DOCUMENT RESUME

ED 047 865 RC 005 090

TITLE	Toledo Public Schools: Operation Success; Teacher's Curriculum Guide.
INSTITUTION	Toledo Public Schools, Ohio.
SPONS AGENCY	Ohio State Dept. of Education, Columbus.
PUB DATE	71
NOTE	83p.
EDRS PRICE	EDRS Price MF-$0.65 HC-$3.29
DESCRIPTORS	Behavioral Objectives, *Curriculum Guides, *Disadvantaged Youth, *Elementary Grades, Grade 5, Grade 6, Objectives, *Outdoor Education, *Resident Camp Programs, Scheduling, Sciences
IDENTIFIERS	*Ohio

ABSTRACT

The Toledo Public Schools developed this curriculum guide for the resident camp experience as a part of a new program especially designed for educating disadvantaged children. Emphasis at the camp is placed on young people learning to live as a community group where 8 to 10 students plus a counselor live in cabins for 5 days. The student group consists of 90 to 180 fifth and sixth graders. A rationale for outdoor education, the program's objectives, a daily schedule, and pre-outdoor-education suggestions are given in the first part of this 1971 guide. Also included are tips on classroom preparation, a teacher's check list, a discussion of teacher's responsibilities, follow-up suggestions, a counselor's briefing, rules and regulations at the resident outdoor school, and information for providing instruction in the following areas: weather, language arts, math and measurements, arts and crafts, science and conservation, animal-plant community study, animal tracking, insect study, and study of soil. Recreational and outdoor activities such as cookouts, fishing, and hiking are also outlined. (AN)

TOLEDO PUBLIC SCHOOLS

Toledo, Ohio

TOLEDO PUBLIC SCHOOLS

OPERATION SUCCESS

TEACHER'S CURRICULUM GUIDE

Frank Dick
Superintendent

Lee R. McMurrin
Assistant Superintendent

Funds for Toledo's Elementary Outdoor Education Program are provided by the State of Ohio Division of Education.

1970 - 71

TOLEDO PUBLIC SCHOOLS

Outdoor Education

All of the efforts of the Toledo Public Schools to provide new programs especially designed for disadvantaged children and youth are identified under the title of "Operation Success".

Superintendent Frank Dick has stated, "We are in the business of success - not failure." Outdoor Education is fiscally supported by monies from one major source: Disadvantaged Pupils Public Fund (State Division of Education).

Programs conceived and developed under Operation Success are innovative in nature and bring about the new approaches in solving persistent problems in educating the disadvantaged child.

The Toledo Public Schools in its planning has kept the large goals of meeting the needs of educationally disadvantaged children in mind. Operation Success as administered and implemented has grown in depth and scope in living up to the letter of the law as well as the spirit of the law.

Toledo Public Schools Outdoor Education program of the future will be a direct outgrowth of "Operation Success" project financed by Special State Division of Education funds. We project that by spring of 1971 the program will have reached 3,100 students. One of the objectives of this program is to seed both ideas and support into an orderly expansion of staff and facilities until 10,500 Toledo Public Schools' fifth and sixth graders can be accomodated each "co-educational" camping year. Key to the whole success must be focused on the classroom teachers and counselors.

SCHOOL CAMPING

LETTER OF INTRODUCTION

Dear Teachers,

In my opinion, education is not something which takes place exclusively within the four walls of a classroom. We are only beginning to touch on the vital educational possibilities outside of the classroom.

The important thing is to get children outdoors so they may have the richest possible opportunity to learn at firsthand the lessons nature has to teach.

We don't want children to grow eight feet high, but we hope their outdoor experiences will help them to stretch mentally; to mature socially; to find inspiration; and to relate what they learn in school to realistic problems of man's wise utilization of his environment.

This most interesting educational opportunity will soon be yours as you participate in Toledo Public Schools "Operation Success" Outdoor Education Program at Toledo YMCA Storer Camps.

Yours very truly,

Frank Dick

Frank Dick
Superintendent of Schools

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LETTER TO TEACHER

Dear Co-worker:

The following materials in this pamphlet have been organized through the efforts of Bryce and Judy Harbaugh to help you in preparing for the camp experience. An effort has also been made to include helpful suggestions relative to the follow-up work, upon return to the classroom, which will be based on these camp experiences.

This is not the final answer to all questions, but it is designed to help you wherever possible in a general way and is for reference only. There is no pattern of procedure, since classroom communities and teachers differ in their approach in handling problems. However, there are some good planning suggestions in the material.

The way the job is organized and carried through to completion depends upon the counselor's own initiative and their method of working with the group. Each is conscious of his own capacity for democratic procedures and each has developed his own methods of organization. This program involves the use of techniques peculiar to each individual transferred to a new working situation. Since camping experience of this kind for most children is a new venture, emphasis should be placed on the development of processes and procedures which involve opportunities for maximum educational value to youth.

Sincerely,

Burt Spice
Director

Bud Tapola
Assistant Director

P.S. We welcome your suggestions and hope you will make as many as you think might help us to do a better job.

THE EDUCATIONAL VALUE OF OUTDOOR EDUCATION

The aim of education is not learning, but maturation, achievement, and adjustment through learning. A program that helps develop keener insight into the responsibilities of citizenship, a concern for the welfare of others, a better understanding of man's interrelationship with nature, a love for and understanding of others, is exceedingly important for modern living.

Extending the school program to the out-of-doors offers many opportunities for developing many of these socially desirable attitudes, skills, habits, interests, appreciation, and knowledge most effectively. Many restrictions imposed by tradition are removed through the wise use of modern procedures and methods of instruction. The direct learning experiences that an elementary child will find in an out-of-door program should help in his growing-up, achieving, and adjusting to life situations.

