vessels, eliminating almost completely the expense and necessity of trans-shipment of general cargo. The overseas shipping season on the Great Lakes is restricted to about 260 days, but this is possibly to be extended.

- Since the highway and road system became so extensive, development has occurred along the major routes, taking over from the historical settlement along the railroads.

- With the extensive road system has also come increased truck transport; in the mid-1960's 450 interstate trucking firms operated from Chicago.

- Chicago is an important rail center. In the map below you will see that dozens of railroads converge on Chicago and carry freight to all parts of the nation. Some of the railroads have commuter service that is very important to people in the suburbs and outlying towns. A few of the suburbs, because of the congestion and parking problems caused by automobiles, have instituted shuttle bus service for commuters.

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Chicago Tribune from Chicago:
a Profile of Greatness
by David Halvorsen

- The most recent transportation development has occurred in the air routes. There is direct air service between Chicago and most cities of the world. O'Hare Airport is reputed to be the busiest airport in the world.

What of the future? Traffic handled by the Seaport of Chicago will undoubtedly continue to increase. Improvement of mass transportation in the metropolitan area would seem to be a necessity. This may mean improved rail and bus service and possibly experimentation with other kinds of mass transit. Revitalization of long-distance rail travel seems to be under way with Amtrak.

THINGS TO DO:

- Visit the Seaport of Chicago at Navy Pier, East Ohio Street, to watch the loading and unloading of cargo; phone Chicago Port Authority at 744-4206 to learn when ships are expected and procedures

followed, observation deck is free.

- Follow the progress of the Regional Transportation Authority (RTA).
- Learn more about the Illinois-Michigan Canal by visiting the Will County Historical Society in Lockport on Illinois Route 171, one block north of Route 7; this museum is in the original office and home of the canal commissioners; it was placed on the National Register of Historical Sites in 1972.
- Watch for information on the new Illinois-Michigan State Park; write to the Illinois Department of Conservation, State Office Building, Springfield.
- Learn more about Amtrak.
- Learn more about the St. Lawrence Seaway.
- Visit an airport--O'Hare Airport; observation decks in each terminal; price 10¢: Midway Airport--no observation deck; inquire about helicopter ride; and/or Meigs Field--also inquire about helicopter rides.
- Visit Union, Illinois, Railroad Museum--steam locomotives, diesel stream liners, wooden elevated cars; electric equipment operated on weekends early spring through late fall; charge for rides but no admission charge; for information, write Box 165, Union, Ill. or phone (815) 923-2488.
- Take a ride on a railroad, CTA bus, elevated train or subway, and/or suburban bus.
- Take a train and group boat ride (Wendella) on the Chicago River from Union Station to Wacker Drive and Michigan Boulevard; inquire Wendella (312) 337-1446.
- Take a longer boat ride on Lake Michigan; Wendella and other companies offer longer rides; Wendella price for two-hour ride is $2.50.

This chapter was researched and written by Alaire B. Shields.

# Land Use

In looking at various aspects of your environment, you may have been conscious of the many ways land is used:

- for housing, parks, beaches and other open spaces
- for schools, libraries, museums, city halls and other government buildings and other institutions
- for streets, parking lots, freeways, railroads, airports, sewage plants, pumping stations, power lines, sewage lines, power plants
- for stores, factories, commercial buildings, laboratories, farms, gravel pits, quarries, strip mines, and storage (stock piling).

Perhaps you have come to realize that the viability of a community depends to a large extent upon the kind and quality of the use of land.

Over the years in our country there has been general agreement that an owner of land could do what he wanted with his land without consideration of what the land could support or how the use would affect other people and other parts of the surrounding environment. The concept of "highest and best use", which actually meant use resulting in the most profit, has been accepted, and our laws have supported this concept. Under this concept there has been much abuse of land. Let's stop here to consider the purpose of towns and cities. Why do they exist? Quite simply, <u>they are for people</u>. Then it seems appropriate to consider:

- what kind of a city do people want to live in?
- what makes living and working in a town or city pleasant?
- what is good for the eye and spirit as well as for someone's pocketbook?

There is a growing concern for the rights of the majority and for the effects of land use on the physical and biological environment. Russell E. Train, former chairman of the (national) Council on Environmental Quality and now Administrator of the U.S. Environmental Protection Agency, indicated in a newspaper article several years ago that:

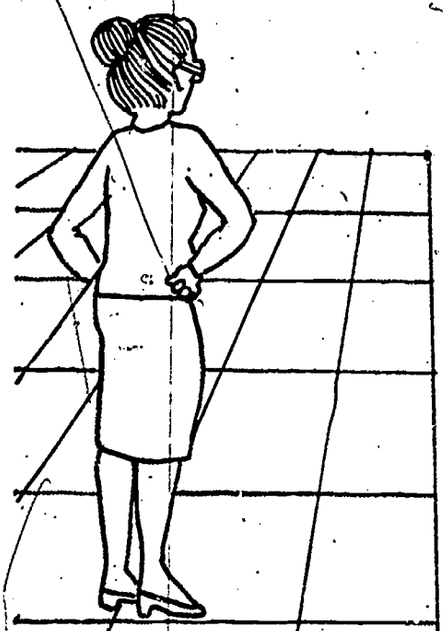
> "Land use is the area that potentially is far more important than the environmental pollution problems we have been worrying about, as far as its contribution to the quality of life is concerned...Land is our most finite resource. It's the basic resource of the country, of its people, and the way land is used doesn't affect just the guy who is using it; it affects everybody else around him."

Good land use, however, is not uneconomic. It has been found that planning with social and environmental concerns leads to economic gain as well; for example, strategically placed open space adds to property values.

Though people differ in details on what they believe is "good" land use and makes a city attractive, there may well be general agreement. You might keep in mind waht seems important to you as you consider land uses in towns and cities.

Land planners use the following categories for land use, and the terms seem self-explanatory:

| | |
|---|---|
| residential | transportation, communication and utilities |
| industrial | cultural, entertainment, and recreation |
| commercial | agricultural and vacant |
| services | |



As you look around you, keep these categories in mind.

- Can you tell which category fits what you see?
- Is there a mix of uses? If so, why do you think it happened?

Paved Land

Have you thought about the vastness of areas of land that are paved for use as roads, parking lots, airports, and school grounds? The paving, of course, may cover land which used to be productive farmland or a woods or perhaps a marsh or part of a river, and may have resulted in extensive destruction of trees, other plants and water areas. What is there now? Consider, for example, shopping centers. While a few of them have extensive plantings, many shopping centers have only a few trees and shrubs which are almost lost in the enormous paved parking lots.

- Does this matter?
- Can anything be done once the centers are built?
- Do you think there has been enough planting in any shopping centers where you may shop?
- Is it economically feasible for developers to include attractive plantings? Do you tend to shop where there are flowers and trees?

If considering the problems of runoff water and the need for retention areas (See "Do You Take Water for Granted?", p. 21 ), seeing vast paved areas may be disturbing to you.

- What can be done to retain the runoff water?
- Could the slope of the parking lot have been planned to drain into a pond so the runoff water could slowly sink into the ground?


- What could be done so that less land is covered?
- What about using multi-level buildings rather than one or two-storied buildings?
- What about better mass transportation to cut down the use of the automobile and resultant "need" for more highways?
- What other solutions can you think of?

Roads, parking lots, and other space used by and for automobiles take up to 70 per cent of the land area in some of our cities. How do you feel about this use of land? As air pollution standards have become more stringent, attempts to limit automobile use are being made, especially in the centers of cities. A fascinating and unique book is Streets for People: A Primer for Americans by Bernard Rudofsky (see book list at the end of this chapter).

## Solid Wastes

Getting rid of our ever-increasing solid wastes is a land use problem. Open dumps, formerly common, are infrequently used today because of health hazards and visual pollution. Instead, sanitary land fills are widely used, wherein garbage and trash are buried under layers of soil. Often the filled-in area is converted to recreational uses. It is increasingly difficult to find land for landfills that is close enough so the garbage and trash can be economically transported and that neighboring people will not find it objectionable. What are possible solutions to the problems of solid wastes? (See "All That Garbage and Trash" on page 57 ).

## Open Space

People's need for open space of various kinds has become more widely recognized. Open green areas are valuable for recreation, mental health therapy, noise control, separation of incompatible land uses, separation of communities, flood control, absorbing air

pollutants, screening unattractive views, helping the carbon dioxide and oxygen cycles, and providing wildlife refuges. (For longer treatment of "open spaces", see "Open Spaces/Green Areas" on page 125 .)

Renewal of Inner Cities

How can congested, blighted areas be made more livable? This, of course, is a subject you could pursue for months and years. It is hoped that this short section will help you think about the subject in new ways. When people become too crowded under daily living conditions, crime, juvenile delinquency and other social problems seem to increase. Some urban renewal attempts to meet housing demands with highrise buildings have been failures. In St. Louis, for example, huge buildings which some people found they could not live in happily and agreeably have been torn down. Some people, however, like living in highrises. What could be done? It would seem that a mix of housing might be the answer--so that people could have a choice, along with other aspects to make the community attractive (recreation areas, parks, and playgrounds, stores, medical centers, public transportation), and these are being provided in some places. What other features make living in any given neighborhood attractive to you?

Some planners have given up on our cities, consider them beyond saving. Can we afford to do this, when cities are where most of our people live?

New Towns

To some planners, "new towns" are considered more promising than renewal of our cities. These planners may envision a satellite suburb bound to a large city or a separate, independent town with its own services, theaters, stores, industry, and so on. Park Forest South in Will County is a "new town" of the second type. This new town in expected to reach 100,000 population eventually, and plans call for housing, public transportation, an industrial area, a university, a hospital, and other amenities, many of which are already available.

Another community, "New Century Town", is being planned for the area just south of Libertyville in Lake County. A third place, Fox Valley East, in Kane County, originally conceived as an independent new town, has been annexed to Aurora. You may want to watch the newspapers for information on these areas, or visit them as they develop.

Often housing developments are advertised as new

communities. While they may offer good housing and recreational facilities, most lack the many facilities that make a town a viable, vital place.

Throughout your explorations, consider which values were placed high by the developer or user, and the impacts on surrounding land and people. As you look around you will undoubtedly see other land uses you may want to learn more about.

> An invaluable tool for your explorations is the Chicago Tribune Chicagoland Map annual edition available at newsstands and bookstores.

## Farms

Perhaps you have seen productive farms disappear in parts of our six counties and housing developments take their place. Competition for space is strong in this area. You may have asked how a growing population can be fed when the amount of farmland is decreasing. That is a good question, especially when we are in the center of the largest productive land area in the world.

*Special Research:*

*Learn about the good soil conservation practices of: contour cultivation; strip cropping, and crop rotation.*

In Kane, Lake, McHenry, and Will counties farming is still a life style. Almost 70% of Will County is still agricultural land. Look into how lands are taxed; many tax reforms will be needed to protect rich farm lands from being converted to other uses.

## Strip Mining

Acres and acres of land in Will County have been strip-mined for coal, leaving in many places scarred unproductive land surface. In some areas, conservation groups and recreation clubs have developed attractive sites, well used by club members. The coal company has done some conservation work. In the past the state law on land reclamation was very weak, but now impact statements for new mining areas are required which include plans for restoring the land. In some areas of Will County the coal mining was done decades ago. At present no mining for coal is going on, but it is commonly accepted that there will be re-mining, using new techniques and technology that make it profitable to use poorer quality ore. Strip mining for stone, sand, gravel, and clay is going on in various parts of this county.

*Find out what reclamation is now required after coal is mined. Learn about what reclamation Germany and England require.*

## Zoning

As you possibly know, zoning has an important effect on land use policies. Reflecting concern with

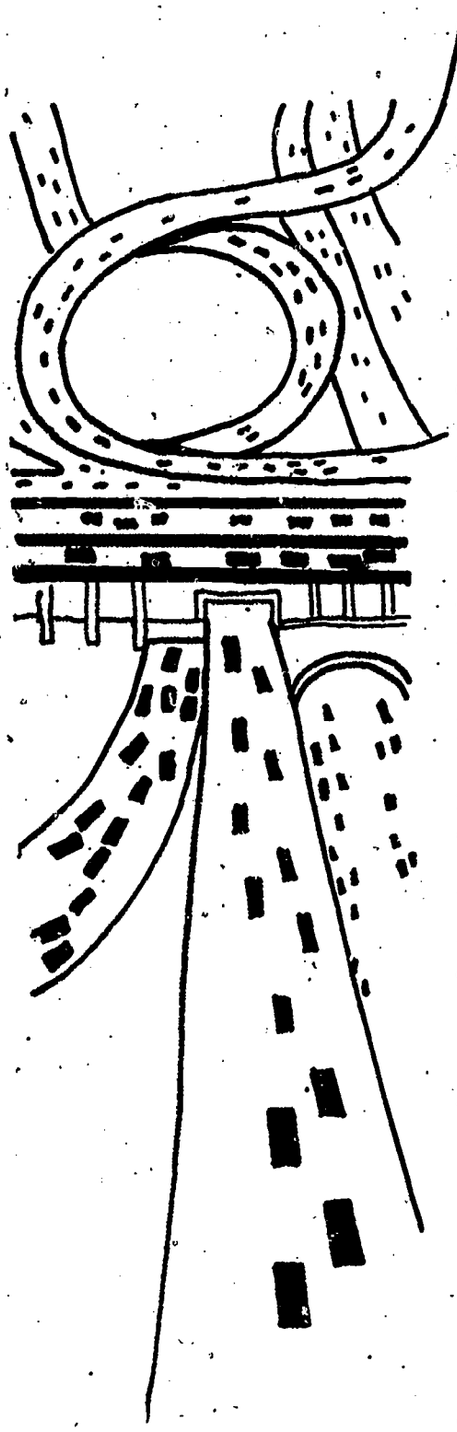
*Special Research:*

*Check into the zoning and planning practices in your town. Visit the zoning and planning commission meetings. Learn about "cluster zoning".*

aesthetics, health and safety, and protection of property investments, zoning was intended as a protection against unwanted development. Because zoning has been subject to (political) alteration, there has often been no assurance that land would be kept as open space or developed in any particular way. Exceptions have been granted, resulting in "spot zoning" and perhaps setting a precedent for more exceptions.

"Cluster zoning" is a concept which is gaining in acceptance. It is a profitable means of fitting enough people on an area of land while preserving open space.

It seems logical to include zoning with comprehensive planning, and this is being done in some places.



Planning

Some people have strong negative feelings about planning by local, regional, or national bodies, and it is important to listen to their reasons. But what are the alternatives to planning? Is it more of the unchecked, disorderly growth which has occurred? More of the urban sprawl and deterioration of inner city areas? More inconveniences, hazards and ugliness in our environment? If you think this is strong language, look at the growth along major arterial streets radiating from towns and cities in many parts of these six counties. If there were no planning for growth, what would be the effects on land use of an increasing population 10, 20, or 30 years from now?

A business man who is efficient and a good manager knows what his business' resources are and plans for the future. Is it not more important that our governmental bodies at different levels make plans for development of our vital land resource? Citizens should be informed about what is going on; should participate in hearings held by planning bodies; and should let their desires be known about what kind of community they desire.

While planning is needed on a local level, is it not even more necessary on a county and regional level where the effects of land use in one area can be anticipated on other parts of the regions, sometimes miles away? Costs as well as benefits of various land uses can be studied.

The planning concepts of regionalism and comprehensiveness are gaining increasing support in our area and across the nation. A truly regional viewpoint recognizes that the problems of the city and suburbs do not end at city or state lines. A truly comprehen-

sive viewpoint recognizes that planning for transportation to serve people where they live, work and shop should be part of planning for population growth and distribution and land use.

The more up to date planning approaches take into account social and environmental (or physical) concerns as well as economic. They recognize that planning is being done for people generally (the common good)--not for any special interest groups.

> "Planning is a multi-faceted function. Land use, transportation, water supply and distribution, sewage disposal, and open space are interrelated. Comprehensive plans and policies, to be effective, must cover all of these items. They cannot be treated individually and independently..."
>
> from: Findings and Recommendations of the Legislative Advisory Committee to the Northeastern Illinois Planning Commission: A Report to the 77th General Assembly, State of Illinois, March, 1971.

## The Northeastern Illinois Planning Commission (NIPC)

The Northeastern Illinois Planning Commission (NIPC) is the regional planning body for our six counties. It was created in 1957 by an act of the Illinois General Assembly to help promote orderly growth of this region. From 1950-1970 the population of these counties grew from five to seven million and is expected to reach nine million by 1995.

NIPC has legal responsibilities to conduct research, prepare comprehensive general plans, and advise units and agencies of government. By law it has no regulatory or enforcement power, but relies upon voluntary compliance with its plans and policies.

NIPC deals with general development policies. It supports and coordinates county and municipal planning, rather than competing with this function. The Commission works closely with other agencies and provides service to local governments.

NIPC is headed by elected and appointed Commissioners who serve without pay. Most of the Commissioners are also elected officials of local governments.

The Commission's staff includes professionals in many fields: planning, transportation, economics, political science, engineering, architecture, hydrology,

demography, cartography, data processing, and communications.

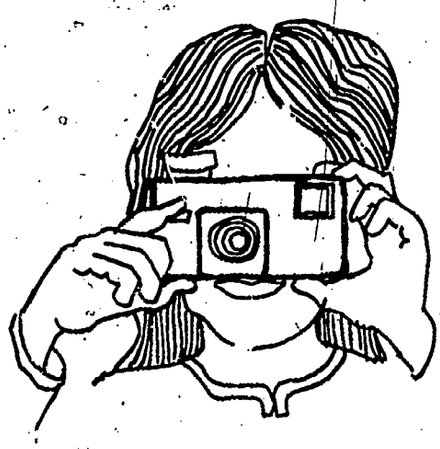
In 1968, NIPC adopted a Comprehensive General Plan for the region. It has prepared other plans including waste water, open space, airport noise, water supply, and an interim transportation plan. It also has compiled information on various subjects, and its Regional Data Service Section acts as a clearinghouse for information developed by the Bureau of the Census, NIPC, and other agencies.

Applications for federal matching grants for planning and development projects are reviewed by this Commission.

NIPC is regional, comprehensive planning at work in our area.

THINGS TO DO:

- Consider why your town is located where it is; is there a natural land or water feature which influenced settlement? Was it located on an Indian trail or along a railroad? You may want to investigate this in your public library.
- Students and others might interview older residents of the community about how the community "looked" long ago, about social and economic changes.*
- Do research on how your community looked 25, 50, 100, 150 years ago.*
- Walk around your community and look for different land uses: perhaps using the categories listed on page 96 in this section; what things did you discover that you had not particularly noticed before: what services are for children? for adults? Do you think there are enough parks and other open spaces? If not, what can you do about it?
- Make a photographic record of your community; look for good land use--open spaces, parks, attractive shopping areas.
- Make a photographic record of landscape pollution --litter, unsightly areas, and so on.
- Consider how substandard housing is a poor land use.
- Consider the impact of the automobile on your area --what ways can you think of that your nearby and more distant environment have been affected by the auto; how much land is set aside for the use of autos (include parking lots at factories and industrial parks, filling stations at home, as well as roads).
- If a change is being proposed, i.e., an addition to a parking lot, the widening of a street, or



*Contact your local or county historical society for help and share your results with them.

dredging or filling of a pond or marsh, make a mini-impact statement. Include:

- a description of the proposed change
- reasons for the change
- construction-type activities that will be required
- ways the physical environment will be affected (the water, air, soil, and so on)
- living things in the area that will be affected and ways they will be affected
- ways people will be affected
- weighing of the benefits and the costs to the environment
- conclusions you have come to; possible alternatives to the project

▸Learn about the territory animals need for an adequate food supply; how do they indicate their territory?

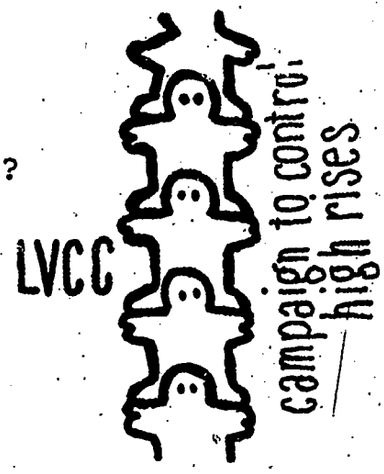
▸Learn about animal experiments on crowding; does this tell us anything about densities in our cities?