Such a program with its many purposeful activities should be a part of the total instructional program of a school system. Its basic aim, therefore, is to give the child varied opportunities for learning in an outdoor laboratory and to make maximum use of such opportunities in the educative process. We must think of these experiences not a part from but a part of the total educational program.

With these beliefs we are instituting this new study at the sixth grade level with the idea of incorporating an out-of-door program in the regular school curriculum of the Toledo Public Schools.

OBJECTIVES

1. To make classroom learning more meaningful through the application of knowledge to practical outdoor situations.

2. To learn to live democratically with other children and adults through an experience in a 24-hour learning situation.

3. To give students an opportunity to share knowledge and experience with classmates.

4. To help pupils think critically.

5. To develop self-reliance as well as cooperation.

6. To increase the appreciation of nature's beauty.

7. To develop an awareness of the importance of conserving our natural resources which provide us with food, clothing and shelter.

8. To encourage good health and physical fitness practices.

9. To develop skills and interests in outdoor recreation which will carry over into later life.

10. To provide opportunities so that the scholastically handicapped child is an important person in our community.

11. To grow in those intangible outcomes often labeled as "spiritual values."

OUTDOOR EDUCATION CENTER
TOLEDO PUBLIC SCHOOLS
OPERATION SUCCESS

INFORMATION ABOUT THE OUTDOOR SCHOOL
PROGRAM

Prepared for the Use of High School and College Students

COLLEGE PARTICIPATION AT TOLEDO PUBLIC SCHOOLS OUTDOOR EDUCATION CENTERS

Bowling Green State University, Findlay College and out of state colleges send approximately three hundred college students to the outdoor school each year for the experience of working with and living with students in a 24-hour a day situation.

WHO OPERATES THE OUTDOOR SCHOOL? The outdoor school is leased from, but staffed by, the Toledo YMCA and programmed by the Toledo Public Schools. Toledo uses the greater number of school weeks, with surrounding school systems using the other weeks.

THE STAFF? There is a full time staff of one director, a nurse, two cooks, a kitchen helper and maintenance people. Each week four or five classroom teachers come to the outdoor school with their students. Besides the full time staff and the classroom teachers, there are from twelve to twenty high school and college students each week.

WHICH STUDENTS ATTEND? There are usually 90 to 180 fifth and sixth graders attending each week, usually four or five classroom groups.

HOW LONG DO THEY STAY? Students arrive about 11:00 on Monday morning and leave at 11:30 on Friday.

PURPOSE OF THE PROGRAM? The program is an extension of the classroom. The teachers plan with their students in the classroom. The out-of-doors is the laboratory for the teacher to study each student in a 24-hour-a-day living situation. Purposes for study become very real at the outdoor school. Real problems can be attacked directly. Although science is a natural to study, there are many possibilities for history, English skills (ease of communication), mathematics, music, nature hikes, and science. Students work with primary resources in all subject areas.

HIGH SCHOOL PARTICIPATION AT THE OUTDOOR CENTERS? Toledo public high schools send approximately one hundred fifty students each year for leadership experience.

ROLE OF THE COUNSELOR STUDENT? The high school and college students arrive at the outdoor school for an orientation session on Monday morning. They are assigned to work with one of the classroom groups for the week. College students have continuous opportunity to discuss the students, teaching techniques and other experiences with the classroom teacher and the outdoor school director.

WHAT IS THE WORKING UNIT? The 20 to 30 students from one class, their classroom teacher, and two to three college students.

Classroom groups usually work and study together during the day. In the evening there will be activities: campfires, games, square dancing.

EVALUATION? One of the staff teachers will talk with the college students about their work for the week. The purpose being to discuss situations that are experienced during the week. Reports are made to the college.

WHAT TO WEAR? Slacks, jeans, khakis. No skirts needed. Sweat shirts, sweaters, coat, hat, mittens, raincoat, a change of shoes, rubbers or overshoes. Nothing fancy.

WHERE DO COLLEGE STUDENTS LIVE? In log cabins with 8 to 10 students.

TRANSPORTATION TO OUTDOOR SCHOOL? This is provided by the counselor or the school.

COUNSELOR ORIENTATION AT THE OUTDOOR SCHOOL

Monday

9:00 A.M.	Orientation hike of the facilities and equipment.
10:00	Explain dining hall, blocks of time, cabin organization, policies and methods of teaching in the out-of-doors.
11:00	Prepare to meet the students arriving by bus.
11:30	CABINS: Students, with the aid of the counselors, make up their bunks. Room: for all jackets and overshoes.
12:00	MEETING ROOM: Counselors are assigned about ten campers to CRUISE the area. (Cruising is exploring: lake, woods, campfire areas, lodge and cabins)
1:00 P.M.	LUNCH: At all meals we try to improve communication through group singing and other activities. Outdoor director and school staff in charge the first day.
2:00	ORIENTATION: Plan the afternoon's activity. (Talk with teacher about class plans for the week)
4:00	SKILL HOUR: Afternoon skill activities
5:30	DINNER
7:00	ALL-CAMP ACTIVITY: Mixers, square, round or folk dances, games, songs and campfire.
8:30	WASH-UP for all students. (usually no showers unless needed on Monday night)
9:00	LIGHTS OUT: Story by flashlight.

COUNSELOR RESPONSIBILITIES AT THE OUTDOOR CENTER?

These are the responsibilities that you might assume during the week. The outdoor staff will be glad to talk over any of the experiences at all times. Always feel free to ask questions.

7:00 A.M.	CABINS: Wake students up. Stay with the students until they are ready to go to the dining hall for breakfast.

7:45 A.M.	SET-UP DINING HALL: You will aid the hosts and hostesses in setting the tables or you will eat with the servers' table. (students who bring in the hot food for the meal)
8:00	BREAKFAST: You will sit as a counselor at one of the tables. Ten students sit at each table with one counselor. At the table you watch for manners and you have a good chance to chat with the students about the activities. Lead songs alone or with students.
8:40	COUNSELOR MEETINGS: This may be the only possible time to "hash" out concerns with the program.
9:00	PLANNING SESSION: Each classroom group has its own meeting place. The teacher, outdoor school teacher and college counselors plan with the students for the day's activities. In this meeting the teacher takes the lead or may ask the outdoor school teacher or college student to take charge of the planning session. In short: Plan the activity, setting up purposes Do the activity Discuss activity - how well did we do? You will be assigned a group of students or a responsibility for the activity.
11:30	SET UP DINING HALL: Same as breakfast
12:00	LUNCH: Same as breakfast
1:00 P.M.	PLANNING SESSION: Similar to 9:00 A.M. planning session
3:30	SKILL HOUR: Supervise the boys' or girls' activities. Supervise the quiet games, writing, reading and chat group. (Resource Center)
5:00	SET UP DINING HALL: Same as breakfast
5:30	DINNER: Same as breakfast
6:30	TIME FOR FLEXIBILITY
7:00	EVENING PROGRAM: You will participate with the students or lead the various activities. Activities such as campfires, songs, astronomy, square dances, night hikes and games.
8:30	CHILDREN WASH UP AND SHOWERS: Stay with the students until they are asleep.
9:00	LIGHTS OUT: Read a story to students and stay with them until they are asleep.
9:00	SLEEP IN CABINS: One counselor sleeps in the cabin with ten students. STUDENTS ARE NEVER LEFT UNSUPERVISED.

MONDAY'S SCHEDULE

10:00-11:00	Arrive at camp, general instructions, organization of cabins, and acquainting yourself with the camp grounds.
11:45	Table setters report.
12:00	Lunch and explanation of dining hall procedures.
	by CABINS by CABINS by CABINS
1:30	Cabin organization - ABC Hike - weather station
2:15	ABC Hike - weather station - cabin organization
2:45	Weather station - cabin organization - ABC Hike
3:15	Skill Activities
5:15	Bell - table setters, flag ceremonies, weather report
5:30	Dinner
6:15	After dinner activities (meditation, singing, education movies, etc.)
7:00	Evening activities
8:30	Snacks and to bed

TUESDAY'S, WEDNESDAY'S, THURSDAY'S SCHEDULE

	7:00	Arise
	7:30	Clean up
	7:45	Bell - table setters, flag ceremonies, weather report, cabin inspection
	8:00	Breakfast
	8:30	Teacher - counselor meeting
	Teacher	_____ _____ _____
Tuesday	9:30	
Wednesday	9:30	
Thursday	9:30	
	11:30	Clean up
	11:45	Bell - table setters report
	12:00	Lunch
	Teacher	_____ _____ _____
Tuesday	1:30	
Wednesday	1:30	
Thursday	1:30	
	3:30	Skill activities
	5:00	Clean up
	5:15	Bell - table setters, flag ceremonies, weather report
	5:30	Dinner
	6:15	After dinner activities (meditation, singing, education movies, etc.)
	7:00	Evening activities
	8:30	Snacks and to bed

FRIDAY'S SCHEDULE

7:00	Arise
7:30	Clean up
7:45	Bell - table setters, flag ceremonies, weather report
8:00	Breakfast
9:00	Pack up and clean up the cabins and grounds
10:00	Activities of the competitive nature
11:00- 1:00	Leave for home - lunch

OUTDOOR SCHOOL OBJECTIVES
RESEARCHED FROM 1969-70 OUTDOOR EXPERIENCES

A Few Facts About Camp:

1. The camping program is an integral part of the school curriculum.
2. The program concerns itself with youth living together in the natural settings of the out-of-doors.
3. "Elementary experiences of humanity" are the core of the program.
4. Youth needs are met when they are living as a community group. Emphasis is placed on healthful, social work and activities which are purposeful in nature. The work is carried on in conjunction with Conservation Departments which serve as a resource agency and aid in providing outdoor learning experiences.

Camp Specifics in Terms of Expected Outcomes:

1. Student campers' attitudes toward teachers improve and are validated in case discussions.
2. Student campers learn to understand others.
3. Student campers learn to cooperate with others.
4. Student campers learn to better appreciate their homes and families.
5. Student campers gain an independence apart from their families for a week.
6. Student campers gain in responsibility, dependability, and reliability.
7. Student campers gain a new interest in the out-of-doors and the conservation of natural resources.
8. Student campers gain a more workable interest in health.
9. Student campers gain a better attitude toward school and its work.
10. Student campers gain a better attitude toward helping around the home and in the classroom at school.
11. Student campers gain a better feeling of belonging to the group.
12. Student campers learn to have a better attitude toward public property.
13. Student campers learn to work in groups together.
14. Student campers learn to keep a daily digest of activities.
15. Student campers learn to be worthwhile citizens in a democratic community.
16. Student campers learn to govern themselves, with help from the camp staff.
17. Student campers learn to broaden their scope of learning, socially, mentally, and physically.
18. Student campers make new friends from their own and other classrooms.