▸Attend some local, county, or regional planning or zoning hearings; you may want to participate actively and present your views. (How does one become informed about impending meetings which concern zoning or planning?)

▸Compare aerial photographs of a given area, going back to oldest set of photos available.

▸If you want to get an aerial view of Chicago's use of land--but not go up in an airplane--you might be interested in going to one of the following observatories on a clear day.

- John Hancock Center Observatory, 875 N. Michigan Blvd.--daily 9:00 a.m. - mignight. Adults $1.50, children under 12 $1.00; group admission for 20 or more $1.25 for adults, 75¢ for children: telescopes available for 10¢. 751-0900, ext. 63.
- Prudential Building Observation Deck, Randolph St., East of Michigan Blvd.--weekdays 9:00 a.m. -10:00 p.m., Saturday and Sunday until midnight; adults 50¢, children 25¢. Groups of 20 or more receive a 15¢ discount; telescopes available for 10¢. 822-3456.
- Sears Tower Skydeck, 233 S. Wacker Dr.--daily 9:00 a.m. - midnight; $1.50 for adults, $1:00 for children; for groups of 20 or more adults $1.25, children 75¢: telescopes available for 10¢. 875-2500.
- Often a county agricultural group holds an annual "airlift" or "air-tour" day; for a nominal payment you can fly over much of your county.




*Symbol of the efforts of a community organization (Lake View Citizens Council) to control the building of highrises in their neighborhood*

BOOKS TO ENJOY:

Clawson, Marion: Man and Land in the U.S. University of Nebraska Press, 1964. adult.

Little, Charles E.: Challenge of the Land. Pergamon Press, 1969. adult.

McClellan, Grant S. (editor); Land Use in the U.S. H.W. Wilson Co., 1971. adult.

Platt, Rutherford H.; Open Land in Urban Illinois. Northern Illinois University Press, 1971. adult $4, paperback.

Rudofsky, Bernard; Streets for People: A Primer for Americans. Doubleday, 1969. adult. $5.95 paperback.

The following information on the six-county area and on the individual counties has been taken from two Northeastern Illinois Planning Commission reports: "Waste Water Report for the Outer Area", July, 1970, and "Preliminary Waste Water Plan for the Inner Area", April, 1969.

## The Six-County Area

The six northeastern Illinois counties of Cook, DuPage, Kane, Lake, McHenry, and Will encompass 3,750 square miles, an area three times the size of the state of Rhode Island.

The land is heavily urbanized along Lake Michigan and along the principal railroads. Other urbanized centers have developed at points where streams cross land routes and industries were established. The area has large steel mills as well as agricultural, food processing, chemical, and general manufacturing industries.

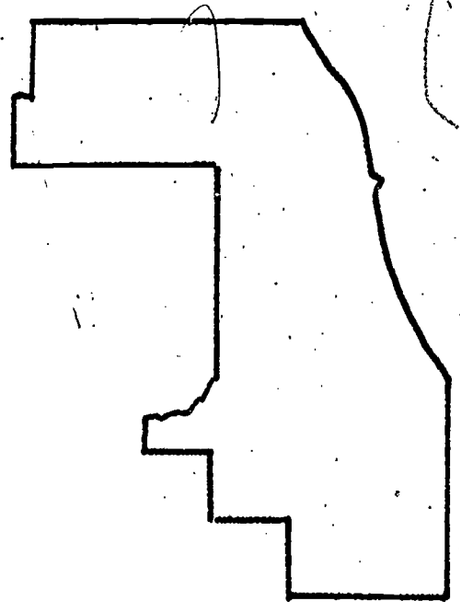
The six-county population has grown from 6.8 million in 1965 to an estimated 8.8 million in 1973. The breakdown of population by county from the NIPC Suburban Facts Book Is:

| | | | |
|---|---|---|---|
| Cook (1970 figure) | | | |
| Chicago | 3,367,000 | Kane (1973) | 266,300 |
| Suburban | 3,851,000 | Lake (1973) | 389,500 |
| DuPage (1973) | 543,600 | McHenry (1973) | 121,000 |
| | | Will (1973) | 274,000 |
| | total 8,840,000 | | |

| Counties in Order of Size (in square miles) | |
|---|---|
| Cook | 956 |
| Will | 845 |
| McHenry | 612 |
| Kane | 520 |
| Lake | 457 |
| DuPage | 331 |

The drainage pattern in the area, especially in the eastern part of the Chicago Lake Plain area, is very poorly defined, due to the flat terrain and intervening low ridges. To alleviate the poor drainage, the Sanitary and Ship Canal and the Cal-Sag Channel were constructed. These waterways not only provided drainage but improved navigation for commercial water-borne traffic.

About 68 square miles along Lake Michigan north of the center of Chicago, and almost 300 square miles around and south of Lake Calumet originally drained into Lake Michigan. The Canal and Channel with their locks and dams reversed the flow from most of this area across the low drainage divide separating the Great Lakes and Mississippi River system. The rest of the area drains generally south into such streams as the Des Plaines, DuPage and Fox Rivers, all of which flow into the Illinois River. The Kankakee River, flowing generally northwest through southwestern Will County, joins the Des Plaines to form the Illinois River west of the Will County line. Western McHenry County is drained by the Kishwaukee River flowing in a westerly direction. The Kishwaukee joins the Rock River and finally empties into the Mississippi.



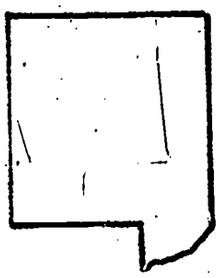
## Cook County

Cook County is the only county bordering on all the other five counties in Northeastern Illinois. It is the largest of the six and the most heavily urbanized county in the state.

Cook County has an enormous concentration of manufacturing industry, including machinery, basic steel and food products. The county's development has been closely tied to that of its principal city, Chicago. Trade and transportation, important to the early settlers, are still important. (See Transportation, page 91.) Truck and rail traffic are impor-

tant nationally while airport, lake, river and harbor facilities are important in international air and water traffic, as well as national traffic. Chicago, of course, is the rail, wholesale, retail, service and financial hub of the central part of our nation.

In 1965 there were almost 5.5 million people in the county, with Chicago accounting for over 3.5 million. By 1970, there were over 7 million, almost 3.4 million in Chicago.



DuPage County

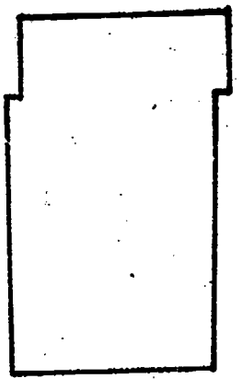
DuPage, the smallest of the six counties, was one of the fastest-growing counties in the nation from 1950-1970 in percentage growth. It is the fastest growing county in the state. In 1965 the population was 395,000; by 1973, the estimated population was over 543,500.

Before World War II, DuPage County was largely agricultural. Municipalities at that time were either rail commuter suburbs or part of the farm economy. At present there are practically no working farms left.

DuPage County is located directly west of Chicago, its closest point being 15 miles from downtown Chicago with Wheaton, the county seat, about twenty-five miles from Chicago's loop.

More major east-west transportation routes developed than north-south routes since they came from Chicago. The land developed along the railroads until the highways were built. Since then development has followed the highways.

There is relatively limited industry in the county.

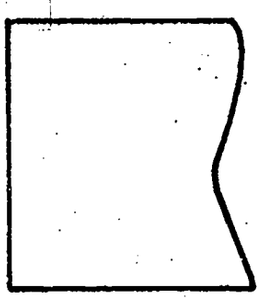


Kane County

Kane County is directly west of Chicago, the closest part of its eastern boundary being 34 miles from the Loop. Geneva is the county seat. The county has four major rail lines and is crossed by two major expressways, the East-West Tollway and the Northwest Tollway. The Fox River flows from north to south near the east border. Concentration of population is along this river. Recent residential and commercial development has been around Elgin and Aurora, both on the Fox River.

The western two-thirds of the county is mostly rural. The 1964 farm census showed more than 1,300 farms averaging almost 200 acres, principally in feed grain farming and dairying.

In 1965 the population of Kane County was 234,000; by 1973 the estimated population was 266,000.



Lake County

Lake County is along routes of communication from Chicago to Milwaukee and other northern points. Its county seat, Waukegan, is about 35 miles from downtown Chicago. Lake County borders on Lake Michigan, and its development has been strongly influenced by that body of water--for potable and industrial water, navigation and related industrial development, choice residential developments, and recreation.

The 1964 farm census showed more than 700 farms in the county, covering 40 per cent of the total land area. The county has a wide variety of industrial research firms with pharmaceutical research being especially strong.

In the western part of the county, the Chain O'Lakes area has had extensive recreational development. On Lake Michigan there are two important military installations: the Great Lakes Naval Training Center and Fort Sheridan of the U.S. Army, occupying over 2200 acres. The military personnel and civilian employees have great economic impact on the county and on the region as a whole.

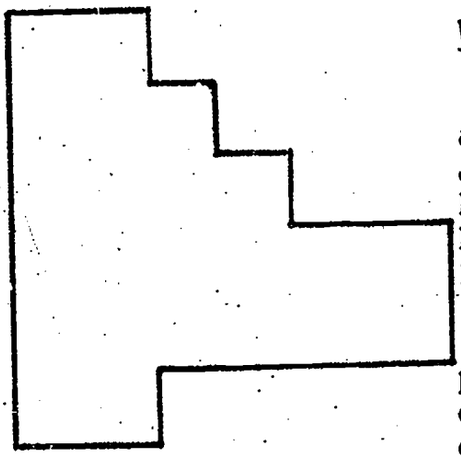
In 1968, the estimated population was 385,000, the third most populous county in the state. By 1973, the estimated population was close to 390,000.

McHenry County

McHenry County is located in the northwestern corner of the metropolitan area. Woodstock, the county seat, is about 55 miles from downtown Chicago. The northern boundary serves as the state line between Illinois and Wisconsin.

The area has remained largely agricultural with only recent residential and commercial development. About three-fourths of the county is in some form of agricultural use. In 1964, there were almost 1,700 farms averaging over 180 acres. Dairying is the primary agricultural activity, followed by field crops such as corn.

The county is the least populated in northeastern Illinois. The 1965 census showed a little over 100,000 people, while the 1973 estimated population was more than 121,000.



Will County

Will County is the southernmost of the six-counties and the second largest county in Northeastern Illinois. Joliet, the county seat and largest city, is 38 miles by highway southwest of Chicago's Loop. The eastern boundary of the county is the state line between Illinois and Indiana.

A large number of important rail and highway routes pass through Will County. In 1964, about 70 percent of the total acreage was devoted to agricultural use or was vacant. Today, 60-70 percent is still farmland with the primary crops being corn and soy beans. The Joliet arsenal--U.S. Government land--covers 5 percent of the land, but no longer manufactures small arms.

The Joliet-Lockport area has a relatively large concentration of industry. The mining of stone, sand, gravel and clay are also important to the county.

The 1965 census was almost 228,000 people; the 1973 estimated population is over 274,000.

# History of This Area

Why include history in a Sampler on environmental study areas? History is included because people can understand present-day problems better and do more thoughtful planning of goals and priorities for the future if they know what has taken place in the past, if they realize that the impact of white people in this area has occurred in less than 150 years.

To understand Illinois as it is today, one must reach into prehistory. Some 490 million years ago the Paleozoic era, the third of the five geological eras, began. Present-day Illinois was then covered by a series of shallow seas resulting from repeated, massive submergence and uplift of the earth's crust. When the seas diminished, the surface of the earth was exposed to weathering and erosion. During the Cambrian period, the earliest period of the Paleozoic era, thick layers of sandstone and dolomite (a form of limestone) were deposited. Later, water seeping from the surface into this sandstone established aquifers (reservoirs) which today are tapped by the wells of many municipalities in this area. More recently, though still 270 million to 440 million years ago, during the Silurian and Devonian periods, several strata of limestone were laid down. At the present time these layers are quarried extensively for road-making materials near Chicago and Joliet.

Toward the end of the Paleozoic era, by far a very important era geologically and economically, the great coal layers were deposited. A warm sea covered much of this area then; the land was low and marshy. The favorable climate resulted in growth of trees and ferns that subsequently were compressed to form the coal veins that underlie two-thirds of Illinois. Despite rather recent extensive mining, only a small part of Illinois' coal reserves have been removed.

As this geologic era ended, ice sheets of the glacial period covered this land. As recently (geologically speaking) as 23,000 years ago, the Wisconsin glacier formed Lake Chicago, from which Lake Michigan was formed. The present site of Chicago lay deep beneath the surface of this ancient great lake, and deposits from the waters of this lake resulted in the flat land on which Chicago now stands.

Indians occupied this country for thousands of years before the white man arrived. Their population was small. They used many of the resources at hand for their survival, by:

- fishing the lakes, rivers, and streams;
- eating wild berries;

- killing only to obtain necessary food and hides for their clothing and shelter;
- and practicing a rudimentary agriculture which apparently did little to affect the "closed" natural energy circuits of the land. We can only speculate that they must have been filled with wonder at the wealth of life in the prairies, woods, and waters of the region.

In 1673, the first white men came through the Chicago area. They were Louis Joliet, an explorer, and Father Pierre Marquette, a Jesuit missionary. They went on to explore the Mississippi River, and in seeking a more direct route north, followed the Illinois and Des Plaines Rivers, making a portage across land to what is now Chicago. (Perhaps during 1973 you saw TV and newspaper coverage of the re-enactment of the 300th anniversary of the Joliet and Marquette journeys and the festive welcome the modern enactors received as they landed at the portage site, at Michigan Avenue and the Chicago River, and at the Lighthouse in Evanston.) The portage site was used a great deal by later visitors and settlers and eventually a channel was dredged through it to connect the Illinois River with Lake Michigan. This historic site can be viewed in part at 47th and Harlem, in the Cook County Forest Preserve.


Missions were established along the Mississippi. Fur trappers, traders and early settlers filtered in; forts were built, not only for protection but to reinforce claims of British or French as they vied for the territory.

In general, the Indians of this area were friendly to the early settlers and taught them how to survive in the woods and prairies. The Indians cultivated largely on the bottom lands, where the soil was a sandy loam and more easily worked with crude implements. They planted corn, beans, and squash; they broadcast wheat (seeding at random, a practice still in use in some places). The beans, which are legumes, grew up the cornstalks, and their roots returned nitrogen to the soil. The squash leaves provided shade to retain moisture. Today nitrogen is supplied through use of expensive fertilizers and sometimes water is provided by irrigation.

The Indians here were the Illinois, Kickapoo, Sauk, Fox (sometimes referred to as "Sauk 'n Fox" after merger of the two tribes), and Potawatomi, the last having been in this area for about 12,000 years. Their language was Algonquin. The word for Chicago (Shucungkow) came from their language and referred to the strong-smelling wild onions which grew where Chicago was settled. There are still some wild onions in this area.

The Indians lived along the creeks and rivers or in groves of trees (but above the floodplains); their paths often followed animal trails. Animals, trees, and plants, and a variety of flint, chert, and quartz rocks were vital to the Indians:

- their homes and baskets were made from hides or woven mats of bark rushes and cordgrass sewn together with long, thin roots of tamarack trees which could be waterproofed with thick, heavy resin of gum trees;
- their boats were dugouts made from elm trees;
- snowshoes were fashioned by woven thongs or webbing of rawhide over a frame of ash, hickory, or elm frames
- their blankets were hides or fur, perhaps rabbit, woven into fluffy yarn so both sides were soft; their yearly (controlled-in-part) burn-offs kept the wooded areas like meadows and parks and prevented disastrous fires. (Where controlled burn-offs are practiced in California there has been a reduction in disastrous fires.)
- flint, chert, and quartz were used to make implements and projectiles.

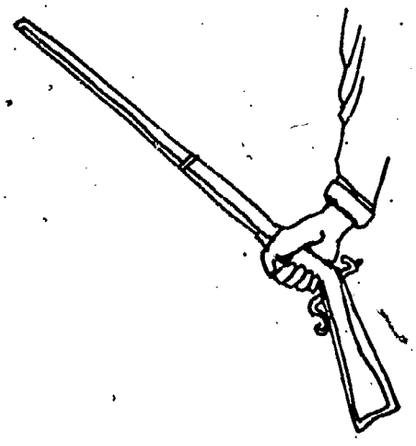
*Can you find places whose names use Indian words, such as Illinois?*

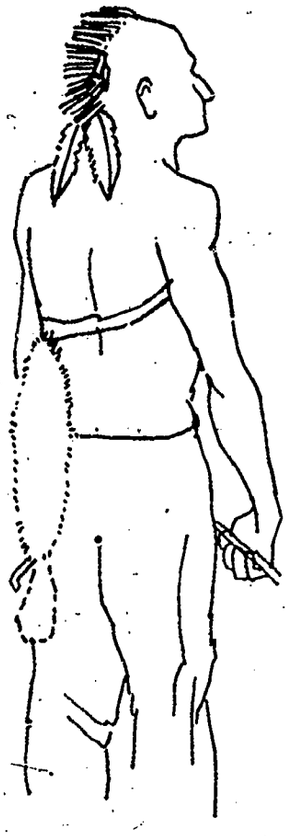
The pioneers and later settlers had a quite different attitude toward the land. They regarded living things and many other resources on this continent as inexhaustible riches. With the advent of the rapid-fire guns and easily transported and repaired steel traps, they decimated species of wild animals and birds. They cleared the forests and plowed the prairies to make their fields. In some wooded portions the settlers did not continue the yearly burn-offs and the woods became thick with underbrush, difficult to clear, and probably provided places for the Indians to hide and raid settlers.

*To get a real feeling for early American life and for the changes from the days of the pioneers in the wilderness to the settlers in towns and countryside, read the trilogy by Conrad Richter (published by Alfred Knopf)*

| | |
|---|---|
| *The Tree* | *1940* |
| *The Fields* | *1946* |
| *The Town* | *1950* |

As more and more settlers came, it was natural that the Indians became more belligerent. They sometimes helped the settlers but no longer particularly liked them. The Indians felt that land was to use and enjoy, perhaps to be defended against trespassers, but they did not believe that it could be owned exclusively by one person. They did not understand the "buying and selling" of land. When such a transaction occurred, the Indian might agree and even accept a sum of money or a gift. Later when the settler tried to enforce the bargain, conflicts arose. It was not simply that settlers were sharp bargainers (which they sometimes were), or that Indians reneged on their bargains (though it might seem so), it was probably that there was never a true meeting of minds





because each had a totally different concept of ownership of land, and the pressure of on-coming whites was great.

The early settler had to be independent and resourceful to survive, fighting his own battles with Indians, renegades, interlopers, crooked salesmen, and and solving his own problems. These attitudes carried over into all phases of social, economic and political life.

A BRIEF ACCOUNT OF PIONEER LIFE IN ILLINOIS

Pioneer life in Illinois was often a very hard struggle. People lived far from neighbors, work was hard, and the future was uncertain; a crop failure, for example, would be a major disaster.

The farmer grew wheat and corn, but he also was a hunter, not only for deer, bear, squirrels, but for game birds such as ducks, geese, passenger pigeons, cranes, and prairie chickens. He fished in the rivers and creeks, and undoubtedly ate mussel and crawfish.

Berries, wild fruits, nuts and mushrooms were gathered. Maple sugar and wild honey were used where sugar was expensive. Cornmeal mush and milk were eaten regularly. In good times, molasses might be added, and in bad times the milk might disappear from the table.

"Hogs and hominy", which was pork with Indian corn, was eaten often. "Corn pone" and "johnny cake" (cornbread containing bear grease or butter and flattened on a board) were forerunners of our pancakes and waffles.

Most farmers had a vegetable garden, not only with squash and beans, but with potatoes, turnips, cucumbers and tomatos.

Corn and wheat were the basic crops. Corn was eaten in many ways, as well as fed to cattle and hogs. Most hogs lived on acorns and nuts (mast) lying on the forest floor.

When a flour mill was built in a region, it was considered a real sign of progress.

Salt was used to season foods and to preserve them. It was expensive and one of the important items sold in the early stores.