Teacher's Goals:

1. Teachers know their students better while at camp.
2. Teachers discover new leaders or potential ones while at camp.
3. Teachers gain some different insights into some of the children's home life.
4. Teachers gain a firmer conviction about some of the children so they can help them further.
5. Teachers gain an opportunity to work with children in a natural setting and a more relaxed atmosphere.
6. Teachers have an opportunity to show their good humor and personality at camp.
7. Teachers are given written reports on each student as an evaluation of each of their children as others have seen them in working with them at camp.
8. Teachers may see groups throughout the week planning and working together.
9. Teachers may see children helping each other who never did in school.
10. Teachers may see children succeeding in camp who never succeeded in school.

Teacher Opportunities:

The teacher has an opportunity to:

1. Attend the orientations in town, showing the slides of camp.
2. Attend the camp workshop at Storer Camps. (This is a chance to see camp and learn some outdoor skills.)
3. Visit camp for a full day a month or so before bringing a group to camp. (Tuesday or Wednesday are good days.)
4. Attend the morning staff meeting at camp at 9:00 A.M. the Monday the campers arrive. This is an important beginning of the week meeting.
5. Receive any help theymay need in planning, from the Outdoor Staff.

Note: At staff meeting Monday morning, camper list of names, log books, check books, camp pamphlet, pencils, library books, quiet games, are equipment necessary.

PRE-OUTDOOR EDUCATION SUGGESTIONS

1. Arrange nature exhibits and display exhibits and display maps.

2. Make available books, etc., or have children write for literature on nature, conservation, etc. Discuss in class.

3. Show movies and slides on nature topics and the camp site.

4. Appoint a committee in your class to collect library books for reference at camp.

5. Discuss health habits at camp. Personal cleanliness. The school nurse should have a part in this discussion. All campers must report illness or colds immediately upon feeling sick. This should be stressed before children arrive at camp and after.

6. Supply the camp director with names of children with physical disabilities, diet, or activity restrictions and emotional problems.

7. Discuss common sense safety practices and health while in the out-of-doors.
   a. Don't run on rough trails.
   b. Always stay with the group.
   c. Wear proper clothing.
   d. No rough-house activities.

8. Discuss proper use of camp facilities.
   a. Don't deface walls.
   b. Don't carelessly discard rubbish.

9. Arrange for individual logs of daily activities. Include health tips, comments on activities, other items of interest.

10. A small notebook and pencil for the log should be brought to camp for each child.

11. Bring simple art materials to camp that could be used during a language arts activity period, or for a rainy day program.

12. Help the children add new words and their definitions to their vocabulary.
    a. Predatory animal
    b. Conservation
    c. Geology
    d. Ecology

13. Develop a spelling list of camp terms in your room.

14. Remind children to write letters home while in camp. (Instruction on how to address envelope). Bring envelopes and stamps to camp.

15. Go over list of equipment to bring to camp - clothing, etc. Make sure each child understands it and reasons involved. Give one such list to the parent and one to the child.

16. Go over all rosters, duty rosters, and schedules that are available before experience begins.

17. Go over all menus furnished by the camp staff to select your preference of meals.

CLASSROOM PREPARATION

To The Teacher:

We know through past experiences that a class group well prepared is the group that has the best time at camp. It is the group that accomplishes the most and learns to a better advantage.

Preparing a group is not a difficult task. It is how it is done that counts. Children learning with the teacher and seeking to find out the answers through discussion and reading are best prepared. Children who have it told to them and must listen to all, come to camp not knowing or remembering why they are there.

Campers all keep handbooks and by starting them in the classroom with details covered in the classroom discussions, the handbook becomes important right from the beginning.

The following details about classroom planning are in short question and answer form so that the person reading them can get to the point right away:

1. These questions dealing with parents should help in the planning sessions with children.
   a. When will our parents know about us going to camp?
      At the same time that we begin to plan to go to camp. We must have their written permission.

   b. How will they know about our trip details?
      We will write them letters from time to time explaining our plans.

   c. Will they have a chance to meet with us to see the camp slides?
      Yes, about four weeks before we go. (Slides may be shown by the teacher or camp coordinator upon call.)

   d. How much does it cost to go to camp?
      The cost per person is $25.50 or $5.10 per day.

   e. Do our parents pay the fee before we go?
      Yes, the Friday before the Monday we go the money is due.

   f. May we earn some of the money?
      Yes, you may earn all or part of the money as you see fit.

g. How have other groups gone about this?
They have made it a part of their arithmetic lesson. They have had bake sales, sweater sales, pencil sales, popcorn sales, and shown movies. Others have made out contracts to do household chores at home. Both parent and child have signed the contract.

h. May our parents visit camp while we are there?
No.
Why?
Because of the short time you are there. One of the objectives of going to camp is for you to learn some independence away from home.
Note: Parents who wish to see camp may drive out and see it on the weekends when campers are not in camp.
There is an official school letter signed by the Superintendent, for parents. (See Table of Contents) Groups planning to go to camp should begin to plan at least six to eight weeks before hand. Students should see the camp slides also.