Beverages were water and tea made from herbs or sassafras. Real coffee was expensive and many settlers made a kind of coffee from parched corn or wheat or

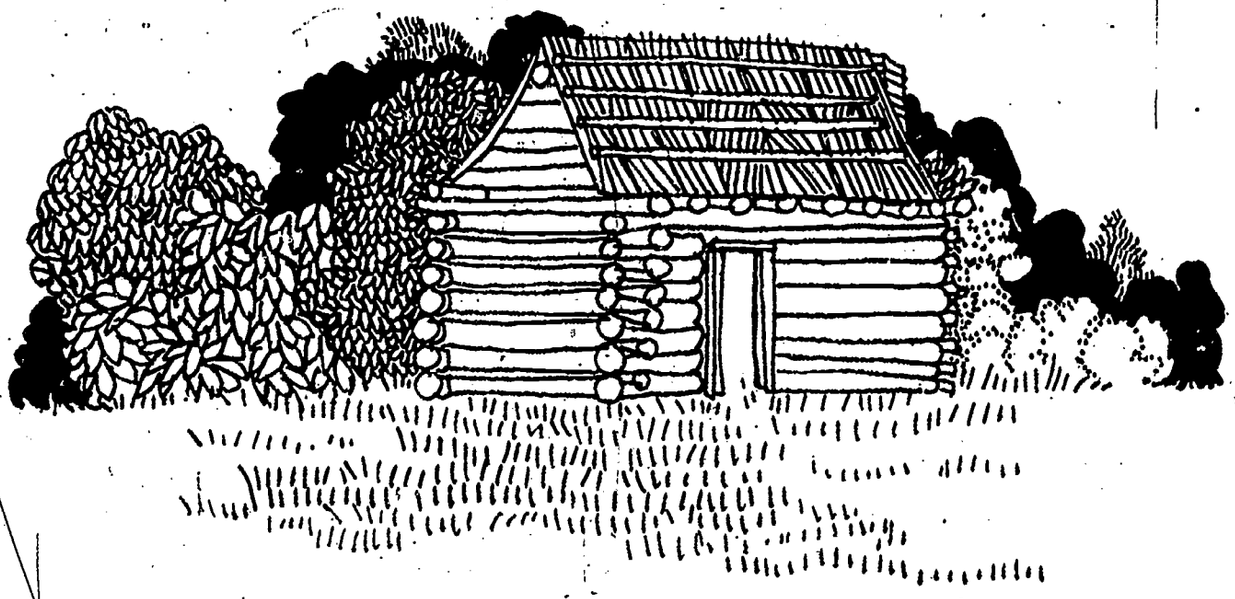
even bread crumbs. Some settlers even ran distilleries for "corn liquor" or made beer and wines. Settlers who came from New England or other northern areas liked a breakfast of beans and pie.

Early simple homes of the pioneer were like a lean-to, open on one side. The walls were built with logs, with mud used to make the structure more weather-tight. An open fire helped keep out the cold on the side without a wall, although skins were hung for added protection.

Within a year the settler began work on a more permanent home, a log cabin built with the help of neighbors. Completely enclosed, the cabin usually included a window and a door, along with a chimney made of sticks and mud or rocks, if such were conveniently nearby. Floors were dirt or puncheon, which are split logs laid with the flat side up. Cord grass was cut for roof thatching.

Flies, mosquitoes, rats, mice and bedbugs flourished in the cabins. Farm animals came in the cabins, littering floors and tracking dirt. Cooking was done in the open fireplace. When the housewife cooked, it was hot and smoky, and the temperature was always changing. Much cooking and laundering was done out-of-doors when weather permitted.

Hunting and fishing were play as well as a way to get more food. Trapping was a source of furs, food and income. Cabin raising was necessary, but was also a time for having fun. Weddings and funerals were also times when neighbors gathered and enjoyed themselves. A wedding celebration could last for days.



The following is a chronological account of events in this part of the country which influenced life in the six counties: NOTE: See also sections on "Where Does Your Food Come From?", "Do You Take Water for Granted?", "Transportation", and Parks and Forest Preserves section of "Open Spaces/Green Areas".)

1717 By decree of French Royal Council, Illinois passes under government established for Louisiana.

1731 Illinois becomes royal province, governed directly by King of France. French failed to develop resources.

1754 French and Indian Wars, which were the American phase of war between Britain and France more accurately called the "Great War for the Empire" which Britain won.

1763 Treaty of Paris signed whereby France cedes to Great Britain her North American possessions east of Mississippi. Because of resistance of Pontiac, a chief of the Ottawas, England did not take possession of country in 1765. England did not promote resources because of conflict of interests with those of the rest of the Empire.

1769 Relaxed policy resulting in immigration from east coast and Virginia.

1774 The Illinois country was annexed by France. English instigated Indian attacks on frontier colonies.

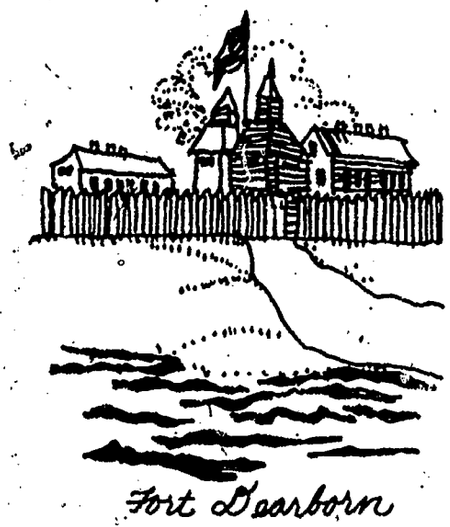
1778 Conquests by George Rogers Clark of Virginia secures land and Legislature of Virginia sets up territories Clark captured as part of the county of Virginia.

1783 By the treaty which concludes the War of Independence, the boundary of the United States is extended to the Mississippi (except for East and West Florida, which belonged to Spain).

1784 Virginia cedes Illinois country to national government.

1787 Northwest Territory, including Illinois, organized by ordinance of Congress.

1795 By Treaty of Greenville, Indians cede large areas to the whites including several tracts in Illinois. Among these is future site of Fort Dearborn.



1803 Fort Dearborn built on south side of Chicago River at Wacker Drive. John Kinzie and his family settled in a cabin on other side of Fort. Kinzie, known as "Father of Chicago" traded and sold supplies and people used his boat for river and lake transportation.

1812 American garrison evacuating Fort Dearborn was massacred by Indians. With help of friendly Indians, Kinzie family escape massacre. (Story of the massacre at Fort Dearborn is told in stone on the pillar of Michigan Avenue Bridge.)

1816 Fort Dearborn rebuilt, but never really needed as Indians in this area were peaceful by this time. Torn down in 1836 to make room for Chicago.

1818 Illinois becomes state of American union with present -day northern boundary instead of earlier proposed boundary which passed west through state from southern tip of Lake Michigan. The reason for change was that if Mississippi and Ohio Rivers were the only outlets for Illinois trade, the interests of state would become identified with southern states, but if outlet by Lake Michigan were provided, closer relations would be established with northern and middle states and "additional security for perpetuity of the Union would be afforded", quote from enabling act of State of Illinois, 1818. Had it not been for the acceptance of more northerly line, almost all of our six-county area would not be in Illinois.

1823 The opening of lead mines in Galena after which time towns in the present six-county area experienced growth, especially after removal of Indians in 1832, opening of Illinois-Michigan canal and railroad in 1848.

1824 People vote against calling convention to amend constitution to permit slavery.

1825 Opening of Erie Canal in New York State along with invention of practical steamboat brought many people from east coast to Illinois, many settling in what were to be outlying towns of northeastern Illinois.

1832 Defeat of Black Hawk, resulting in removal of all Indians from Illinois.

1833 Chicago incorporated as a town.

1834 Abraham Lincoln elected to State Legislature.

1836 Construction of Illinois-Michigan Canal begins.

1837 State appropriates $10,000,000 for building of railroads. Chicago becomes a city.

1845 Free school law enacted.

1847 Cyrus McCormick, inventor of reaper, comes to Chicago and opens factory.

1848 Illinois-Michigan Canal opens (See Transporation, page 91, for history of canal.)

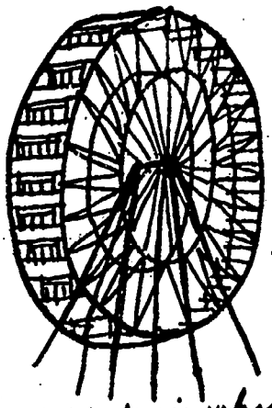


1848-70 Transition stage--Chicago developed from a town of 30,000 to a city of 300,000, probably the swiftest growth of a metropolis in history; Many Illinoisans left for goldrush in California and the Yukon and to settle the fertile lands of Kansas and Nebraska. This was followed by another gold rush to Pike's Peak. In their places came "Yankees" from New England and others from other East Coast areas who settled in northeastern Illinois. Settlers from the Southern states came to southern Illinois. In 1849 there appeared in the Boston Post a poem which began:

"Come leave the fields of childhood
Worn out by long employ
And travel west and settle
In the State of Illinois."

*Find out when first railroad was built in U.S.*

1851 Illinois Central Railroad granted charter
1853 First state fair held
1855 Legislature authorizes system of free schools.
1860 Illinois population about 800,000
Republican national convention held in Chicago nominated Lincoln for President)
1861 Civil War--Illinois furnishes 256,000 soldiers.
1865 Lincoln buried at Springfield.
1870 Illinois population reaches 2,540,000.
1871 Chicago fire.
1880 Illinois population over 3,000,000.
1888 State Capital at Springfield completed.
1889 Chicago Sanitary District organized
Jane Adams' Hull House built.
1890 Chicago had 10,000 manufacturing establishments employing over 200,000 people.
Chicago becomes most important livestock market in U.S.



*first ferris wheel - built for the Columbian Exposition*

1893 World's Fair (Columbian Exposition) held in Chicago to commemorate 400th anniversary of discovery of America.
Frontier of U.S. virtually closed.
1895 38 railroads enter city with about 2,600 miles of track in city limits; local traffic by electric, steam, cable and horse-drawn car lines.
Chicago has public school system unexcelled in nation.
Free public library.
1898 Spanish-American War.
1909 Chicago Plan of Daniel Burnham (1846-1912) demonstrates that intensive modern industries and commercial activity can profitably harmonize with beauty, social welfare, ample recreation, and cultural centers for people in a metropolitan city.
Two-thirds of frontage on Lake Michigan is composed of beaches, parks and boulevards.
1910 62% of Illinois is urban with Chicago housing half the population; half the population of

Chicago, Joliet and Rockford are foreign-born.

1915 Navy Pier built.

1917-1918 World War I; Illinois contributes 210,000 men and women.

1918 State-wide system of hard roads approved by voters.

1933 First state general sales tax (of 2%).

1939 Oil boom in central and southern Illinois.

1941-1945 World War II; Illinois contributes 900,000 men and women.

1959 St. Lawrence Seaway opened.

1965 Construction begun on Circle Campus of the University of Illinois.

Carl Sandburg said of Chicago:

"Hog Butcher for the World
Tool Maker, Stacker of Wheat
Player with Railroads
and nation's Freight Handler,...
Stormy, husky, brawling,
City of the Big Shoulders."

THINGS TO DO:

- Learn about the Social Studies Tour-Program for school classes of the Raymond Foundation of the Field Museum on Indians of Woodlands and Plains (how environment influences way of life): write Department of Education, Field Museum of Natural History, Roosevelt Road and Lake Shore Drive, Chicago, 60605.
- Get information on an excellent historical program for a school assembly or meeting for an organization by phoning Reid Lewis, who portrayed Joliet in the re-enactment of the 300th anniversary of the Joliet and Marquette voyage: those involved in the voyage are still trying to make up the costs of the trip; phone (312) 631-7446.
- Visit an historical museum in your town, county or elsewhere.
- Read some of the books on the list in this chapter; look for historical fiction in your public library.

DATES OF SETTLING OF EARLY TOWNS AND CITIES IN 6-COUNTY AREA

(* indicates county seat)

| Date Settled | Cook | DuPage | Kane | Lake | McHenry | Will |
|---|---|---|---|---|---|---|
| 1765 | | | | Little Fort Waukegan | | |
| 1790 | | | | | | Plainfield |
| 1793 | Chicago*-- DuSable | | | | | |
| 1803 | Chicago-- Ft. Dearborn | | | | | |
| 1826 | Evanston | | | | | |
| 1830 | DesPlaines | | Batavia | | Crystal Lake | |
| 1831 | | Naperville | | | | Joliet* Lockport |
| 1832 | Berwyn | Downers Grove | Geneva* | | Woodstock* | |
| 1833 | Oak Park Calumet City | | | | | |
| 1834 | | Lombard | Aurora Carpen-tersville | | | |
| 1835 | | | Elgin | Waukegan* Lake Forest Lake Zurich | | |
| 1836 | | | | Wauconda | McHenry | Romeoville |
| 1837 | | Wheaton* | | Libertyville | | |
| 1839 | | | | | | Wilmington |
| 1840 | | Warren-ville | | | | |
| 1850 | | | | | Harvard | |

NOTE: Research turned up only this information. It is assumed that other areas in each county were settled between 1765-1830. Please send in any information you know (see form in Appendix for reaction and additional information).

BOOKS TO ENJOY:

(See other historical books of Landmark Book series, published by Random House.)


Adams, Samuel Hopkins; The Erie Canal. Random House (Landmark Books), 1953. Intermediate grades - up.

Havighurst, Walter; The First Book of Pioneers. Watts, 1959. Grades 1-5.

Hoff, Rhoda; America-Adventures in Eyewitness History. Henry Z. Walck, 1962. Intermediate grades - up.

Johnson, Gerald W.; America Is Born. Morrow, 1959. Intermediate-adult.

Johnson, Gerald W.; America Grows Up. Morrow, 1960. Intermediate-adult.

Johnson, Gerald W.; America Moves Forward. Morrow, 1960. Intermediate-adult.

Luna, Charles; The Handbook of Transportation in America. Popular Library, 1971. Adult.

Nathan, Adele; The First Continental Railroad. Random House (Landmark Books), 1951. Intermediate-up.

Nevins, Alan; Short History of the United States. Knopf, 1969. Adult.

Quimby, George. Indian Life in the Upper Great Lakes. University of Chicago Press, 1971. Adult. $2.45.

Ritzenthaler, Robert E.; Woodland Indians of Western Great Lakes Area. Natural History Press, 1970. Adult. $1.95.

Tunis, Edwin; Frontier Living. World, 1961. Intermediate-adult.

Tunis, Edwin; Indians. World, 1959. Intermediate-adult.

Walton, Clyde C. (editor); An Illinois Reader. Northern Illinois University Press, 1970. Adult. $7.50.


This chapter was researched and written by Alaire B. Shields.

# Historical Sites and Museums

In communities in northeastern Illinois some historical museums have been in existence for some time, some newly opened, and fortunately, additional museums continue to be brought into existence through the devoted efforts of local historical societies. These range from museums of one or two rooms to some of several transported and/or restored buildings. Though attempts were made to obtain information on all the historical museums in the six counties, it was not possible to confirm all the leads that were found. If you know of information which is missing here, please indicate it on the Reader's Reaction Sheet in the Appendix. (NOTE: Charges are subject to change.)

## Chicago

Chicago Historical Society--in Lincoln Park at Clark Street and North Avenue; emphasizes Chicago and Illinois history; exhibits include demonstrations of frontier weaving and candlemaking and a dramatization of the Great Chicago Fire; admission is $1 for families, 50¢ for adults and 25¢ for children (6-17), students and Senior Citizens. Mondays are free. Open 9:30-4:30 Monday-Saturday; 12:30-5:30 Sundays and holidays.

Fort Dearborn (site of)--southwest corner of Michigan and Wacker; bronze marker indicates site.

Museum of Science and Industry--57th Street and Lake Shore Drive--exhibits include stagecoach, steam locomotive, Yesterday"s Main Street, nickelodeon, old-fashioned movies.

Pullman Community--between 111th and 115th and Cottage Grove and Langley--19th century company town; tour on first Sunday of every month; group tours of 20 or more by arrangement; $1.00 adults, 50¢ students, kdg. - high school. Museum building open 9:00-5:00; Phone (312) 785-8181.

## Cook County

Arlington Heights Historical Museum--5 buildings--500 N. Vail, Arlington Heights. Phone Mrs. Frieburg, (312) 255-0688, to schedule tours. Open Wed. 2:00-4:00; Sat. 1:00-4:00; Sun. 2:00-5:00. Admission 50¢ for adults; children 25¢. Museum phone (312) 255-1225.

Des Plaines Historical Society--777 Lee,Des Plaines; history of Des Plaines and Main Township; special group tours Tues. and Thurs.; Wed., Sat., Sun. 2:00-4:00.; admission 25¢, families 50¢; (312) 297-4912.

Evanston Historical Society--225 Greenwood, Evanston; museum in former home of Charles G. Dawes, a Vice-President of the U.S.; daily 1:00-5:00, Sat. 9:00-noon. Closed Wed., Sun., and holidays. Admission 50¢, members and senior citizens (busload) free; children, students 25¢, families $1. Fri. is a free day. Reservations for groups of 5 or more. Phone (312) GR5-3410.

Lemont Area Historical Museum--306 Lemont Road: housed in Old Stone Church building erected in 1861 and used as a recruiting headquarters for Northern Armies during Civil War--unable to confirm information.

Oak Park and River Forest Historical Society Museum Room--Pleasant and Home Avenues, Oak Park; includes mementoes of Ernest Hemingway. Sunday 3:00-5:00 except holidays and 3 day weekends. Phone (312) 386-6777.

Chicago Portage National Historical Site--at 47th and Harlem in Cook County Forest Preserve--preserves a section of the famous portage discovered by Marquette and Joliet and used by pioneers as connection between the Great Lakes and the Mississippi.

Frank Lloyd Wright Home and Studio--Forest and Chicago Aves., Oak Park; Tues. and Thurs. 1:00-3:00, Sat. and Sun. 1:00-5:00. Admission, children $1, adults $2. Phone (312) 848-1976.

## DuPage County

Cantigny War Memorial Museum and Col. Robert R. McCormick Museum--south west of Wheaton (west on Roosevelt Road past Wheaton to Winfield Road; south on Winfield Road one-quarter mile to Cantigny); Cantigny open Tues. through Sun. from 9:00-5:00; McCormick Museum open Wed. through Sun.,noon to 5:00; gardens open 10:00-6:00 daily.

Downers Grove Historical Society--842 Curtiss Street; should open at this new address in Fall, 1974; rooms decorated with belongings of early Downers Grove residents. Several group tours by appointment. Phone 964-0300 or 969-2790.

DuPage County Historical Museum--102 E. Wesley, Wheaton; includes farm room and cabin typifying pioneer life in DuPage; Monday, Wed., Fri., Sat. 10:00-4:00; groups by appointment. Free. Phone (312) 682-7343.

Lombard Historical Museum--23 W. Maple, Lombard; Victorian style home decorated as for a middle-income family. Wed., Sat. 1:00-4:00; Admission 50¢, 25¢ for children 17 and under. Group tours. Phone (312) 629-1885.

Naperville--Caroline Martin Mitchell Museum--Aurora St. and Route 65, Naperville; Victorian mansion; adjacent is Century Memorial Chapel, built in 1964. Museum and chapel free; donations appreciated. Open Wed., Sun., legal holidays 1:30-4:30. Group tours by appointment. Phone (312) 355-0274, (312) 357-2180.

Old Graue Mill and Museum--on York Road, about one-half mile north of Ogden, Hinsdale; mill grinds cornmeal; cellar served as rest station for escaped slaved on the underground railroad; three floors of museum. Daily 11:00-6:00, May 1st to end of October; 25¢, children 8-12 10¢, free to children under 8. Educational, civic groups with leaders free except weekends and holidays. Phone (312) 654-9703.

## Kane County

Aurora Historical Museum--Oak and Cedar, Aurora; housed in 1856 mansion and carriage house. Museum free. Carriage house 25¢, children 10¢. Wed., Sun. 2:00-4:30. Phone (312) 897-9029.

Pioneer Park, Aurora, Galena and Barnes--5 miles west of downtown Aurora just under one mile east of the East-West Tollway and Galena interchange; reproduction of Midwestern village of about 1900; museum includes 14 shopes and stores; farm; sensory garden; rides. April 1st to Labor Day daily 10:00-6:00; Labor Day to end of October, weekends only, 10:00-6:00; 75¢, children 25¢. REservations for group tours necessary 1 week ahead. If 50 or more and 1 person buys tickets, 20% discount; for information, phone (312) 896-2398.

Also, there are historical museums in Elgin, Geneva, and St. Charles; by the time this book had to go to press, it had not been possible to locate information on them.