2. These questions dealing with camp itself may be helpful.

a. How far is camp from us?
About 70 miles - (west of Toledo and directly three miles west of Napoleon, Michigan)

b. How long does it take to get there?
It should take about 1½ hours.

c. What time will we leave on Monday?
You will leave from your school about 9 o'clock.

d. What time will we return on Friday?
About 1:00 P.M.
Note to Teachers: Teachers are at camp Monday by 9:00 A.M. for a staff meeting.
It would be wise for someone to put the children on the bus and check their names off, the morning they are to leave. Any one of the school building teachers, the principal, nurse, or a classroom mother could do it. Children should be kept in order in the classroom or outside. It is better to have arranged for them to be organized than to have them running all over and parents in the midst of it all.

e. What are the buildings like at camp?
Each one is constructed of wood and pine paneled. All are heated. Washrooms have hot and cold water in them. Lodge has a stage area and lounge area. There are girls' cabins and boys' cabins. There is also a nature building and nature pond.

f. May we be with our friends in the cabin?
Yes, with one as a partner.

g. How many sleep in the cabins?
About eight or ten students and one counselor.

h. Do we have a regular bedtime and rising time at camp?
Yes. Rising is about seven or seven-thirty A.M. Bedtime is at eight-thirty P.M.

3. These questions deal with equipment

May we bring a camera, fishing pole, and flashlight to camp?
Yes. It is also a good idea to bring an alarm clock. Campers do not need: guns, sheath knives, radios, or large trunks.

4. General Questions

a. What happens if one of us gets homesick or sick at camp?
If a camper is sick at camp, arrangements will be worked out with the parents. If a camper is homesick we will try to help him get over it.

b. Is there a nurse at camp?
Yes, there are two first aid people and one doctor in Brooklyn (twelve miles from camp) for emergencies.

c. What will we do during our free time?
There is not much free time. There is one morning in camp when a camper may choose what he or she would like to do. The remaining times are under leader control.
Some groups in the past have brought table games to camp. There have been many campers who have enjoyed playing with them after or before a meal. Groups who have brought games to camp have marked them well and have taken them home when they have left camp. The camp does have some table games.

d. May we make our own covers for our camplogs or notebooks?
Many groups have and have asked their art teacher to help them.

e. Is there a telephone at camp?
Yes. The number is 1-217-536-8890 Napoleon, Michigan.

f. What is the official name of the camp?
The Toledo Outdoor School.

g. May we bring candy to camp?
Candy, gum, cookies, etc., in camp bring mice into the cabins and create trouble for campers' property. It is not needed and not a good thing to bring with you.

h. Who helps us at camp?
Teachers, senior students from Bowling Green State University, Findlay College, Toledo University, and other colleges; Michigan Department of Conservation resource men; students from Toledo high schools and teachers from our own Toledo system.

i. How are the groups divided?
There are two different kinds of groupings in camp.
1. Children from the two or three classrooms attending are divided into groups of 8 or 10 boys or girls, each group with a counselor. These are known as "cabin groups" and each group occupies a sleeping cabin. (Each student may be with a friend or partner.)
2. The other type of groups are called "Activity groups." The activity groups are also representative of all the classrooms attending camp but consist of both boys and girls. These groups also have leaders.

j. Will we have time each day to write in our handbooks?
Yes, just before rest time and snack.

k. What happens if it rains at camp?
The camp program changes to inside activities. Changes are not made unless the weather keeps us in. There are rain hikes to see what happens to the forest. Students have to go outside to use the washroom or to other buildings and cabins; therefore, they should be dressed for any kind of weather.

5. Camp Program Notes

The camp program, generally, covers those things dealing with the outdoors which can be taught there better than any other place.

Conservation and hiking to the historical cemetery and gravel pit are highlights of the program.

Skill activities prove to be fun.

Learning to do things in housekeeping is a chore in which everyone has a chance to help others.

The cookout is another project where team work is important.

Planning for a social hour may require a little review with some of the play books you used in the library reference work you did before camp.

Archery, fishing, and ice skating in the winter, are the sports that have proved most popular.

Camera and nature hikes are "learning by doing" projects.

Many students have been successful in making maps and learning to use the compass.

TEACHER'S CHECK LIST FOR PLANNING

Teacher:

___ 1. Attended visitation day at Camp Storer.
___ 2. Attended teacher workshop at Storer Camps.
___ 3. Began planning 8 to 12 weeks ahead of the date to go.
___ 4. Arranged for a parent meeting showing the slides. (Toledo Director)
___ 5. Sent health/permission form home for parents.
___ 6. Collected camp fee. (School secretary to give receipt)
___ 7. Earned part or all of the money for camp.

Handbooks:

___ 1. Arranged through the Outdoor office for student handbooks.
___ 2. Campers have the equipment list in the books.
___ 3. Have used the book to develop new words the children will meet at camp. They have the list of them.
___ 4. Campers have decided upon some written goals for the week at camp.
___ 5. See camp logs in Student Handbook.
___ 6. Campers are familiar with the contents of the handbooks.
___ 7. Campers know they must have logs completed by end of camp week.
___ 8. Campers know how to write in camp logs because they have used them in their daily planning.

Before Camp on Monday:

___ 1. Arrangements have been made for the nurse to check the health of the campers Monday morning.
___ 2. There will be someone to see that the students are checked as they board the bus, and to help load luggage.

After Camp on Friday:

___ 1. There will be someone to meet the students when they get off the bus Friday. Parents have all been notified of the time.
___ 2. Each student has a way of getting home.
___ 3. Each student will wait in the classroom until they have been picked up by someone they have made arrangements with and it is written on the permission slip.
___ 4. Counselors have a way getting home.

General Details:

___ 1. The art teacher has helped us.
___ 2. The music teacher has helped us with some camp songs.
___ 3. The librarian has helped us gather books to use at camp.
___ 4. The physical education teacher has helped us play some small group games and table games and some get-acquainted ones.
___ 5. The school nurse has helped us with some tips on taking care of ourselves.
___ 6. We have used a limited amount of public school films by way of introduction.
___ 7. I have a list of my students' names and addresses and telephone numbers in the office. (Is there a copy for camp?)
___ 8. Arranged for "finalizing of plans" meeting with Outdoor staff.
___ 9. All necessary paper work for the meeting is complete and ready for the directors.

Social Goals:

___ 1. We know how to make introductions.
___ 2. We have rehearsed the procedures in the dining room.
___ 3. We have discussed how to make new friends.
___ 4. We have set a new goal each day of our planning toward our time at camp.
___ 5. We have developed our plans in groups and have listened to some details we could not plan for at camp.
___ 6. We know how to discuss and evaluate the goals we have set because we have done so in our class work.

Camp Program Details:

___ 1. Campers know about some of the activities at camp so they can make wise choices as a group member or an individual.
___ 2. Campers know what some of the work jobs are.
___ 3. Campers are familiar with the daily schedule at camp.
___ 4. Campers know something about planning for evening social hours.
___ 5. Campers know the details about table manners in the dining hall.
___ 6. Campers have made plans and talked about things they can and cannot do on the bus during the rides to and from camp.
___ 7. Campers are familiar with how the groups are divided at camp.
___ 8. Campers know about the flag raising and the weather report.
___ 9. Campers know about the boundaries and facilities at camp.

CLASSROOM TEACHER RESPONSIBILITIES

1. Pre-Camp Planning and Post-Camp Follow-Up.
   Probably the major responsibilities of the classroom teacher are in the classroom before the class goes to camp and upon their return. The most unique thing about outdoor education is the continuity of experiences in the classroom and at camp. The teacher holds the key to outdoor education. The degree of correlation and integration of the outdoor experience with the on-going school program is up to the classroom teacher.

2. General Role in the Camp Program
   During the period at camp the classroom teachers are classroom leaders to the camp staff. They should be sure that the camp staff understands what objectives they and their classes have; they should be certain that the camp staff is aware of any particular needs or problems of individual campers. If at any time they feel that the program should be changed, that some activities should be repeated, that others should be left out, that discipline is not being handled properly, or that certain improvements can be made, they have the responsibility of making their feelings known to the camp director. This is essential to cooperative working relations among the camp staffs.

   In a sense, therefore, the teachers are program directors. It is true that the camp staff members know the camp site, natural science, conservation, and so on, but it is the teacher who knows the children and their background.

   The teachers are to be assigned to their own special classroom group in order that they may work with all the children equally and participate in their group activities. This does mean that the teachers relinquish some of their teaching responsibilities to resource personnel.

   The teachers are equally responsible with the resource teachers for the learning outcomes. The teachers should point out things they want their children to know. They should feel free to refer to the resource teacher for the help if they do not know about something observed. Lack of knowledge of things observed does not prevent calling attention to them and initiating research to find answers.

3. Group Discussions and Evaluation
   One of the best places for the teacher to assume the leadership role is in an evaluation when the campers are all together again at camp. These occasions present themselves after meals when the announcements are made, after supper, and in discussions around the campfire. Teachers will assume responsibility for some of the teaching situations during the week.

4. Cabin Duties
   A number of duties are involved in cabin activities. One senior counselor sleeps with the campers during the night. Supervision is required during rising time, rest hour, shower time, and bedtime. These duties are shared responsibilities between the teachers and the counselors.

5. Free Time Duty
Before each meal there is a period when campers may pursue individual interests. This time is also for washing up and setting the dining tables. During these periods two or three staff members are assigned the duty of general supervision of these activities. This involves such things as supervision of the table setters (early in the week especially), checking the cabins for general tidiness, talking with campers about things on the nature tables, and where possible, introducing games, songs, library reference work appropriate to the camp setting.

6. Staff Free Time
By sharing and rotating various duties the school personnel are able to have some time free of responsibility during the camp period for academic interests.

Teacher Checklist

Note to Teachers:

To ensure a properly organized program and a meaningful experience, a checklist for teachers has been formed to coincide with another checklist on the teacher planning sheet.

____ Visit Storer Camps (if you have not been there) to find out what the program is about.
____ Prepare the week's program (preferably with the students).
____ Explain the clothing list in great detail.
____ Make sure the medical/permission forms are returned and signed.
____ Make cabin roster assignments. It is best not to release the lists until the students are at camp.
____ Check on bus schedules - leaving and returning home.
____ Covering weather terminology with the students.
____ Four audio-visual department movies in case of bad weather.
____ Reference book material about nature.
____ Do you have a plan for evening programs? Cover these programs with the counselors. Put them in charge if you wish.
____ Discourage parents writing letters to camp.
____ Encourage students to write letters home.
____ The duty roster and KP sheets will be prepared at camp by the counselors on Monday. You may explain what each duty requires of the students.
____ Do the students know how to set a table?
____ Have you discussed respect for other peoples property?
____ Will the class prepare a menu for the week?

FOLLOW-UP SUGGESTIONS

After Camp Comes:

1. The job of further evaluation to parents. (A survey sheet, a classroom newspaper, a letter home from the teacher or students, or both.)

2. The experience of using the camp logs in the classroom for writing reference material, sending the logs home or retaining them in the classroom, putting them on school bulletin boards, etc.

3. Thank you notes to those people who have made the trip possible and interesting: The School Board, the Superintendent, the Assistant Superintendent in charge of elementary and junior high school, principals, student teachers, parents, bus drivers, conservation men, camp staff, and others.

4. Dramatization of some of the experiences at camp for other rooms, assemblies, P.T.A. groups, others.

5. An increased interest in general science and the world about the group. The teacher may want to follow up the camp experience with additional science movies or slides. The class may have their science aquarium filled with samples brought home from camp. There may be some books from the library they could consult for more information.