## Lake County

For information on Lake County history, write to Mr. James R. Getz, President of the Lake County Historical Society, Box 847, Lake Forest 60045.

## McHenry County

Illinois Railway Museum--at Union; steam locomotives, diesel streamliners, wooden elevated cars; electric equipment operated on weekends early spring through late fall; charge for rides but no admission charge; for information write Box 165, Union, or phone (815) 923-2488.

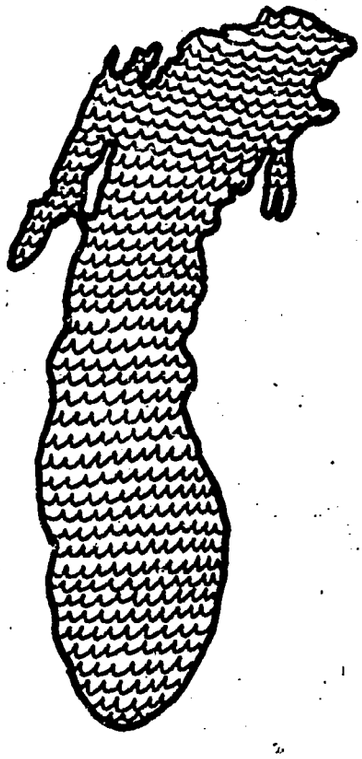
McHenry County Historical Museum at Union--recently moved to an old schoolhouse; phone (815) 923-2267.

## Will County

Pilcher Park Nature Museum--off U.S. 30 on east side of Joliet; has restored French fort; open year-round Monday-Friday, 10:00 til dusk; Sat. and Sun. noon to dusk. Guided tours for groups. Free admission. Phone (815) 726-2207.

Will County Historical Museum (Illinois and Michigan Canal Museum)--803 S. State, Lockport, just north of Route 7; original office and home of the canal commissioners; placed on the National Register of Historical Sites in 1972; daily 1:00-4:30. Groups of 10 or more must make reservations.

# That Valuable Asset, Lake Michigan



Lake Michigan is the largest freshwater lake entirely within the limits of the United States. It is 307 miles long, 118 miles wide, and over 900 feet deep. The bottom of the lake is not smooth, but has 200-foot vertical cliffs in the northern section. There is a ridge of rock and rock debris 200 feet high which separates the northern section of the lake from the southern section. This ridge keeps the water in two sections from mixing thoroughly.

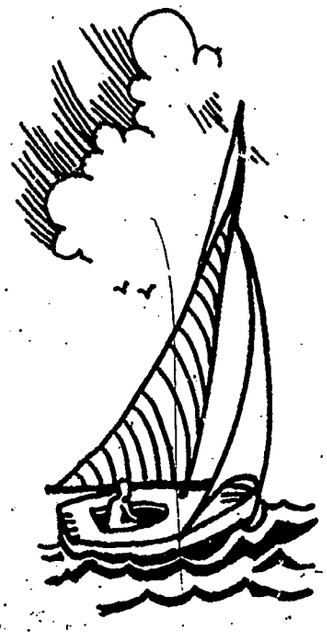
Four hundred million years ago warm seas covered this entire area of northeastern Illinois and resulted in the formation of limestone bedrock which gives firm footing to our skyscrapers. The seas receded, and about 50,000 B.C. the last of four ice sheets covered the land. By 9000 B.C. the climate had become warm enough to melt the glacier. The land where Chicago is today was still 60 feet below the surface of the lake but areas such as La Grange, Homewood, and Palos Park were above the surface.

Lake Michigan greatly influences the climate of the surrounding land. In the winter warm air flows from the land, cooling over the cold water. This keeps the waters fairly calm. During the spring and summer months, warmth from the sun's rays is absorbed and stored in the lake. Then, in the fall, when cold air comes from the Arctic and Canada, and interacts with the warm water, there may be extreme stirring up and storms.

Lake Michigan interacts with and is dependent upon the sun, soil, air and other waters of the area.

The climate, of course, influences the types of plants and animals that flourish in the area. The lake acts as a barrier between plants and animals on the east and west sides, on the north and south shores. The same species of living organisms may not live all around the lake.

The lake has had a tremendous influence in the development of Chicago as a great urban area. Through the lake and the St. Lawrence Seaway, there is contact with the Atlantic Ocean; ocean-going vessels come to the Port of Chicago for about six months of the year. The connection of Lake Michigan with the other Great Lakes has resulted in unique navigation conditions and considerable lake commerce. In addition, the connection with the Illinois-Mississippi waterway has resulted in movement of goods in both directions.



Today the Lake's shore provides important recreational space for some of the most densely populated areas of the city. It is also the source of Chicago's drinking water.

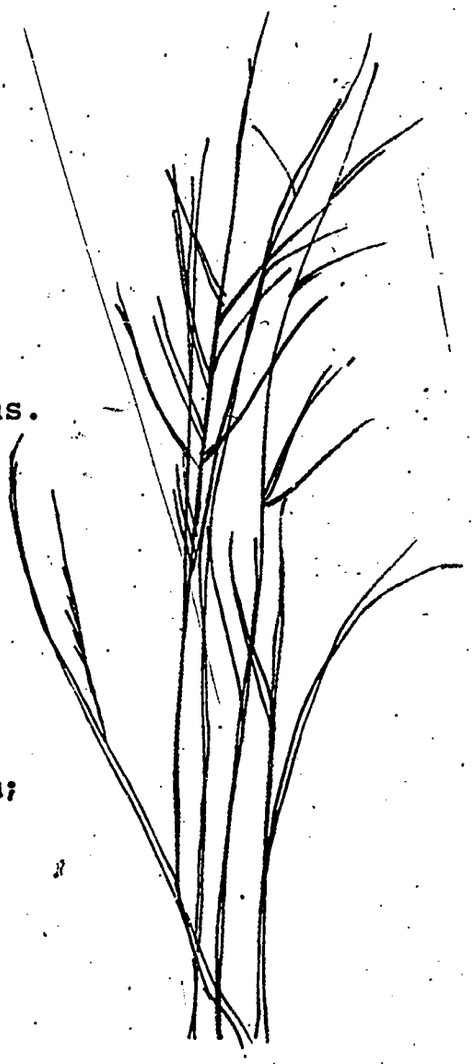
Over the years Lake Michigan has had an important effect on Chicago and the surrounding region, and life here would have been quite different without it.

Some of the finest dune systems in the mid-continent of North America are found around Lake Michigan.

THINGS TO DO:

- Get acquainted with and visit the Indiana Dunes National Lakeshore of Indiana, just southeast of Chicago. How can you help to preserve this dune area?
- Map the present watershed (drainage basin) of Lake Michigan. For such a large lake you may be surprised to find out how small the basin is.

# Open Spaces/Green Areas



## Introduction

S P A C E SPACE Space ! How remarkable; all around us and we cannot see it. We sense it, such as the margins on this page or the gaps between words, when something is there to bring it into focus.

You may catch some vibrant aspects of space... by examining many kinds of art, especially the more traditional Japanese paintings and delicate line sketches.

There are the vast interstellar reaches that stagger our imagination; the molecular-microscope penetrations of intra- and inner- cellular worlds; the clean-cut, beautiful patterns we silently see as we walk through a woods after a driving snowstorm; the myriads of intimate, fundamental arrangements and textures of blades of grass and leaves of trees; the delicate wind-wafted odors of flowers; and the progression of seasons and time. All spatially oriented.

There are the psychological and sociological "people spaces" and animal territories; the stops, rests and beats of music which create rhythms and moods. There is an infinity of spatial relationships, including those very personal, reflective thought-interludes and day-dreaming engaged in by most of us. The factory worker welcomes the break spaces.

Without space, life, as we know it, could not exist. SPACEismorefundamentalthanweperhapsrealize.

How strange that we have not incorporated more teaching/learning about the universality, the all-pervading reality and spirit of space in all of education. Fortunately, skilled ecologists, engineers, geographers, psychologists, and planners are giving more attention to space and how it is a part of and influences everything we do.

Teachers and interpreters at outdoor education campuses, arboretums and nature centers, forest and conservation preserves, parks, and wildlife refuges face an important challenge in introducing aspects of space to a wide variety of visitors. This is not a particularly easy challenge. Arboretums demonstrate space qualities in styles of landscaping.

In this chapter of the SAMPLER, we shall be concerned largely with some special spaces: greenways, parks, forest and nature preserves, open lands, arboretums, uncluttered "viewing borders" of such magnificent vistas as Lake Michigan and the dome of the sky. In other chapters we have looked along streets, in greenhouses and conservatories, in backyards, plazas, and vacant lots.

With care, we can wander into many of these special places, or at least "reflect" and delight in viewing their beauty.

All the spatial inputs and outputs of nature are ours, although some turning in might require preparations ahead and highly sophisticated methods and equipment.

Space astronauts caught inspiring views of the earth and sensed the beauty and wholeness of its energy-flowing processes. How precious are all of the inter-related ecosystems of Spaceship Earth; here are natural working spaces of the world so finely tuned after millions of years of evolvement. Yet, how much of these systems, before knowing what they were, we have already destroyed, damaged, or cluttered.

Thanks to the dedicated help and money from a handful of foresighted individuals and groups, we are managing to cling to a few but pitifully small remnants of natural areas, parks, open lands, nature centers (green islands), and uncluttered vistas.

Quite probably, the more people there are crowded into cities and suburbs and the more we push man-made things and operations into all kinds of open space, the closer we may be pushing ourselves to a state of insanity. Here, in brief, may be the process we suspect is at the root of all forms of pollution.

In many ways, this chapter of the SAMPLER could change your values and views of life, but you must discover and have courage to push your curiosity. We "stare into space" and scarcely realize how marvelously close we are to recapturing the essence of creation. "S P A C E " is indeed one of the great concept words concocted by human beings.

Douglas E. Wade
Lorado Taft Field Campus
Northern Illinois University

These six counties have a variety of open spaces and green areas. Open space as defined by the Northeastern Illinois Planning Commission, consists of "land and water area which is retained or restored to a condition in which the natural environment predominates". These areas take many forms and have many names--forest preserves, parks, wildlife refuges, nature preserves, natural areas, and conservation areas as well as golf courses and bike,horseback riding, and hiking trails. The trails may be within or near some of the forest preserves and other areas.

If you "use" outdoor areas, have you stopped to think what attracts you? Why do you think other people spend leisure in various ways in parks or other open spaces? You may have observed, or been part of, the crowds of people, particularly on summer week-ends, who flock to the many areas in these six counties.

You may be a person who wants space for a picnic or someone who seeks renewal of the spirit in the colors and patterns of nature, in the quiet away from man-made noise, in solitude removed from the rushed surroundings where most of us spend much of our time. Stop for a moment and try to think what might happen if people did not have open lands and green areas to enjoy. People feel better just knowing these areas are close by, even if they do not go there often. Thus, these areas have the value of a safety valve in addition to their other assets.

These areas may help us to understand the workings of the natural world and the inter-relationships of people and the natural environment, which many

people consider essential for the survival of human beings. Countless people have been so removed from the workings of the natural world that they are not aware of their own reliance on soil, air, sunlight, and water and on the place of human beings in the scheme of things.

In many of these open areas there is opportunity for a variety of activities--for people alone, with families, with groups of different sizes.

Here is how some planners view the need for open space:

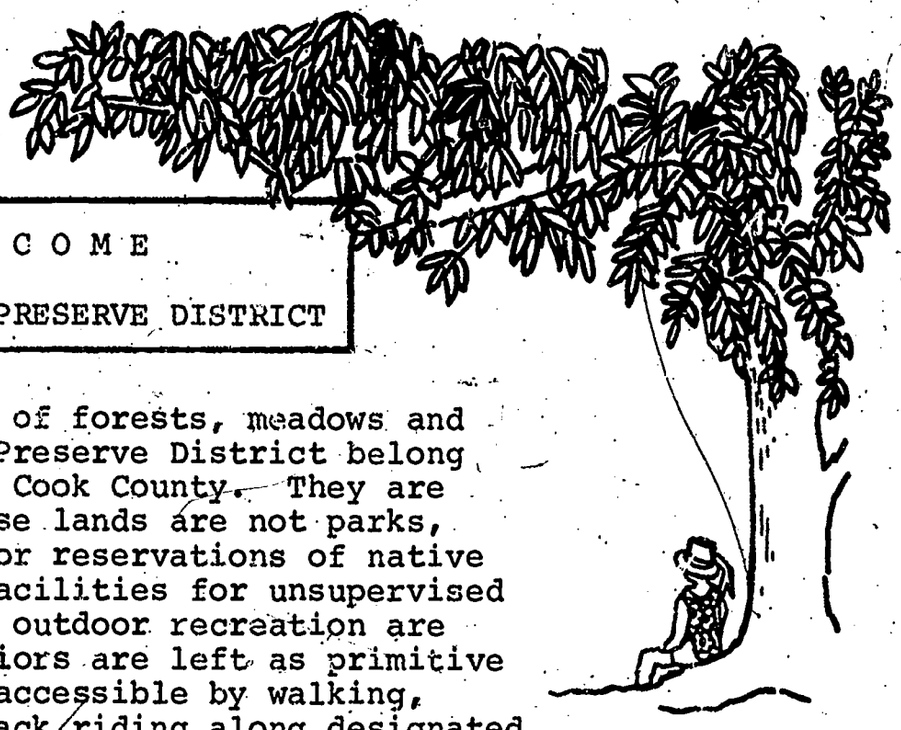
> "Perhaps the most irreversible consequence of... runaway urban expansion is the rapid disappearance of open space.* Because open space is needed to give definition to urban form, maintain ecological balance, provide recreation space, and contribute to economic health, its loss, particularly in light of the increasing demand for its benefits by an exploding population, is critical."
>
> from "Open Space in DuPage County--Love It or Lose It" by the DuPage County Regional Planning Commission
>
> *Open space is defined herein as publicly owned land, less than 1% of which is covered by buildings.

The following sections of this chapter present information on different types of open spaces/green areas.

Forest Preserves/Conservation Districts

In size, variety of facilities and terrain, accessibility, present use, and potential the forest preserve/conservation district areas of these six counties are an invaluable asset. Past, present and future residents of this region owe a tremendous debt of gratitude to the dedicated, visionary individuals who fought over the years to have this land set aside for public use. The battle was far from easy--at times there was strong opposition by special interest groups--but today we benefit greatly from the perseverance of a relatively small number of individuals.

The brochure of the Forest Preserve District of Cook County gives a clear and appealing idea how forest preserve areas in general can be used.



W E L C O M E

TO YOUR FOREST PRESERVE DISTRICT

"The 64,000 acres of forests, meadows and water of the Forest Preserve District belong to all the people of Cook County. They are yours to enjoy. These lands are not parks, but are sanctuaries or reservations of native landscape. Simple facilities for unsupervised appropriate forms of outdoor recreation are provided. The interiors are left as primitive as possible and are accessible by walking, bicycling and horseback riding along designated trails. Motorcycles, motor bikes and other motorized vehicles are not permitted on trails."

"Suggestions for Pleasant Outings" in the following lovely language are given with a map indicating the location of many of the sites.

"Outings in the Forest Preserve District are enjoyable, inexpensive, relaxing and healthful. Hiking along any portion of the 175 miles of trails, winding their devious ways through woodlands and meadows offer a seasonal change of panoramic beauty--a canopy of trees overhead --fields adorned with wild flowers. Hike, but do it slowly--stop occasionally and listen to the pace of the woods, or watch for wildlife at work or play. Wear comfortable clothing and stout walking shoes--carry a candy bar or sandwich in your pocket. Early morning walks are most rewarding. For it is then that the wildlife is most active. An outdoor breakfast is an experience that will not be forgotten.

Other activities may be added to your outings --watch the migration of waterfowl and songbirds in spring and fall...fishing, horseback riding --spring wildflowers along with hawthorn and crabapple bloom time--fall colors and fruits-- or just loaf along the edge of some pond or stream to enjoy the sights and sounds of the wilderness. These are the things that furnish relaxation and give strength to body and soul alike."

Forest Preserve District of Cook County

The District is involved in education for adults

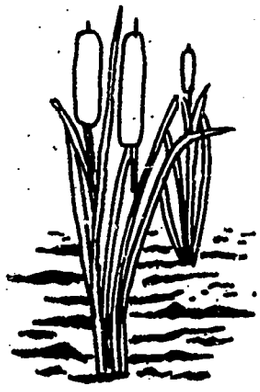
and for children. The adult education program includes field trips, lectures, hiking, and nature trails. Teacher and other adult groups, youth group leaders, and older school groups can hear an introductory talk by a naturalist and then follow labeled trails. Lectures can be arranged for clubs and organizations.

The District indicates that everyone in the county is within a half hour's ride by public transportation from one or more forest preserves. (See the map of sites and list of nature centers on yellow page).

GENERAL INFORMATION

For maps and information on trails, summer or winter sports, outdoor recreation, and nature programs, call 261-8400 or 369-9420, or write:
FOREST PRESERVE DISTRICT OF COOK COUNTY
536 N. Harlem Ave. River Forest, Ill. 60305

THINGS TO DO:



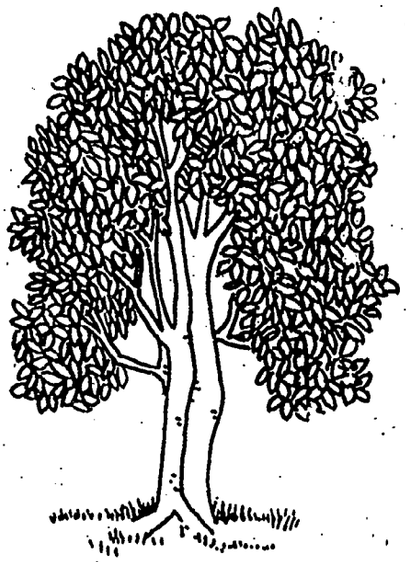
- Urge a group you belong to to plan a program on your forest preserves or take a field trip.
- If you are a teacher, learn more about the District's program of teacher education.
- If you have not done so before, visit one of the five nature centers. (See list on one of the following yellow pages)
- Take an Ecology course at Camp Sagawau, on Route 83 south of the Cal-Sag Channel--open to teachers and others interested in ecology; phone Conservation Department of the Forest Preserve District for information: 369-9420.

The Forest Preserve District of DuPage County

The Forest Preserve District of DuPage County classifies its more than 20 sites as recreational, natural, or historical. One of the recreational areas is Roy C. Blackwell Forest Preserve, where an abandoned gravel pit and surrounding area have been changed by land restoration methods into lakes covering nearly 85 acres and a hill which is the highest point in DuPage County.

The most developed natural area is Fullersburg Woods Nature Preserve, where "The Landing", the District's first environmental education center, is located.

Historic sites include the restored Graue Mill at Fullersburg, which was built in 1852. The mill museum includes rooms with 19th century furnishings,



a general store, part of a barn. Because it was a station on the underground railway and Lincoln stopped there, the Mill has been designated a National Historic Landmark.

Future plans include interpretive programs at the preserves, and restoration of other historic sites such as the Deacon Winslow Churchill cabin and surroundings at the Churchill Woods Forest Preserve.

The District has an educational program for teachers, youth group leaders, and school groups. For the general public there is a summer film series for families at Blackwell. Trails and exhibits at the Landing are open to the general public, various groups, and school classes. There is a school lecture and slide program. The District's Conservation Corps program (CAC) gives conservation leaders 16 years and older ecological and environmental background for projects in the forest preserve and elsewhere. Forest rangers are knowledgeable about environmental problems and can give field trips and lectures. For information on any of these programs, phone the Headquarters for Environmental Education (312) 323-0389.

Forest Preserve District of Kane County

With its diverse areas--meadows, woods, reclaimed pastureland, marshes, and creeks, as well as land along the Fox River--the Forest Preserve District of Kane County offers variety to its users. The initial site of Johnson's Mounds is an example of a "kame", a hill left by glaciers that rises about 200 feet from the surrounding prairie. On the Fabyan site, the Fabyan house, designed by Frank Lloyd Wright, is now a museum. Other areas contain stands of oak, hickory, black walnut, and sugar maple trees.

Under consideration are plans for a naturalist to work with the schools, possible acquisition of other sites, and establishment of a nature center.