6. The campers' further desire to consult the map for the location and direction of camp. It may be important to know the number of miles and amount of gas and oil needed for the trip. They may have become more interested in historical landmarks and the historical background of camp. (There is material on both).

Note to teacher: After camp there should be noticeable changes in the individuals of the room or as a whole group. It would be helpful for all teachers to make a note of different instances and situations. A written record of data from each will be asked for at the end of the semester. It is hoped that this will help the camp committee in the future.

You may see changes in attitudes, citizenship, group cooperation, and group feeling toward you and others in the group.

Other Follow-up Suggestions:

1. There is a possibility that a new and meaningful spelling list could be drawn up from the experiences at camp.

2. Stories about campers' experiences using these new words and sentences could be developed along with the logs.

3. Developing a social science unit is an interesting follow-up of camp.

4. Working as groups, setting daily and weekly goals, and then evaluating them is an important area to work on in the classroom.

5. Making effective use of the camper self-evaluations and leader reports is another area of follow-up from camp.

   Self-evaluations and reports can be sent home to the parents. Or they can be put into the teacher's file or office file.

6. It is difficult to pin point an area and say, "We will work from here as a result of camp." The experiences at camp will cover almost all classroom subjects and the children, with the teacher, will find the areas and places to integrate their learnings.

COUNSELOR BRIEFING

I. Counselor Responsibilities

A. Curriculum -- You as a teaching assistant

1. Offer to share your talents or knowledge in the development of any block of instruction.
2. Attend instruction, understand demonstrations and help diffuse understanding of it to the students.
3. Help your kids develop an interested and inquisitive attitude. Be alert; look; listen; and get your kids to do it too. It will take a conscious effort. It may be the most important thing we do here. This attitude building is a non-stop thing to be carried over from curriculum period into the rest of the day.
4. Do as much as you can to convince the kids that this is their camp and their opportunity to see the world in a pure, unpolluted condition. This should also be an attitude which is stressed during curriculum period as well as outside of the curriculum period. The kids should be made to see the treasure of the environmental condition of the camp. Make them aware of the delicacy, beauty, balance, and cleanliness by observing the setting and talking with them about it. The children should also be made to see that they have a responsibility to preserve this land full of natural treasure for others to enjoy. The following suggested specifics can be used to impress the students with the notion and attitude of responsibility.

    a. Care of wildlife
    b. Cleanliness of the camp grounds
    c. Avoidance of over-population of the Nature Zoo House with articles of nature brought in by the students.

B. Skills

1. Assist in organization and generation of enthusiasm.
2. Encourage sportsmanship conduct wherever appropriate.

C. Fun

1. Set the tone by your personal attention. Give leaders your attention when appropriate and insist that the students do also.
2. Be whole-hearted in your involvement. The students will follow your lead.

D. Use of Free Time

1. Help the students structure their free time as much as possible. Be ready with suggestions on how the students could use this time appropriately.
2. Involve yourself in the activities which the children engage in during free time but let them assume leadership positions.

E. The Social Laboratory

1. Insist on good behavior.
2. Stress cooperation in performance of daily jobs.
3. Insist on good standards of performance in daily jobs.
   In all three of the above mentioned areas you, as a counselor, are the example!
4. An even handed, steday, fair approach to the matter of discipline will not necessarily bring the best results. Persistance is important. Do not fail to call a student down for any sort of delinquent behavior.
5. It is a strong possibility that you would want to leave your cabin group sometime during the week, either at the discretion of the classroom teacher or during the curriculum activity. However, you realize that your group is your responsibility. Showers may be taken with your cabin, at night after the students are in bed, or on your own free time.
6. Camp service projects are to receive your careful attention each morning.
7. You, as a counselor, should work to develop spirit within your cabin. Build an attitude of pride in your students.
8. Seek to involve everyone from your group in whatever it is you are doing. Encourage participation from the extroverts as well as the introverts.
9. When working with the students, attempt to talk with each one about himself and what he is doing as well as what you are doing and would like him to do. Stay away from ghost stories. Elect, within your cabin, a big brother or sister to help in cabin responsibilities. Ask the classroom teacher whom she would suggest for this duty. Remember to stay with your cabin.
10. You, as a cabin counselor are expected to adhere to the following personal behavior:
    a. Cigarette smoking will occur in the parking lot only.
    b. Remember that your responsibilities come first.
    c. Remember that you are setting an example for the students to follow so please be firm and steady.
    d. No gum chewing will be allowed.
    e. There will be no leaving of the camp grounds during the week.
11. Your general policies as a camp counselor should include being alert and inquisitive. You should always use what you consider to be good judgment and common sense while enforcing steady and fair discipline.

F. Special Considerations

1. Health

   a. Minor First Aid treatment materials can be found in the dining hall for routine sick call situations. There is a nurse in the dining hall area at 9:30 A.M. Wednesday and Thursday. Her name is Betty Warolin and her phone is LA9-9453.
   b. Encourage the students to inform you if they do not feel well or sustain some kind of an injury.
   c. Remember that inclement weather conditions cause colds. Therefore, ask the students to keep their feet and heads covered.

d. Special cases - the students would not be allowed to be here if their special condition were not manageable. Simply be aware of the particular problem and watch that individual a little more closely than the others.

e. Medical evacuation - if there is ever any doubt in your mind about the advisability of moving an injured student from the scene of an accident, administer those First Aid measures that you know to be appropriate. Then, leaving the student attended, go and get the Directors or one of the teachers. They will be between the waterfront, Nature Hut, dining hall, and their cabin. They will get the student evacuated properly. When any other emergency case arises, bring the injured student to the vicinity of the dining hall and the Directors and teachers will handle the situation. Phones are located in the dining hall and the Director's cabin. A list of emergency phone numbers is located beside each phone.