Forest Preserve District of Lake County

The Forest Preserve District of Lake County makes every effort "to preserve the beauty of our native landscape", while providing basic facilities for recreation. The forest preserve areas offer a rich variety of bogs, virgin woods, natural prairie land, small lakes, dunes, lands on both banks of the Des Plaines River, and Lake Michigan frontage, many areas with self-guiding facilities.

Naturalists carry on an interpretive program

for the schools and other groups and for the general public at the Ryerson Conservation Area. This area includes a farm with cropland, farmland, and animals; an oak-hickory forest, a maple-basswood climax community, and a transition community. Curriculum materials are available. Arrangements for large groups should be made in advance. See yellow page for details.

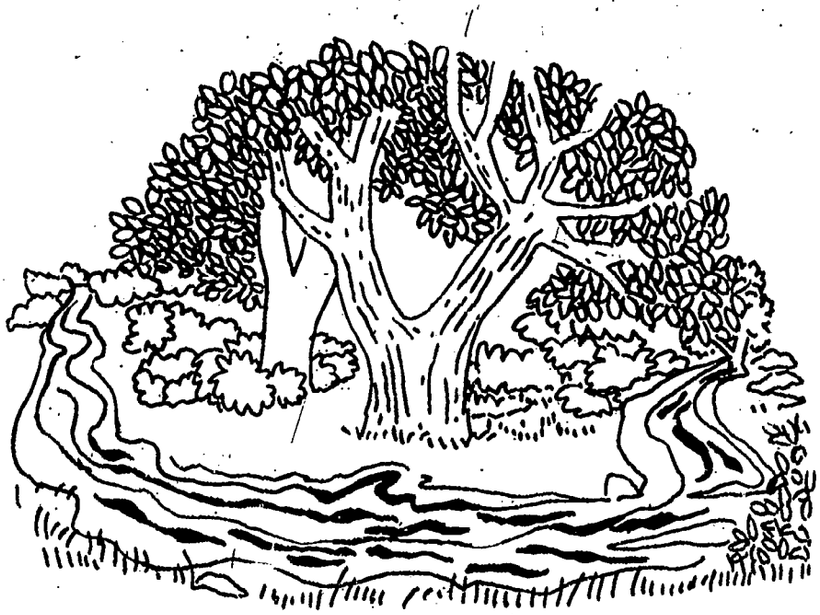
McHenry County Conservation District

For open land acquisition and development, McHenry County has a conservation district, instead of a forest preserve as in the other five counties. With similar over-all goals, the District has some what different legal rights and responsibilities and different taxing and governing body arrangements. This District, approved by public referendum only in April, 1971, already has six sites and an active program of teacher education begun in 1973. This program was initiated by the executive director of the Conservation District with the environmental education coordinators of each school district. The coordinators now carry on their own program.

Forest Preserve District of Will County

A brochure on this District is being printed at this time. For information write or phone:

Forest Preserve District of Will County
14 W. Jefferson
Joliet, Illinois 60431 (815) 729-8400



# Nature Centers of the Forest Preserve District of Cook County

Crabtree (1100 Acres)

Location: Entrance is on Palatine Rd., 1 mile west of Barrington Rd., or 1/2 mile east of Algonquin Rd. (Rt. 62).
Hours: Exhibit Building open 9 a.m. to 5 p.m. daily (9 a.m. to 4 p.m. Nov. 1 to Mar. 1) Parking lot and trails open 8 a.m. to one-half hour before sunset daily. Center closed Thanksgiving, Christmas and New Year's Day.
Of Special Interest: Ecology is the underlying theme. Relationships between plants, animals and their environment are stressed. Emphasis is on the native oak-hickory forests and prairies. Examples of each local plant-animal community can be seen along the nature trails (from 20 to 90 min. long). Also at the center are a resident Canada Goose flock, wildlife observation blinds, wildflowers, prairie and aquatic exhibits.

Little Red Schoolhouse (400 Acres)

Location: West side of Willow Springs Rd. (104th Ave.) 1/2 mile south of 95th St., 1 mile west of Rt. 45.
Hours: Exhibit Building open 9 a.m. to 4:30 p.m. Monday thru Thursday; from 9 a.m. to 5 p.m. Saturday, Sunday and holidays. Parking lot and trails open 8 a.m. to one-half hour before sunset daily. Center closed Fridays, Thanksgiving, Christmas, New Year's Day.
Of Special Interest: Located on Valparaiso terminal moraine, noted glacial feature of northeastern Illinois, and 125 ft. higher than downtown Chicago. Visitors to one-room schoolhouse can view wildlife on Longjohn Slough by telescope. On exhibit are mammals, birds, fish, reptiles, amphibians and invertebrates, seasonal wildflowers, a farm garden, an orchard. Three nature trails offer 15, 30, and 60 minute hikes.

River Trail (350 Acres)

Location: West side, Milwaukee Ave. (Rt. 21), 3/4 mile southeast of River Rd. (Rt. 45), Northbrook.
Hours: Exhibit Building open 8:30 a.m. to 4:30 p.m. Monday thru Thursday; from 9 a.m. to 5 p.m. Saturday, Sunday and holidays. Parking lot and trails open 8:30 a.m. to sunset daily. Center closed Fridays, Thanksgiving, Christmas, New Year's Day.
Of Special Interest: Visitors to center see native mammals, fish, birds, amphibians, reptiles; Indian displays; a pioneer village; a honeybee colony; and seasonal displays in museum. Outdoors are self-guiding nature trails emphasizing ecology of local plant, animal communities. Observable are sugar maple groves and wild woodland flowers, plus year-round flock of ducks on the DesPlaines River.

Sand Ridge (235 Acres)

Location: On Paxton Ave., two blocks north of 159th, South Holland.

Hours: Exhibit Building open 9 a.m. to 4:30 p.m. Monday thru Thursday; from 9 a.m. to 5 p.m. Saturday, Sunday, and holidays. Parking lot and trails open 8 a.m. to sunset, Monday thru Friday; from 9 a.m. to sunset on weekends. Center closed Fridays, Thanksgiving, Christmas, New Year's Day.

Of Special Interest: Center emphasizes natural history of the Calumet region and its relation to the geological past. For visitors are nature trails, the exhibit building and pioneer exhibits which show physical, biological, social, historical relationships of man and his environment.

Trailside Museum (35 Acres)

Location: At Thatcher and Chicago Aves., River Forest.

Hours: OPen 10 a.m. to 5 p.m. daily, except Thursdays, and holidays.

Of Special Interest: For short visits by families, children, small groups. Center has no nature trails. FO9-6530.

Reservations

All school groups must make reservations. Small groups do not need a reservation. All groups of 15 or more must arrange dates by phone. (Call CO1-8400 or FO9-9420). No limit on total size of groups.

Note: The Forest Preserve District of Cook County has so many sites that it is not possible to list them. For information on sites, phone (312) 261-8400 or (312) 369-9420 or write the District at 536 N. Harlem Avenue, River Forest, 60305.

# Forest Preserves

FOREST PRESERVE DISTRICT OF DU PAGE COUNTY



| Name of Site and Location | Acres | Boating | Drinking Water, Toilets | Fishing | Hiking | Historic | Horseback Riding | Shelter | Winter Sports Area | Youth Group Camping | Features |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Belleau Woods | 72.5 | | | | x | | | | | | Undeveloped |
| Roy C. Blackwell | 1235 | x | x | x | | | | | x | | Partially open |
| Bloomingdale Woods | 45 | | x | | x | | | | | | Rich in Wildflowers |
| Churchill Woods | 244 | | x | | | x | | | | x | District Headquarters |
| East Branch Reservoir | 468.5 | | | | x | | | | | | Undeveloped |
| Fischer Woods | 108 | | | x | x | | | | | | Undeveloped |
| Fullersburg | 136 | | x | | x | x | x | | | | Environmental Center: Graue Mill |
| Greene Valley | 1440 | | x | x | x | | x | | | x | Thunderbird Youth Camp |
| Herrick Lake | 555.5 | x | x | x | x | | x | x | x | x | Fishing and Boat Rentals |
| Mallard Lake | 785.5 | | | | | | | | | | Under Construction |
| Maple Grove | 83.5 | | x | | x | | | | | | Mature Maple Woods |
| McDowell Grove | 416.5 | | x | x | x | | | x | x | x | Picnic and Snowmobile Trail |

| Name of Site and Location | Acres | Boating | Drinking Water, Toilets | Fishing | Hiking | Historic | Horseback Riding | Shelter | Winter Sports Area | Youth Group Camping | Features |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pratt's Wayne Woods | 796.5 | | x | x | x | | x | | | x | Lakes and marshes |
| Salt Creek | 79.5 | | x | | | | | x | | x | Area for Large Picnics |
| Timber Ridge | 568 | | | | x | | | | | | Undeveloped Nature Preserve |
| Warrenville Grove | 43 | | x | x | x | | | | | x | Historic dam site |
| Waterfall Glen | 2196.5 | | x | x | x | | | x | | x | Rugged, Scenic Area |
| West Branch Reservoirs | 1105.5 | | | x | x | | | | | | Undeveloped |
| West DuPage | 594.5 | | x | x | x | | x | | x | x | Elsen Hill Winter Sports |
| Willowbrook | 43 | | | | x | | | | | | Wildlife "Hospital" |
| York | 16.5 | | x | | x | | | x | | x | Large Open Picnic Areas |
| Preserves leased to Park District | 205 | | | | | | | | | | |
| Total acreage | 11,283 | | | | | | | | | | |

For further information, phone or write: Forest Preserve District of DuPage County, 881 W. St. Charles Rd. Lombard, Il. 60148 (312) 629-5700

FOREST PRESERVE DISTRICT OF KANE COUNTY



| Name of Site and Location | Acres | Boating | Fishing | Hiking | Historic | Horseback Riding | Shelter | Winter Sports Area | Youth Group Camping | |
|---|---|---|---|---|---|---|---|---|---|---|
| Hampshire: Ketchum Road | 205 | | | x | | | x | x | | Mostly Woods; Favorite Picnic & Hiking Preserve |
| Rutland: Big Timber Road | 60 | | | | x | | x | x | | Rolling Topography; Picnicing & Nature Study |
| Binnie: Binnie Road | 116 | | | | | | x | x | x | Open Land; Large Pond for Waterfowl |
| Algonquin Shores: Winaki Road & Fox River | 2 | x | x | | | | | | | Undeveloped |
| Burnridge: Coombs Road | 215 | | | | | | | x | | Undeveloped |
| Tyler Creek; Rt. 31 | 50 | | x | x | | | x | | | Rolling Meadows; Steep Hillsides; Valley Stream |
| Tollway: Rt. 31 and Fox River | 16 | x | x | | | | x | | | Undeveloped |
| Blackhawk: Rt. 31 & Fox River | 97 | x | x | | | | x | | | Under Development |
| Campton: Rt. 64 | 168 | | | | | x | | x | | |
| Elburn: Rt. 38 | 87 | | | x | x | | x | x | | Open Meadows; Early Trading Post on Oregon Trail |
| Leroy Oakes: Dean Street | 210 | | x | | x | | | x | | Rolling Farm Land, Wooded |
| Lone Grove: Perry Road | 98 | | | x | | | | x | | Winding Creek, Heavy Forest, Open Timber Prairie |
| Johnson's Mound: Hughes Road | 98 | | | x | x | | x | x | | Hill Surrounded by Rolling Prairie, "Kame" |

| Name of Site and Location | Acres | Boating | Fishing | Hiking | Historic | Horseback Riding | Shelter | Winter Sports Area | Youth Group Camping | Features |
|---|---|---|---|---|---|---|---|---|---|---|
| Seminary: Rt. 31 & Fox River | 16 | | | | x | | | x | | Undeveloped |
| Fabyan: on the Fox on Rt. 25 East, Rt. 31 West | 245 | x | x | | x | | x | x | | Frank Lloyd Wright's Fabyan House, now Museum |
| Thorpe: Rt. 31 on Fox River | 14 | | x | | | | | | | Undeveloped |
| Sugar Grove: Bliss Road | 75 | | x | | | | x | x | x | Extensive Picnic Facilities Beside Creek |
| Oakhurst: Fifth Ave. | 213 | | | | | | | | | Undeveloped |

For information write or phone: Forest Preserve District of Kane County, Geneva, Ill. 60134
(312) 232-2400, ext. 278 or 290

# FOREST PRESERVE DISTRICT OF LAKE COUNTY

| Name of Site and Location | Acres | Boating | Drinking Water, Toilets | Fishing | Hiking | Historic | Horseback Riding | Shelter | Winter Sports Area | Youth Group Camping | Interpretive Program | Self-Guiding Trails |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lakewood | 1400 | | x | x | x | | x | x | x | x | x | x |
| Van Patten | 700 | | x | x | x | x | x | x | x | x | | x |
| Ryerson Conservation Area * | 550 | | x | | x | x | | | | | x | x |
| Captain Daniel Wright | 414 | | x | x | x | x | x | x | x | x | | x |
| Spring Bluff | 330 | | x | x | x | | | x | x | | | |
| Gurnee Woods | 113 | | | | x | | | | | | | |
| Wilmot Woods | 108 | | | | x | | | | | | | |
| Gander Mountain | 36 | | | | | | | | | | | |
| Berkeley Prairie | 18 | | | | | | | x | | | | x |
| Des Plaines River Project | 3500 | | | x | x | x | | | | | | |

* small groups Friday, Saturday, Sunday: 10 a.m. to 5 p.m.; other groups need special permit (phone District office) to arrange program. (312) 945-0440.

For further information write or phone Forest Preserve District of Lake County, County Building, Waukegan, Il. 60085. (312) 689-6000.

## MC HENRY COUNTY CONSERVATION DISTRICT



| Name of Site and Location | Acres | Boating | Drinking Water, Toilets | Fishing | Hiking | Historic | Horseback Riding | Shelter | Winter Sports Area | Youth Group Camping | Features |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Harrison-Benwell Conservation Area: McCullum Lake Rd. | 80 | | | | x | | | | | x | |
| Joslyn Woods: Mason Hill and Valley Hill Roads | 50 | | | | x | | | | | | Site of Annual County Daffodil Walk, Last Week in April. |
| Deep Cut Marsh Wildlife Refuge: Deep Cut Road | 20 | | | | x | | | | | | Yellow-headed Blackbird Sanctuary and Water Bird Refuge. |
| Beck's Woods-Piscasaw Conservation Area: Rt. 173 | 50 | x | | x | x | | | | x | x | |
| Kunde Woods-Marengo Ridge Conservation Area: Rt. 23 | 80 | | | | x | | | | | x | |
| Burrow's Woods-Rush Creek Conservation Area | 200 | | | x | x | | | | | x | |

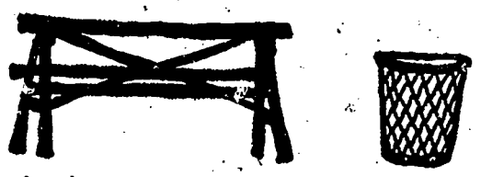
For information write or phone: McHenry County Conservation District office, 142-4 Washington St., P.O. Box 502, Woodstock, Il. 60098. (815) 338-1405.

# FOREST PRESERVE DISTRICT OF WILL COUNTY



| Name of Site and Location | Acres | Drinking Water, Toilets | Boating | Fishing | Hiking | Historic | Horseback Riding | Shelter | Winter Sports Area | Youth Group Camping | Features |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Gerdes Woods | 8.2 | x | | | x | | | x | | | |
| Wayne Lehnert Preserve | 80 | | | | | | | | | | Undeveloped |
| Raccoon Grove | 57.7 | x | | | x | | | x | | | Potential nature preserve |
| Plum Grove | 86.6 | x | | | x | | | x | | | |
| Forsythe Woods | 108 | | | | | | | | | | Undeveloped |
| Thorn Creek Woods | 112 | | | | | | | | | | Being acquired - undeveloped |
| Veterans Memorial Woods | 75 | x | | | x | | | x | | | |
| Des Plaines River Valley | 163 | | | | | | | | | | Being acquired - undeveloped |
| Runyon Preserve | 20.9 | x | | | x | | | x | | | |
| Lamb Woods | 75 | x | | | x | | | x | | | |
| Messenger Woods | 206 | x | | | x | | | x | | | Potential nature preserve |
| Hammel Woods | 151.3 | x | | | x | | | x | | | |
| Spring Creek | 93 | | | | | | | | | | Undeveloped |
| Joseph Zalar Preserve | 30 | | | | | | | | | | Undeveloped |
| Van Horne Woods | 131.1 | x | | | x | | | x | | | |
| Valley View | 24 | | | | | | | | | | Undeveloped |
| Hunters Woods | 41 | | | | | | | | | | Second half being acquired |
| McKinley Woods | 242.2 | x | | | x | | | x | | | |

For information, write or phone: Forest Preserve District of Will County, 14 W. Jefferson, Joliet, Il. 60431, (815) 729-8400.



## Local Parks

Local park districts have been broadening their horizons. Moving from more limited goals of providing playgrounds, picnic areas, ball fields, and perhaps a few other facilities, many park programs now are varied and appeal to people with many different interests. A year-round activity program is offered, in some places, in cooperation with the schools using school facilities after hours and in summer. Such cooperation between different governmental agencies is most encouraging. Programs may include:

- garden plots made available on park land
- centers for senior citizens, some including hot noon meals
- activity programs for all ages with such varied offerings as sports, crafts, field trips, drama, and nature study
- family movies in the park

To acquaint yourself with the facilities of your local park district, get the phone number from your phone book. You may want to learn:

- what sort of a program your local park district offers
- if it is well used
- if the sites are easily accessible to people in the area
- if the district has enough open space
- whether your park district needs public support for acquiring more land or enlarging their program;
- if so, what might you do to help?

## Chicago Park District

The Chicago Park District has 7,000 acres of open space, 29 miles of lake and harbor frontage with beaches, over 100 swimming pools, hundreds of tennis courts, several golf courses, 2 stadiums, and Lincoln Park Zoo. It sponsors a variety of youth recreational activities, senior citizens programs, arts and crafts, competitive sports, olympics for the mentally retarded, and other activities. (For information on Park District sites, see the yellow pages.)

## State Parks and Conservation Areas

Are you aware of the variety of facilities in the several state parks and state conservation areas in northeastern Illinois? Information on these areas is contained in a general brochure covering the entire state as well as in brochures on the individual sites. These may be obtained by writing: The Department of Conservation, Division of Education, State Office Building, Springfield, Ill. 62706.

State areas in the six counties offer a variety of terrain and facilities. (See yellow page for information on facilities.)

Chain O'Lakes State Park:

In McHenry and Lake counties, west and south of Antioch, northeast of McHenry and northwest of the village of Fox Lake--about 1,700 acres, primarily water and swampland; contains Illinois' largest concentration of natural lakes.

Illinois Beach State Park:

In Lake County between Waukegan and Zion, east of State Route 42--over 1,600 acres along Lake Michigan; has varied terrain including sandy beach, low sand ridges covered with black oaks; prairie and marsh; and many rare and unusual trees and plants; park has five-day recreation program; naturalist works with school groups.

Illinois-Michigan Canal State Park:

A new state park encompassing a large portion of the Illinois and Michigan Canal, which stretched for 95 miles, connecting the Illinois River near LaSalle-Peru with Lake Michigan at Chicago; existing recreational opportunities include bicycling, hiking, canoeing, picnicing, camping, and wildlife observation. Watch for further developments; for more information, write Illinois Department of Conservation, State Office Building, Springfield, Il. 62706.

Laurence C. Warren State Park:

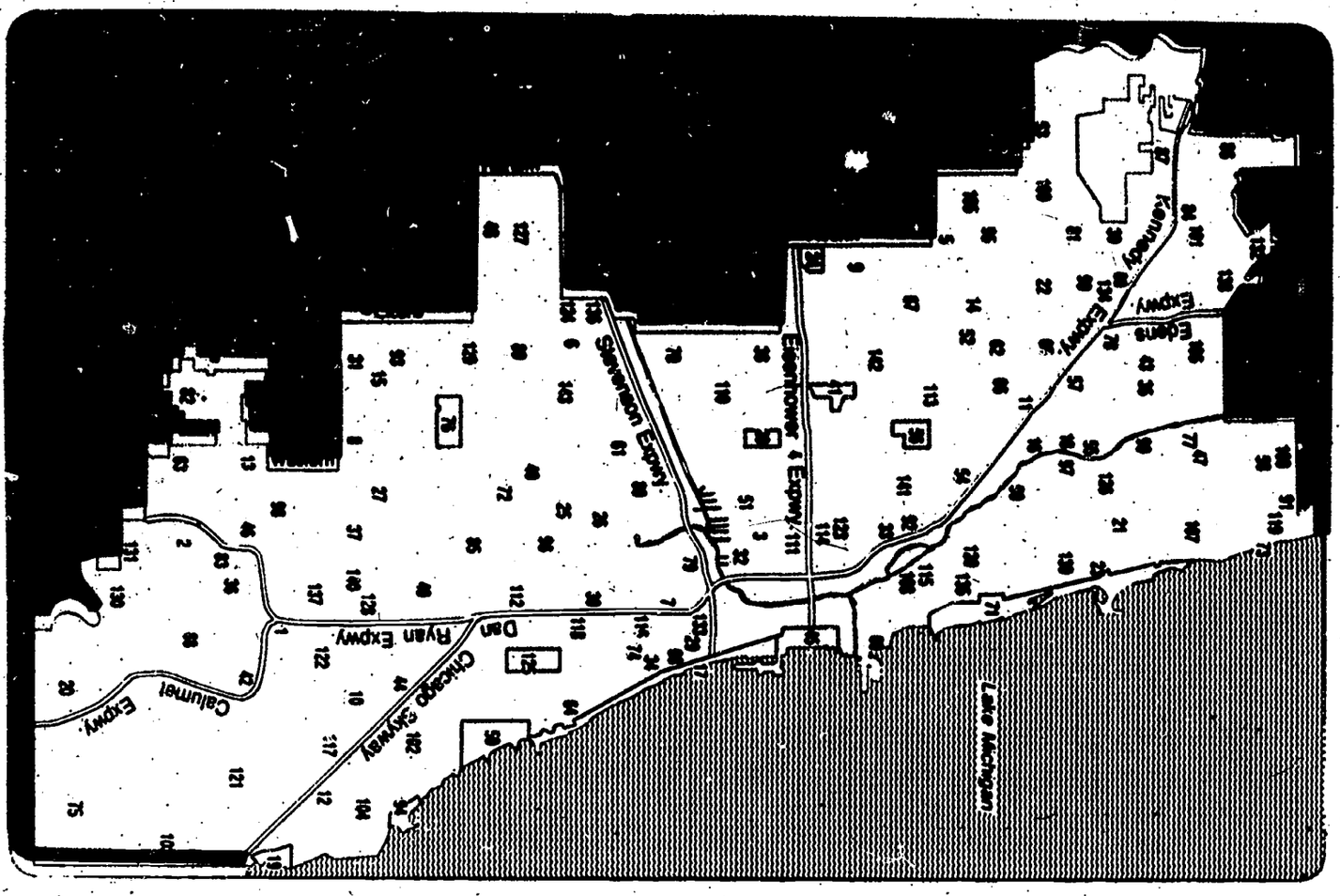
2045 W. Pratt, Chicago, Ill. 60645. 764-5445.

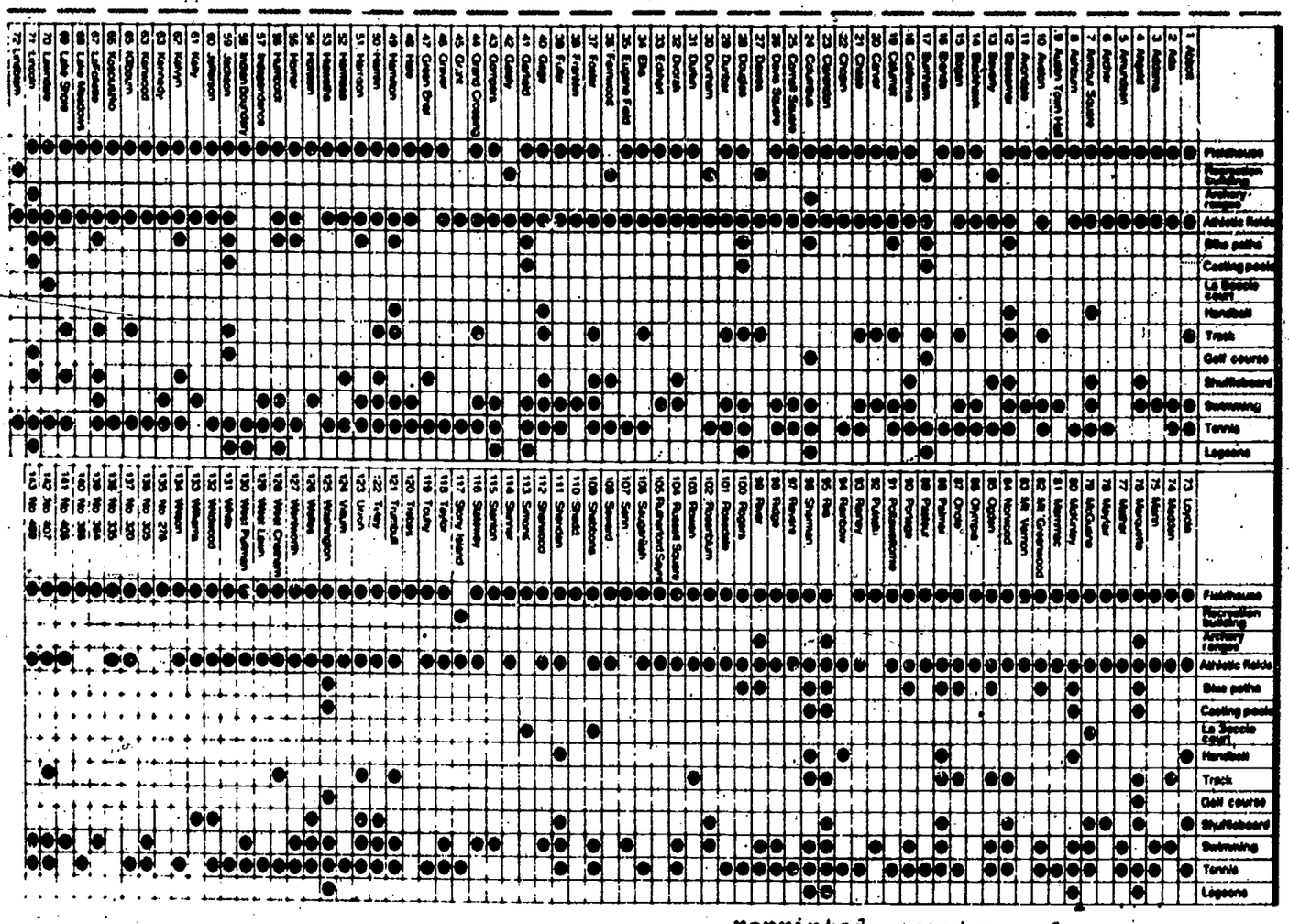
McHenry Dam State Park:

A few miles south of McHenry on the Fox River.

William W. Powers Conservation Area:

In Chicago, off highways 90 and 41, northeast of 130th Street and Brainard Ave. on Avenue O; 580 acres, including 419 acres of water; fishing areas stocked with many kinds of fish; for further information contact; Ranger, 12800 Ave. O, Chicago, Il. 60633; (312) 646-3270.

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# State Parks



| Name of Site and Location | Chain O'Lakes | Bluff | Catherine Channel | Grass | Marie | Fox | Nippersink | Petite | Pistakee | Illinois Beach | Laurence C. Warren | Kankakee River | McHenry Dam |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Boating | x | x | x | | x | | x | | x | x | | x | x |
| Boat Ramp | x | | | | | | | | | | | | x |
| Boat Rental | x | | | | | | | | | | | | x |
| Camping Sites | 300 | | | | x | | | | | 1000 | | 100 | |
| Electricity | x | | | | | | | | | x | | x | |
| Cabins, Hotel, Lodge | | | | | | | | | | x | | | |
| Drinking Water | x | | | | | | | | | x | x | x | x |
| Firewood | x | | | | | | | | | | | | |
| Fishing | x | x | x | | x | | x | | x | x | | x | x |
| Hiking | x | | | | | | | | | x | x | x | |
| Historic Sites | | | | | | | | | | | | | |
| Horses | x | | | | | | | | | | | x | |
| Hunting | | | | | | | | | | | | | |
| Picnic Area | | | x | | | | | | | | x | | x |
| Playground | x | | | | | | | | | x | | x | |
| Refreshments | x | | | | | | | | | x | | x | x |
| Sanitary Station | x | | | | | | | | | x | | x | |
| Showers | | | | | | | | | | x | | | |
| Swimming | | | | | | | | | | x | | | |
| Summer Interpretive Prog. | x | | | | | | | | | x | | x | |
| Tables/Stoves | x | | | | | | | | | x | | x | |
| Year-Round Interpretive Pr. | | | | | | | | | | x | | | |
| Toilets | x | | | | | | | | | x | | x | |

STATE PARKS

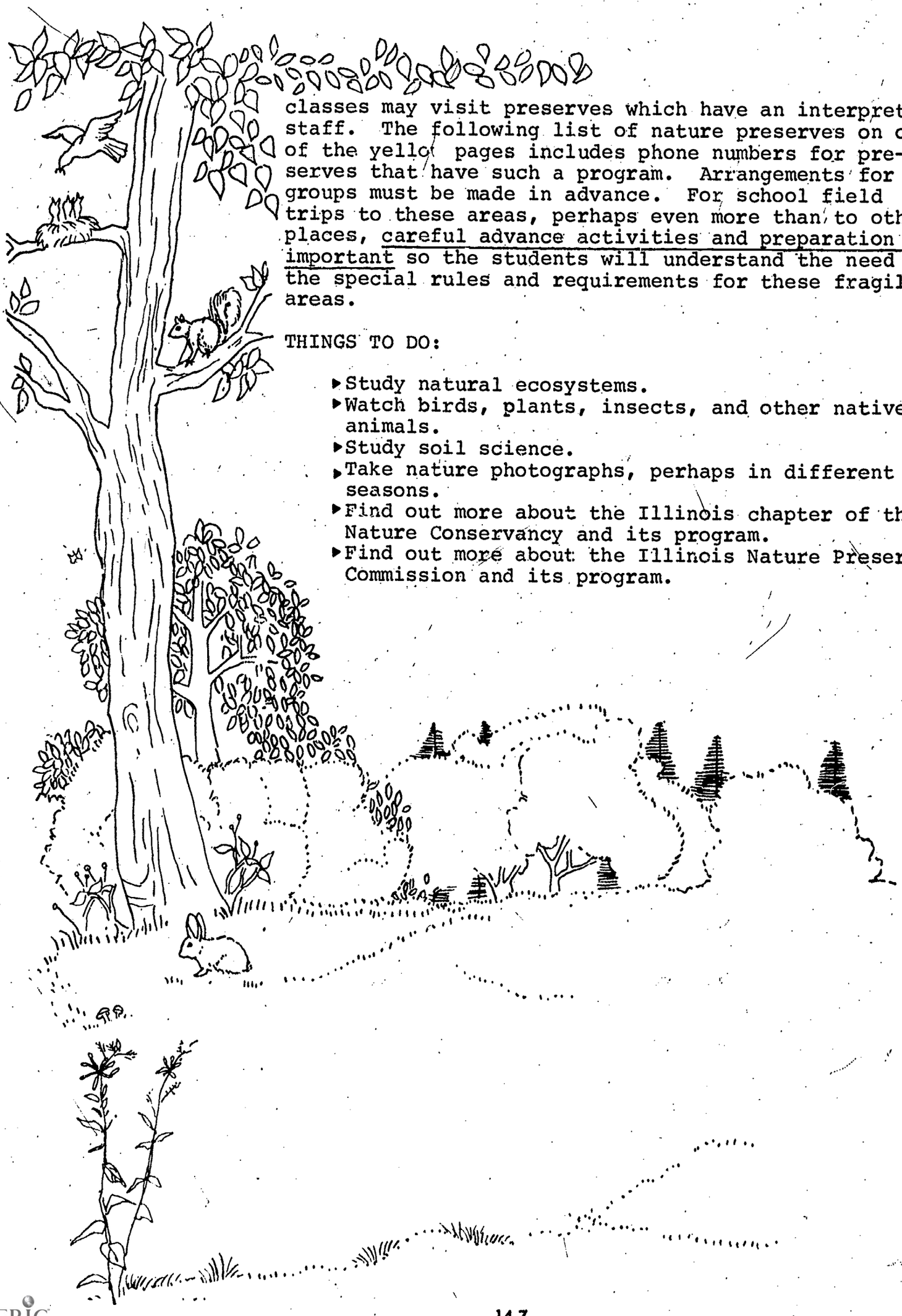

Nature Preserves

Fens--peat bogs--tamarack bogs--upland forest--prairie--these are a few of the terms used to describe some of Illinois' nature preserves. Perhaps these terms are unfamiliar to you or known only through books or perhaps known first-hand and loved. Whatever your previous experience, you may want to visit some of these natural eco-systems.

Nature preserves, as you may know, are areas of land or water, in private or public ownership, that must be maintained in their natural condition. They must be to some extent untouched or "have flora, fauna, geological or archeological features of scientific or educational value". Thought of as living museums, they are examples of the rich natural heritage of Illinois, so little of which is left, so much having given way to agricultural, urban, and industrial development.

In these nature preserves, as you might expect, the preservation of the natural ecosystems is the primary consideration. Since many parts of the preserves are fragile, irreplaceable environments, use is limited. (In contrast, parks and forest preserves are oriented to public recreation.) In nature preserves one can hike by staying on marked paths and observe nature, except in some especailly sensitive sections where even these activities are restricted. In addition, scientific and educational use is allowed, again only if natural conditions are not altered.

Groups such as primary and secondary school



classes may visit preserves which have an interpretive staff. The following list of nature preserves on one of the yello( pages includes phone numbers for preserves that have such a program. Arrangements for groups must be made in advance. For school field trips to these areas, perhaps even more than to other places, careful advance activities and preparation are important so the students will understand the need for the special rules and requirements for these fragile areas.

THINGS TO DO:

- Study natural ecosystems.
- Watch birds, plants, insects, and other native animals.
- Study soil science.
- Take nature photographs, perhaps in different seasons.
- Find out more about the Illinois chapter of the Nature Conservancy and its program.
- Find out more about the Illinois Nature Preserves Commission and its program.

# Nature Preserves



NATURE PRESERVES OF COOK COUNTY

All Cook County preserves have labeled nature trails. Short descriptions of native plants and wildlife are found throughout these trails. They also have short presentations, given by naturalists, upon request.

Black Partridge Woods Nature Preserve (80 Acres)

Location: On the north side of Bluff Road northwest and across the Des Plaines River valley from Lemont:
Natural Division and Section: Morainal Section of the Northeastern Morainal Division.
Natural Features: River bluffs and ravines with mesic forest of sugar maple, basswood, red oak and white oak with some bur oak, elm and ash along the stream. Skunk cabbage and marsh marigold grow in seep springs. The area includes a springfed stream with sculpins and other fishes. There are bedrock outcrops in the streambed.
Ownership and Access: Owned and managed by the Cook County Forest Preserve District, River Forest, Ill. A parking area and trails are provided.

Busse Forest Nature Preserve (440 Acres)

Location: North of Higgins Road (Route 72), between Salt Creek and the forest preserve entrance drive.
Natural Division and Section: Morainal Section of the Northeastern Morainal Division
Natural Features: A rich forest of oaks, sugar maple and basswood on upland sites and swamp white oak and ash on flat and poorly drained areas. Marshes occur in the larger depressions. There is an abundance of wildflowers and shrubs, including large numbers of large-flowered trillium.
Ownership and Access: Cook County Forest Preserve Dist., River Forest, Ill. Parking is available and some trails are developed.

Cap Sauers Holdings Nature Preserve (1,520 Acres)

Location: West of 104th Ave., south of Route 83 to Ford Road and McCarthy Road (123rd St.)
Natural Division and Section: Morainal Section of the Northeastern Morainal Division.
Natural Features: Upland forest, marsh, intermittent streams, ponds and moraine topography are represented. The vegetation includes second-growth oak-hickory forest, thickets and marshes on rolling topography. The Visitation Esker, one of the best defined in the Chicago region, is on the preserve.
Ownership and Access: Owned by the Cook County Forest Preserve District, River Forest, Ill. Trails have been developed and parking is available at Teason's Woods on the east side of 104th Avenue.

Cranberry Slough Nature Preserve (400 Acres)

Location: West of Mannheim Road (U.S. 45) and south of 95th Street.
Natural Division and Section: Morainal Section of the Northeastern Morainal Division.
Natural Features: A peat bog containing communities of cat-tail, bluejoint grass, European buckthorn, button-bush and sphagnum-hardback is the main feature. Upland forests of bur oak and white oak grow on the rolling topography. Unusual plants include royal fern, purple chokeberry and possibly cranberry. Beaver are present.
Ownership and Access: Owned by the Cook County Forest Preserve District, River Forest, Ill. Trails are developed and parking is available at Belly Deep Slough.

Gensburg-Markham Prairie (120 Acres)

Location: 20 miles south of down town Chicago within village limits of Markham.
Natural Features: Unplowed virgin prairie with 16 inches of topsoil; 250 species of wild grasses and flowers.
Ownership and Access: Northeastern Illinois University. Limited access. Phone Dr. Robert Betz, 583-4050, ext. 704.

Jurgensen Woods North Nature Preserve (120 Acres)

Location: South of 183rd Street, east of forest preserve entrance drive and west of Calumet Expressway.
Natural Division and Section: Chicago Lake Plain Section of the Northeastern Morainal Division.
Natural Features: A wet-mesic oak forest. Notable species include black gum, purple chokeberry, cinnamon fern and low blueberry.
Ownership and Access: Owned by the Cook County Forest Preserve District, River Forest, Ill. Parking is provided and trails have been developed.

Paw Paw Woods Nature Preserve (105 Acres)

Location: On both sides of Archer Avenue, from 95th St. to the Gulf, Mobile and Ohio Railroad west of Fairmont Cemetery.
Natural Division and Section: Morainal Section of the Northeastern Morainal Division.
Natural Features: The area contains some of the south bluff and floodplain of the Des Plaines River valley. The forest is of red oak, sugar maple and white oak on the slopes; black oak and white oak on the ridgetops; and elm and bur oak on the floodplain.
Ownership and Access: Owned by the Cook County Forest Preserve District, River Forest, Ill. No parking or trails have been developed.

Salt Creek Woods Nature Preserve (245 Acres)

Location: South of 31st Street, east of Wolf Road and north and west of Salt Creek.
Natural Division and Section: The Morainal Section of the Northeastern Morainal Division.
Natural Features: The area contains upland forest, floodplain forest, small ponds and Salt Creek. The upland forest includes bur oak, white oak, red oak, and black oak with some basswood and hickory. The small floodplain contains silver maple, elm and cottonwood.
Ownership and Access: Cook County Forest Preserve District, River Forest, Ill. Trails are developed. Visitors should park at Bemis Woods.

Sand Ridge Nature Preserve (70 Acres)

Location: East of Torrence Ave., west of Penn Central Railroad, north of Michigan City Road and south of Pulaski Road (134th Street).
Natural Division and Section: The Chicago Lake Plain Section of the Northeastern Morainal Division.
Natural Features: The area consists of long ridges and low swales of lakeshore deposited sands. The vegetation consists of prairie of little bluestem, June grass and porcupine grass in dry areas and of bluejoint grass and cord grass in wet areas. There are some black oak trees on the ridges. Many prairie wildflowers are present, including fringed gentian, closed gentian, prairie dock, cream false indigo and blazing star.
Ownership and Access: Cook County Forest Preserve District, River Forest, Ill. No parking or trails have been developed.

Shoe Factory Road Nature Preserve (8 Acres)

Location: On the south side of Shoe Factory Road, midway between Sutton Road (Route 59) and the Elgin, Joliet and Eastern Railroad, in Hanover Township.
Natural Division and Section: The Morainal Section of the Northeastern Morainal Division.
Natural Features: A gravel hill prairie consisting of little bluestem, side-oats grama, and porcupine grass with some big bluestem and Indian grass and with numerous prairie forbs.
Ownership and Access: Cook County Forest Preserve District, River Forest, Ill. Access is by permission of the naturalist at Crabtree Farm Nature Center.

Spring Lake Nature Preserve (560 Acres)

Location: Bounded by Donlea Road, Cook-Lake County Line Road, Bateman Road, and Sutton Road.
Natural Division and Section: The Morainal Section of the Northeastern Morainal Division.
Natural Features: The vegetation includes bur oak forest on steep slopes; extensive marshes of cat-tail, blue-joint grass and bulrushes; and some mesic prairie and fen. Aquatic habitats include Spring Lake, streams and marshes. The topography includes a broad valley bounded by low morainal ridges.
Ownership and Access: Cook County Forest Preserve District, River Forest, Ill. No parking or trails have been developed.

Thornton-Lansing Road Zanders Woods Nature Preserve (440 Acres)

Location: South of 183rd Street and Thorn Creek (Schwab) Road, south of Thornton-Lansing Road and west of Calumet Expressway.
Natural Division and Section: The Chicago Lake Plain Section of the Northeastern Morainal Division.
Natural Features: Forest, sand prairie and marsh. The vegetation includes mesic oak woods, black oak on sand, cattail-bulrush marsh and wet sand prairie. Unusual shrubs and wildflowers present include sassafras, sweet-fern, lupine, sour gum and several orchids.
Ownership and Access: Cook County Forest Preserve District, River Forest, Illinois. Parking is available along Zanders Road, but no trails have been developed.

Woodworth Prairie (Formerly Peacock Prairie) (5 Acres)

Location: In Glenview on Milwaukee Ave. (Route 21).
Natural Features: A remnant of original black soil Illinois prairie. More than a hundred varieties of mesic prairie plants.
Ownership and Access: University of Illinois Circle Campus. Limited access. Contact Dr. Rouffa, (312) 996-8673.

This information is taken from "A Directory of Illinois Nature Preserves" prepared by the Illinois Department of Conservation and the Illinois Nature Preserves Commission, December, 1972.

# NATURE PRESERVES OF LAKE COUNTY

## Edward L. Ryerson Nature Preserve (150 Acres)

Location: Northwest of Riverwoods, between Riverwoods Road, Deerfield Road and the Des Plaines River.
Natural Division and Section: Morainal Section of the Northeastern Morainal Division.
Natural Features: An old growth forest of white oak, black oak, red oak, sugar maple, white ash, bur oak and silver maple within the Des Plaines River valley. Several large hackberry and black walnut trees are present. The forest supports a luxuriant spring flora including an abundance of large flowered trillium.
Ownership and Access: The area was donated to the Lake County Forest Preserve District by Edward L. Ryerson and others. Access if from Aptakisic Road. The Forest Preserve District is developing parking and trails.

## Illinois Beach Nature Preserve (829 Acres)

Location: On Lake Michigan north of Waukegan, south of Illinois Beach State Park Lodge and east of the Chicago and Northwestern Railroad.
Natural Division and Section: Lake Michigan Dunes Section of the Northeastern Morainal Division.
Natural Features: The preserve includes beach, dunes and laternating sand ridges and swales. The drier ridges support a scrub black oak community while the lakeshore dunes are dominated by bear berry and trailing juniper. Sand prairie dominates most of the low ridges and swales. Aquatic communities include vast cat tail marshes, wet sedge meadows, the Dead River and Lake Michigan. Rare flowers include the downy yellow painted cup, shrubby cinquefoil and many orchids. The preserve includes a grove of pine trees planted about the turn of the century. The preserve provides excellent wildlife habitat and is an important refuge for migrating birds.
Ownership and Access: The area is owned by the Department of Conservation. Parking is provided just south of the Illinois Beach Lodge and trails have been developed.

## Volo Bog Nature Preserve (48 Acres)

Location: Two miles northwest of Volo. May be reached by proceeding 1.2 miles north of Volo on U.S. 12, then 1.4 miles west on Sullivan Lake Road, then 0.3 miles north and east on Brandenberg Road.
Natural Division and Section: The Morainal Section of the Northeastern Morainal Division.
Natural Features: Vegetation includes a tamarack bog, floating bog mat, shrub community, marsh with cat tail, sedges, bluejoint grass and an open water area. This is the only bog in Illinois that contains a well developed tamarack forest and all prior stages of bog succession. There are many unusual plants characteristic of bogs, including sphagnum moss, cotton sedge, buckbean, pitcher

plant, winterberry, poison sumac, leather leaf and cinnamon fern.

Ownership and Access: Owned by the Department of Conservation. A parking area and trail are provided and access is controlled by a watchman during the summer months. This area was originally acquired by the Nature Conservancy in 1958.

Wauconda Bog Nature Preserve (67 Acres)

Location: On the south side of the village of Wauconda, east of Rand Road.

Natural Division and Section: The Morainal Section of the Northeastern Morainal Division.

Natural Features: This is a bog in the old-age stage of bog development that contains no open water areas. Some areas are dominated by shrubs, others by cat tails and still others by tamarack. There are several rare plants including native orchids. Wildlife includes marsh wrens and several species of rails.

Ownership and Access: Owned by the Department of Conservation. No access has been developed. The tract was acquired by the Nature Conservancy in 1958. It was subsequently deeded to the University of Illinois. The University transferred it to the Department of Conservation at the time of dedication.

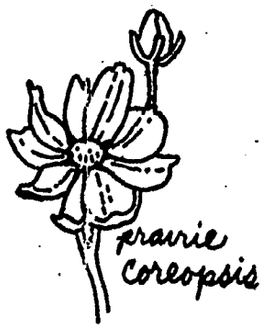
This information is taken from "A Directory of Illinois Nature Preserves" prepared by the Illinois Department of Conservation and the Illinois Nature Preserves Commission, December, 1972.

## Prairies

Shut your eyes and try to picture the vast open expanses of flowering plants and grasses that once covered this part of our country. These prairies probably existed here for thousands of years. Actually, prairies (referred to as grasslands) have covered large areas in many parts of the world. At one time about one-fourth of the entire planet was covered by grasslands. Such lands receive less rainfall than the forested land and are subject to drier winds In Illinois the prairie areas were mixed with areas of forest, mostly oak and hickory in the upland areas. Such treed parts were called "oak openings".


The prairie was the habitat of a very rich variety of plants and animals. Each species of living thing has a job to do, occupies its own niche in the community--a general characteristic of communities. The prairie was a stable community, composed mostly of perennial plants. The grasses and other species were long-lived, an individual plant lasting from ten to twenty or more years. The grasses had deep, well-developed root systems, some of which penetrated 12 feet or more, with up to 75% more bulk below ground than above! These deep roots made it possible for the prairie plants to survive dry periods, extremes of climate, and prairie fires--but they could not survive the plow and heavy grazing which came with the settlers and which caused the prairie to be replaced by crops and by weeds from Europe and Asia.

*Compare soil profiles of a deciduous forest and a tallgrass prairie.*




The Chicagoland prairie can be divided into high prairie and low prairie. The high prairie was found on well-drained upland soils. Here some grasses grew so tall that it took a man on horseback to see over them. For example, big bluestem reached 6-10 feet or more, Indian grass 5 feet, and switch grass 4 feet and little bluestem to 3 feet. Broad-leaved plants (forbs) common to high prairies, and familiar to us today, included asters, goldenrod, and sunflowers. Less well-known to us were pasque flower, prairie smoke, the purple coneflower, prairie cinquefoil, lead plant, and tall coreopsis. Some large forbs, easy to see and to recognize, were the prairie dock, whose flower tops might reach 8 feet, the compass plant, which grew to 7 to 9 feet, and the low, 3 foot, rattlesnake master--all good prairie indicators. These plants tend to be present today only in prairies that have never been plowed or excessively grazed.


The low prairie was wet in spring. Its dominant plants included sedges. Where high and low prairie ground met, a very important indicator plant grew.


It was sawgrass or cord-grass, whose leaves, as the name implies, have a sharp edge. This was the grass cut and used for roof thatching on early log cabins.

Occasionally there were prairie grove (openings) of bur oaks. These trees, which reached heights of 150 or more feet, are the tallest of our oaks. They have a thick fire-resistant bark which enabled them to withstand the prairie fires.

Butterflies, bumble bees, and many other insects --beetles, aphids, moths, wasps, hornets, and others, as well as their larvae in the form of grubs and caterpillars--were part of the world of the prairie. Ants played a very important role in vertically working prairie soils, often to depths of 9 to 10 feet. Such action, stretched over the formation of prairies, a time span of eight to twelve thousand years, becomes very significant. Spiders, too, were part of prairie life.

*Learn about the prairie food pyramids.*

The climax prairie community included many small vertebrates. Ground squirrels, badgers, foxes, moles, and pocket gophers loosened and aerated the soil as they dug their tunnels. Mice were everywhere. Seed and fruit eaters themselves, they were food for many of the birds, snakes and other prairie animals. The prairies of our six-county area were in the heart of some of the best white-tailed deer ranges in North America. Even larger mammals, bison and elk, roamed the prairies of the Midwest. One can easily see what the concept, "flow of energy" means when applied to the prairie community. Frogs and salamanders ate insects and in turn were eaten by snakes and birds, which were eaten in turn by other animals. All died and returned to the land.


Birds of the high prairie included the prairie chicken, marsh hawk, short-eared owl, meadow larks, horned larks, boblinks, several kinds of sparrows, upland plover (upland sandpiper), killdeer (a kind of plover), and cowbirds. The latter followed the buffalow and later the cattle, picking up insects stirred by the animals' hoofs as well as eating ticks and other insects from a perch on the backs of the animals.

In the low, wet prairies, marsh wrens, red-winged blackbirds, many kinds of ducks, sandhill cranes, rails and a few other species flourished. Prairies were intermixed with many ponds and marshes.

Nowhere today is there a prairie plant-animal community as it existed in early times. Some of the creatures have died out completely. Long ago bison roamed the prairies as far east as Pennsylvania, but

were exterminated in most areas by excessive hunting, the last great bison herds of the western plains disappearing in the 1880's. Mass killings for the hides, with the rest of the animal left unused, led to virtual extinction. Prairie chickens have also disappeared.

Have these vast prairie areas completely disappeared? Not completely--but very little of original prairie is left. Now a rare and vanishing community, few prairie remnants are being protected and set aside for study. There are man-made prairies in "restoration" projects. Camp Sagawau in Cook County Forest Preserve and the Morton Arboretum have restored prairies, and a prairie project of some 800 acres was started in 1974 at the Fermi National Accelerator Laboratory in DuPage and Kane Counties, near Batavia.

You may wonder if it is possible to visit a prairie. Because of the fragile nature of these ecosystems, most small native prairie remnants cannot be opened to the public or to large groups, but fortunately for those of you who would like to experience a prairie, there are a few you can visit. These are described in the list on the following yellow page.

In several locations in the six counties, local citizens have cooperated with the Open Lands Project and the Illinois chapter of the Nature Conservancy to save prairie remnants. If you are interested in working with such a group, phone Open Lands Project, (312) 427-4256, to learn what groups are working currently to save a prairie remnant.

To truly gain appreciation for a prairie, you need to visit it in spring, summer, and fall to become familiar with the different seasonal aspects. Generally, each kind of prairie flower blooms for about two weeks, providing color from late April through early November and the prairie changes continuously during this time.

BOOKS TO ENJOY:


Allen, Durward L.; The Life of Prairies and Plains. McGraw-Hill, 1967. Junior high to adult.

Korling, Torkel; Prairie: Swell and Swale. Dundee, Ill. 1972. Includes essay by Dr. Robert Betz, Professor of Biology at Northeastern Illinois University.


*Learn more about the dependence of the Plains Indians on the buffalo.*

*Did You Know?*

*That the bison hunters who were men selected the vigorous young animals and the cows while wolves fed on overage and ailing animals, thus improving the quality of the herd?*


# Prairies

Illinois Beach State P[illegible]

Between Waukegan and Zion in Lake County, east of State Route 42, contains sand prairie which covers most of the low ridges and swales (marshy meadows).

Illinois Prairie Path

Since the railroads acquired land when this region was still prairie, remnants of prairie may be found along many railroad rights-of-way. Such a ribbon-remnant area is the Illinois Prairie Path which follows the former Chicago, Aurora, and Elgin Railway right-of-way from Elmhurst to Wheaton in DuPage County, then branches to Elgin and to Aurora (with a spur to Batavia) in Kane County. The Path is a natural science laboratory, a bird observatory, a 40-mile long trail, a major part of which was designated in 1971 as a "Recreation Trail of the National Trails System". The Kane County portion is leased to the Forest Preserve District in that county. In DuPage County, various segments are maintained and developed by more than 40 groups and individuals, each having adopted a segment to manage. For trail guide or additional information, write to Illinois Prairie Path, P.O. Box 1086, 616 Delles Rd. Wheaton, Il. 60187.

Sand Ridge Nature Preserve

Part of the Cook County Forest Preserve District, this area has a prairie of little bluestem, June grass, and porcupine grass in dry areas and bluejoint and cord grass in wet areas. This nature preserve is located east of Torrence Avenue, west of Penn Central Railroad, north of Michigan City Road and south of Pulaski Road (134th Street).

Shoe Factory Road Nature Preserve

Also a nature preserve of the Cook County Forest Preserve District, with a prairie. It contains little bluestem, side oats grama, and porcupine grass with some big bluestem and Indian grass and numerous prairie forbs. The prairie is fenced and permission is required for entry.

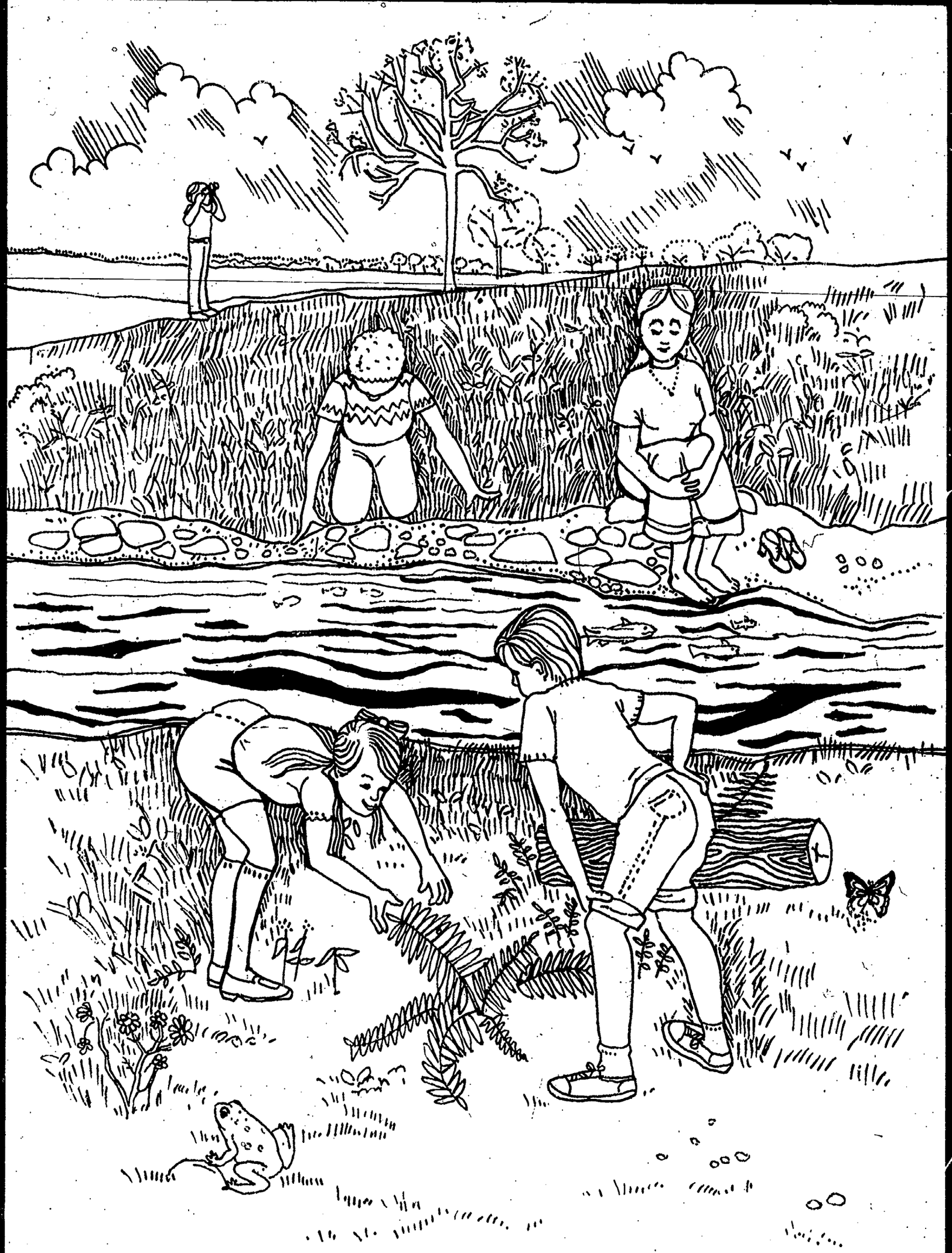
Morton Arboretum

The Morton Arboretum prairie restoration project was initiated in the spring of 1963 and planting was continued until 1972. A "restored" prairie of at least 10 acres has been established with well over 100 different species of plants. It is representative of the kinds of prairie plants that were here in northeastern Illinois before the coming of the white settlers. The general public may visit this restoration and can use a brochure (Prairie Trail) which explains what can be seen from seven marked stations. The Morton Arboretum is located on Route 53, north of Lisle, in DuPage County. Admission is $1.00

per car. The Education Department of the Arboretum provides guided tours of the prairie and other areas for school classes and other groups and conducts workshops for teachers on the prairie and on other habitats. At the Visitors' Center auditorium you can view a beautiful multiple-screen slide show of the seasonal changes at the Arboretum. For information, phone (312) 969-5682.

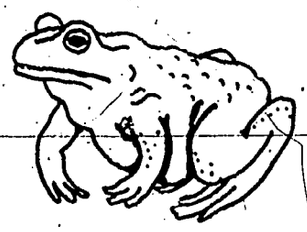
Fermi National Accelerator Laboratory.

At the Fermi National Accelerator Laboratory tentative plans call for 800 acres of prairie restoration with a white oak woods in the center. Watch the newspapers for information and perhaps a request for volunteer help; or call Open Lands Project (312) 427-4256, for more information. Working as a volunteer on such a project can be most rewarding mentally and physically.



THINGS TO DO:

Water:



- In any area with water, watch quietly for animal life at the edge of a lake, pond, or stream where they come for food and water.
- In a lake, look for insects on, over, or just below the surface of the water; you may see dragonflies feeding on mosquitoes; water striders or water boatmen; notice how they move and if possible what they eat.
- Try to trace the source of the water for a lake; i.e., try to determine the watershed that drains into the lake.

Swamps and Marshes: though many people do not realize it, the swamp is a living museum; it affords an environment where many plants and animals can live.

- Compare the dry soil of the surrounding higher land and the wet, spongy earth of the swamp itself.
- Compare the plants growing on the higher land with those that grow in the swamp.
- Notice the plants that grow on the three different levels of the marsh: on the bottom, under the water; with leaves floating on the surface of the water; and growing out of the water.
- Look for insects on, over, or just below the surface of the water.
- Look for frogs and turtles (amphibians); why are they here?
- Look for birds, especially during the fall and spring migrations.
- Look for signs that the wet land is gradually becoming dry land--plants on the shore gradually filling in the edge; clumps of grass forming islands in the swamp where tree seedlings may grow; notice that leaves and stalks of plants raise the level of the wet area as they decay.
- Look for evidence that the water level may have risen; i.e., dead trees with their feet in water.
- Look for the source of the water.
- After examining the swamp, consider: should the swamp be drained for development? (NOTE: the water supply of some cities comes from water that is stored or flowing underground; water held in marsh or swampland gradually seeps in and replenishes the underground water supply. The city of Madison, Wis., is now protecting marshes in its area because of importance to ground water and lake re-charging.

Woods:

- Notice the difference in how much light each plant receives..
- On a hot day notice the differences in temperature in shade and sun.
- Notice the texture of the forest floor and the leaves and twigs that are rotting.
- Look for animals or signs that they are nearby.
- Look for birds.
- Look on leaves, bark, rotting logs (and under it) for insects. (NOTE: Do not be destructive of rotting logs: roll them back in their former places.)
- Learn about the different levels of the forest--the canopy (the upper-most level), understory, shrub layer, herb layer, litter and soil; how would you describe them; what lives in each level?

Misqellaneous

- Send for kit about Blackwell Forest Preserve developed from an abandoned gravel pit to a recreation area with lakes and a hill made on a sanitary landfill; for free kit, write; Forest Preserve District of DuPage County, 881 W. St. Charles Road, Lombard 60148, or phone (312) 629-5700.
- Learn about food chains and food webs in a lake or swamp or woods.
- Learn about ways to attract wildlife--planting food, building brush piles, and so on.
- Learn about the Civilian Conservation Corps (CCC) of the 1930's.
- Groups can visit the Max McGraw Wildlife Foundation--on Route 25, south of Route 72, between Elgin and Dundee; from April 15-July 15 you can see hundreds of pheasants, turkeys, mallards, etc. in all stages of growth on the game farm; animals used for research by departments of conservation. Phone (312) 741-8000.
- Visit the Chicago Academy of Sciences, 2001 N. Clark St; 10 a.m. - 5 p.m. daily; admission free; geological and ecological exhibits of Chicago and Great Lakes region; free educational lectures and films on Saturday and Sunday in fall, winter, and spring; Jr. Academy of Sciences; free nature trips on Saturday mornings; phone 549-0606 for information.
- Visit Field Museum of Natural History, Roosevelt Road at Lake Shore Drive; many exhibits of animals; Admission $2.50 for families, $1 for adults, 35¢ for children (6-17 years), students and senior citizens; Fridays are free; open 9 a.m. to 4 p.m. Nov. through Feb., 9 a.m. - 5 p.m.

weekends; Open 9-5 March, April, Sept., Oct.; open 9-6 May to mid-June; 9-6 Monday, Tuesday, Thursday, mid-June through Labor Day; 9-9 Wednesday, Saturday and Sunday. Open 9-9 Friday year-round.

- Visit Pilcher Park Nature Museum--off U. S. 30 on the east side of Joliet--326 acres; woodlands, 5 miles of nature trails, restored French fort, nature museum. Open Monday-Friday 10 a.m. to dusk; Saturday and Sunday noon to dusk. Guided tours for groups. Phone (815) 726-2207.
- Teachers may already know about the Field Museum's Raymond Foundation programs for school groups; especially pertinent to the topic in this chapter are the Science Workshops on Ecology and the Science Tour-Programs on Plants and Animals of the Chicago Region, Relationships Between Living Things (on ecology), and Vanishing Animals. For information write: The Raymond Foundation, Field Museum of Natural History, Roosevelt Road and Lake Shore Drive, Chicago 60605.
- Learn about the environmental education program for children and adults at the Field Museum of Natural History. The program includes workshops, field trips and courses--for adults, young people and family groups. An exhibit called "Man and His Environment" will open in 1975; watch for special programs in connection with this exhibit. For information on the programs, write to the Coordinator, Special Services, Department of Education, Field Museum of Natural History, Roosevelt Road and Lake Shore Drive, Chicago 60605.

(NOTE: See also Books and Materials listed in chapters on Green Growing Things Nearby, Living Things Around You, In a Vacant Lot.)

BOOKS TO ENJOY:


Busch, Phyllis; Exploring As You Walk in the Meadow. Lippincott, 1972.

Busch, Phyllis; At Home in Its Habitat. World, 1970. Intermediate grades. $5.

City of New York, Board of Education, Bureau of Curriculum Development; Operation New York; Using the Natural Environment of the City as a Curriculum Resource. Reprinted 1970. Available for $2.00 from Board of Education, City of New York, Publication Sales Office, 110 Livingston St., Brooklyn, N.Y. 11201. Make checks payable to Auditor, Board of Education.

Swam, Malcolm D. (editor); Tips and Tricks in Outdoor Education. Available from Interstate Printers and Publishers, Inc., Danville, Ill. 61832. $4.50.

Van Dersal, William R.; The Land Renewed. Henry Z. Walck, rev. 1968. intermediate. $5.

## Indiana Dunes National Lakeshore

NOTE: Although the Indiana Dunes National Lakeshore is outside of northeastern Illinois, it is so accessible and so important an area, that information has been included in this book.

"The Dunes are to the Midwest what Grand Canyon is to Arizona and Yosemite is to California. They constitute a signature of time and eternity..."

Carl Sandburg

The field of ecology, so important today, had its beginnings at the dunes. This science that deals with the interrelationships between living and non-living things, grew out of the work of Dr. Henry Chandler Cowles of the University of Chicago and his students, who developed the ecological concept of plant succession from 1896-1933.

The National Lakeshore is located along Lake Michigan in Indiana between Gary and Michigan City. Actions of glaciers, wind, and water have resulted in an area of fascinating variety--sand dunes, marshes, swamps, bogs, white sand beaches, and a widely diversified flora and fauna.

There are more than a thousand different species of flowering plants and ferns of both northern and southern species. The region is an outstanding scientific laboratory for botanists, biologists, ornithologists, and geologists as well as curious individuals who wish to learn a little more about the wonders of the area.

Important Indian trails crossed these dunes. In the early 1800's pioneers followed these Indian trails. In 1822, Joseph Bailly, a Canadian fur trader, moved his family and business to a site along the Little Calumet River in what is now part of the Lakeshore. The Bailly homestead is an important historical site in this park.

The park program includes hikes, evening programs, and workshops for teachers. The workshops are scheduled periodically and can be arranged upon request. Credit is offered through National College of Education in Evanston. All hikes are led by Park Rangers and last about two hours except for the four-hour Cowles Bog

lunch hike. For further information, write or phone the Indiana Dunes National Lakeshore, R. R. 2, Box 139A, Chesterton, Indiana 46304; (219) 926-7561.

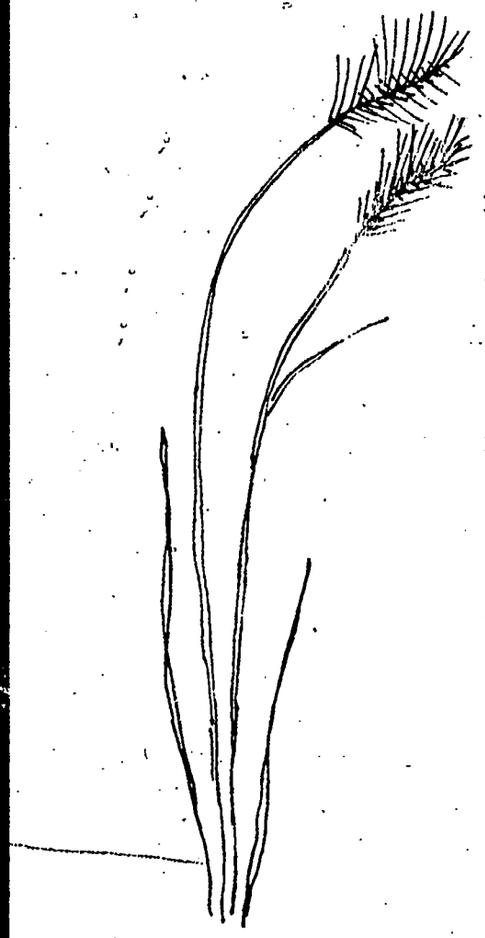
THINGS TO DO:

- Visit the National Lakeshore and take some of the hikes.
- See the geological and ecological exhibits of Chicago and the Lake Michigan region at the Chicago Academy of Sciences, 2001 N. Clark; hours--10 a.m. to 5 p.m. daily. Free admission.
- Read some of H.C. Cowles' writings about the dunes.

BOOKS TO ENJOY:

Cowles, H.C.; The Ecological Relations of the Vegetation on the Sand Dunes of Lake Michigan. Bot. Gaz. 27:95-117, 167-202, 281-308, 361-391, 1899. (Can be found in larger libraries.)

Komaiko, Jean and Norma Schaeffer; Doing the Dunes. Dunes Enterprises, Beverly Shores, Indiana, 1973.



## Cemeteries

Use cemeteries for environmental studies? That may seem odd, but we can agree that cemeteries are open spaces and green areas. (This section could also have been included in the historical chapter.) There is a great deal of variety in cemeteries--in size, location, contents, and so on. In urban areas they may be buffers between incompatible land uses and they may give much-needed open, green space. They may be museums for local history. Some may even be like arboretums or botanical gardens. Many cemeteries are excellent places to watch birds.

What one can learn there varies greatly from one cemetery to another. If you are interested in history, look for a cemetery that is old. It is especially important to respect people's feelings about these areas and to talk to someone at the office, if there is one, to explain what you are doing.

If you are interested in history, the following information may get you under way in realizing the wealth of information to discover; Look for such information as:

- on the headstones--name, dates, cause of death; look for headstones of early settlers; these may reveal the history of the area by showing the different ethnic groups that lived in the area and used the cemetery at different times.

- A class investigating the cemetery can be divided into groups and given different areas to cover, recording the information and consolidating it later. A simple record sheet might include:

| Name | Sex | Place of Birth | Year of Death | Year of Death | Age |
|---|---|---|---|---|---|
| | | | | | |

Cause of Death _____

- After the information is compiled you might discuss where the early settlers came from; ages people lived to at different times; you may notice that there were more deaths at a certain time (due to war? epidemics? catastrophe such as fire?).

- Study the materials used for headstones at different times; were they from local quarries? Ha: any weathering occurred? Note the epitaphs and art

forms, perhaps copying any interesting or unusual epitaphs.

In some cemeteries in rural areas, especially early pioneer or family cemeteries, true prairie plants have survived. These areas are fragile and easily damaged, so they should be observed from a distance but not hiked through or trampled. You can learn about prairie plants from outside the fence! If a rural cemetery is surrounded by a farm, look for evidence of erosion in the fields. See if the level of the ground is higher in the cemetery. What has happened? Why?

# APPENDICES

# GLOSSARY

bog - soft, waterlogged ground; a marsh, swamp

compost - a mixture of decaying organic matter, such as leaves and manure, used as fertilizer

ecology - the science of the relationship between organisms and their environments

ecosystem - an ecological community together with its physical environment

entree - the main course of an ordinary meal

fen - low, flat, swampy land

forb - any herbaceous plant other than grass, especially one growing in a field or meadow

green island - an area in a community for the preservation of nature

green thumb - the ability to foster the growth and health of plants

incinerator - furnace or other apparatus for burning wastes

interpretive - explanatory

niche - the set of functional relationships of an organization of population to the environment it occupies; the area within a habitat occupied by an organism

organic - having properties associated with living organisms

peat bogs - a bog or swamp where peat has accumulated

prairie indicators - plants typical of a prairie

sanitary landfill - a method of trash and garbage disposal by filling in excavations and covering daily with soil

solid waste - trash and garbage

stewardship - responsibility for management

spaceship earth - concept of the earth as a closed system whose only resource replenished from outside the system is that of sunlight

swale - marshy meadow

tamarack bogs - bogs with tamarack trees (a kind of larch)

# RESOURCES

## People

There are many kinds of resource people in a community whom teachers and youth group leaders can turn to for help and advice. You may know about some of them already. Many are happy to help and have the time or they can direct you to others with similar interests:

American Association of University Women (AAUW)--national and local concern for the environment
Audubon Society members--their love and concern for wildlife is contagious
Earth Science Club of Northern Illinois (ESCONI)--especially for geological information
Garden Club members--interested in plants and perhaps shrubs
League of Women Voters--have had a long history of environmental concerns; have excellent publications

There are other organizations with conservation and environmental orientation. Moreover, many people knowledgeable about aspects of the environment may not belong to any organizations. Ask around, and you will undoubtedly find leads. You may decide to ask for volunteers in a newspaper article describing what you are planning. It would be important, no matter how you locate possible resource people, to interview them to try to determine whether you think they can communicate with children or young people.

Remember Senior Citizens or Older Citizens (as some of them prefer to be called), who might have ample time as well as special experience. They can provide a desirable contact with an age group which may not be available to some children within their families.

## Organizations

For information on organizations with an environmental emphasis, write to one of the following agencies.

Illinois Institute for Environmental Quality, 309 W. Washington, Chicago 60606. Directory of Environmental Groups in Illinois available free.
U. S. Environmental Protection Agency, Office of Public Affairs, 1 N. Wacker Dr., Chicago, Il. 60606 Midwest Environmental Directory.

## Agencies and Organizations

Illinois Environmental Protection Agency, Manager, Citizens Assistance Division, 2200 Churchill Rd., Springfield, Ill. 62706; has speakers bureau; write or phone for information on materials; (217) 782-5562.

Illinois Institute for Environmental Quality, 309 W. Washington, Chicago 60606; has general and technical information for all age levels; library open to the public; for information, write or phone: (312) 793-3870.

League of Women Voters of Illinois, Citizens Information Service, 67 E. Madison Ave., Chicago 60603; ask for catalog of publications; also check your public library --many local leagues supply their local public libraries with current publications.

Open Lands Project, 53 W. Jackson Blvd., Rm. 1009, Chicago, 60604; private, non-profit organization offering land advocacy consulting, and environmental education consulting; workshops for teachers and students; many publications. Gunnar A. Peterson, Executive Director; phone 427-4256; inquire about membership and publications relating to trails and environment.

U. S. Environmental Protection Agency, Public Affairs Office, 1 N. Wacker Drive, Chicago 60606; has general publication, and specific publications on air, water, noise, solid waste, and radiation; ask for list of films.

Workshops, Seminars, and Courses on Ecology and Other Environmental Subjects--For Teachers and Others

Chicago Academy of Sciences, 2001 N. Clark, Chicago 60614 (in cooperation with Northeastern Illinois University): for information write or phone: (312) 549-0606.

Chicago Horticultural Society, 18 S. Michigan, Chicago 60603; write or phone Mrs. Beatty, Consultant in Environmental Education and Urban Horticulture; (312) 332-2868.

Field Museum of Natural History, Roosevelt and Lake Shore Drive, Chicago 60605; direct inquiries to Coordinator, Special Services, Department of Education.

Forest Preserve District Of Cook County: ecology classes at Camp Sagawau (credit given through National College of Education); for information, phone (312) 261-8400.

Forest Preserve District of DuPage County: workshops for teachers and others interested in conservation; phone "The Landing" (312) 323-0389.

Indiana Dunes National Lakeshore, R. R. 2, Box 139A, Chesterton, Indiana, 46304 (credit given through National College of Education); write or phone (219) 926-7561.

Morton Arboretum, Route 53, Lisle, 60532; write or phone Education Department (312) 969-5682.

Activities to Watch For and Tours to Take

Chicago Flower and Garden Show
County Fairs
County and Local Garden Shows
Craft Demonstrations
Old Settlers Reunions, Ploughing, Threshing, and/or Tractor-Pulling Contests and Demonstrations

For Illinois Calendar of Events: April to September
or October to March;

or

Backyard Tours: ask for those for northeastern Illinois
or other parts of the state

write: Division of Tourism, Illinois Department of
Business and Economic Development
222 S. College Street
Springfield, Ill. 62706

Watch your local newspaper for information on House
and Garden Tours.

# READER REACTION SHEET

Remembering that this is a SAMPLER, with no attempt to be comprehensive in looking at the environment around us, please give us your reaction.

1 How do you react to the general scope of this handbook?

2. What topics would you like to see added or expanded?

3. If you are an urban resident of northeastern Illinois, is the material on non-urban areas of use to you?

4. If you live outside an urban area, is the material on urban areas of use to you?

5. What type of binding for this book would be most useful for you? (This book is T-punched for easy insertion and removal of pages.) looseleaf_____spiral T-punched_____ permanent_____.

6. What persons do you consider extraordinary as resource people?

7. What environmental organizations do you belong to?

8. We are compiling a list of school sites expecially useful for environmental study and would appreciate any suggestions you can give us. If possible, indicate the individual to contact in the school or district, the location of the site, and the phone number.

9. Please indicate whether you are a: teacher_____, parent____, youth group leader____, other____(please indicate what other _____).

Please mail this form to: Environmental Curiosity Sampler
Illinois Institute for Environmental Quality
309 W. Washington Street
Chicago, Ill. 60606

Check here____if you wish to receive A Directory of Illinois Environmental Information. (Environmental groups, Recycling Centers, Markets for Recyclable Materials).

# DIRECTORY OF PUBLISHERS

Ace Books - Ace Publishing Co., 1120 Avenue of the Americas, New York, N.Y. 10036.

Appleton-Century-Crofts, 440 Park Ave., New York, N.Y. 10016.

Ballantine Books, 201 E. 50th St., New York, N.Y. 10022.

Bantam Books, Inc., 201 E. 50th St., New York, N.Y. 10022.

Benefic Press - Publishing Division of Beckley-Cardy, 10300 W. Roosevelt Rd., Westchester, Il. 60153.

Children's Press, 1224 W. Van Buren St., Chicago, Il. 60607.

Coward, McCann & Geoghegan, Inc., 200 Madison Ave., New York, N.Y. 10016.

Corwell - Thomas Y. Crowell Co., 666 Fifth Ave., New York, N.Y. 10019.

Day - John Day Co., Inc., 257 Park Ave. S., New York, N.Y. 10010.

Doubleday & Co., Inc. 501 Franklin Ave., Garden City, N.Y. 11530.

Dunes Enterprises, Beverly Shores, Ind. 46301.

Dutton - E.P. Dutton & Co., Inc., 201 Park Ave., New York, N.Y. 10003.

Elk Grove Books, Imprint of Children's Press.

J.G. Ferguson Publishing Co., 6 N. Michigan Ave., Chicago, Il. 60602.

Follett Publishing Co., P.O. Box 5705, Chicago, Il. 60680.

Golden Press, Imprint of Western Publishing, 850 Third Ave., New York, N.Y. 10022.

Grosset & Dunlap, 51 Madison Ave., New York, N.Y. 10010.

Harper & Row, Publishers, 16 E. 53rd St., New York, N.Y. 10003.

Hart Publishing Co., 719 Broadway, New York, N.Y. 10003.

Henry Regnery Co., 114 W. Illinois St., Chicago, Il. 60610.

Holt, Rinehart & Winston, Inc. 383 Madison Ave., New York, N.Y. 10017.

Houghton Mifflin Co., 2 Park St., Boston, Ma. 02107.

Interstate Printers & Publishers, Inc. 19-27 N. Jackson, Danville, Il. 61832.

Knopf - Alfred Knopf, Inc. Subsidiary of Random House, order department, 457 Hahn Rd., Westminster, Md. 21157.

Lerner Publishing Co., 241 First Ave., N. Minneapolis, Mn. 55401.

Lippincott - J.B. Lippincott Co., E. Washington Square, Philadelphia, Pa. 19105.

Little, Brown & Co., 34 Beacon St., Boston, Ma. 02106.

McGraw-Hill Book Co., 1221 Avenue of the Americas, New York, N.Y. 10020.

Macmillan Co., 866 Third Ave., New York, N.Y. 10022.

Meredith Corp., 1716 Locust St., Des Moines, Ia. 50336.

Messner - Julian Messner, 1 W. 39th St., New York, N.Y. 10018.

M.I.T. Press, 28 Carlton St., Cambridge, Ma. 02142.

Morrow - William Morrow & Co., 105 Madison Ave., New York, N.Y. 10016.

National Audubon Society, Educational Services, 1130 Fifth Ave., New York, N.Y. 10028.

W.W. Norton, 500 Fifth Ave., New York, N.Y. 10036.

Northern Illinois University Press, De Kalb, Il. 60015.

Oxford University Press, 16-00 Pollitt Dr., Fair Lawn, N.J. 07410.

Parents' Magazine Press, 52 Vanderbilt Ave., New York, N.Y. 10017.

Pergamon Press, Maxwell House, Fairview Park, Elmsford, N.Y. 10523.

Popular Library - Subsidiary of Cadence Industries, Inc., 355 Lexington Ave., New York, N.Y. 10017.

Prentice-Hall, Englewood Cliffs, N.J. 07632.

Putnam - G.P. Putnam's Sons, 200 Madison Ave., New York, N.Y. 10016.

Rand McNally & Co., Box 7600, Chicago, Il. 60680.

Random House, 457 Hahn Rd., Westminster, Md. 21157.

Reilly & Lee Books, Henry Regnery Co., 114 W. Illinois St., Chicago, Il. 60610.

Rodale Press, Educational Services, Emmaus, Pa. 18049.

Scholastic Book Services, Inc. 904 Sylvan Ave., Englewood Cliffs, N.J. 07632.

Simon & Schuster, 630 Fifth Ave., New York, N.Y. 10020.

U.S. Government Printing Office, Superintendent of Documents, Washington, D.C. 20402.

University of Chicago Press, 11030 S. Langley, Chicago, Il. 60628.

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