2. Safety

a. Fire

1. The gas heaters in the cabins are fire hazards. Do not put anything on those heaters to dry for any reason. The item would burn and therefore would cause the cabin to catch on fire.
2. Confiscate any matches you may observe in the possession of the students.
3. Please let the director handle lighting of any pilots that might go out during the week.
4. Discuss a fire prevention plan with the students of your cabin.
5. Fire extinguishers are located in the dining hall and all sanitary units.

b. Wildlife

1. Avoid rattlesnakes.
2. If a student is bitten by any animal, hold on to the animal if it is possible without further exposure to the animal's teeth. The animal should be placed under observation. Observe the animal carefully so that a complete description can be given.

c. Waterfront

1. No one is to be involved in boating or any waterfront activity other than wading or exploring along the edge unless a leader is in the area. Wading can be an organized cabin activity.
2. If wading is to be done it will be in one of the beach areas on this side of the lake under the supervision of a counselor.

d. Horses

Any group may walk down to see the horses if under the supervision of a counselor. No one is to go beyond the corral fence.

e. Overall Safety

1. The general safety of the students is largely your responsibility. You must be with them at all times, particularly at night! The very least the Director will expect of you if you do not have all of your students with you is a positive knowledge of the current whereabouts of each student absent from the group or the information that you are looking for the strays.
2. Make it a hard, fast rule that if students are going to be absent from the group for any reason they must tell you what that reason is, where they are going, and when they will return.

f. Severe Weather

1. During lightning, stay away from the water, avoid isolated trees and open fields. Stay inside a building during a storm.
2. If a tornado warning or watch is on, stay in the village areas. The Director or teachers will maintain a radio monitor. Open all windows and doors in the cabin. If a tornado is spotted move to the closest cabin and get under the bunks. If close to the Nature Hut, go into that basement. Under no circumstances should anyone stay outside... the greatest danger is the flying debris.

g. Location of Leadership

The directors of the camp may always be found in the vicinity of the Nature Hut, dining hall, waterfront or Director's cabin.

DAILY JOBS

The daily jobs are assigned by the week to cabin groups. The individual charts are explained to the counselors in the Monday morning orientation before the students from the school arrive. The charts should be hung in the cabin and explained to the students during the cabin orientation. Learning to work together is a valuable tool for cabin unification and for job performance training.

Flag Raisers and Weather Reporters should report to the weather station at 7:45 A.M. and 8:15 P.M. for the A.M./P.M. duties respectfully.

Table Setters report 15 minutes before meal time. They are responsible for setting the tables, deciding the hopper secret and saying grace.

Dish Washers remain after the meal and report to the girl who is in charge.

Camp Service should be completed before breakfast.

a. Sanitary Units ..... including the village and dining hall units.
b. Nature Hut ..... the floor should be swept and the leaves and debris should be taken out of the turtle pit.
c. Dining Hall ..... The area outside should be carefully policed. The front hall should be swept and the athletic equipment should be organized in the wagon and readied for the day.
d. The Green ..... The green should be policed and the newly planted trees watered with one bucket of water per tree.

Suggestions:

In assigning the jobs, do not have the Flag Raisers/Weather Observers, table setters or dish washers do a camp service.

Have the counselors act as straw boss for all jobs, encouraging high performance standards.

DAILY ROUTINE

5:30	Fishermen get up time. (optional)
5:50	Fishermen meet in front of the Nature House. (optional)
7:00	Fishermen return to their cabins and everyone else rises. All dress, use sanitary facilities, and clean cabins.
7:30	Camp service.
7:45	Weather readers and table setters report to their stations.
7:55	Weather report given and flag raising.
8:00	Breakfast.
9:30	Morning curriculum.
11:30	Wash up for lunch.
11:45	Table setters report.
12:00	Lunch.
1:30	Afternoon curriculum.
3:30	Skill hour.
5:00	Wash up for supper.
5:15	Weather readers and table setters report to their stations.
5:30	Supper.
7:30	Evening program.
8:45	Snacks and bed.

CABIN CLEAN UP AND INSPECTION

Cabin clean up is completed before breakfast from 7:00 to 7:30 A.M. This is an excellent means for developing cabin enthusiasm and competitive spirit. Inspection is done by the director during breakfast and the results are reported after the breakfast meal is over. The results are reported after the breakfast meal is over. The results are posted on a Clean-Up Champs Chart in the dining hall and running competition is held. On Friday morning the week's champions are recognized and presented with home made certificates.

Cabins are judged for all over neatness and uniformity. All bunks must be made tightly and smoothly. All gear except outer clothing (i.e. coats or rain clothing) should be in suitcases. Wet articles should be hung on the railing on the second level unless the weather permits using the clothes line outside. All shoes and suitcases should be aligned uniformly either in one part of the cabin or under each individual's bunk. The floor should be swept; waste basket emptied and the area outside the cabin policed.

As the results are announced each day, the deficiencies in each cabin are given so the cabin knows where it fell down.

RULES AND REGULATIONS AT THE RESIDENT OUTDOOR SCHOOL

1. Students are to work together in groups.

2. Students are expected to keep their sleeping quarters neat and tidy, beds made every morning before or after breakfast. Blankets tucked under.

3. Students are expected to be at meals and every activity on time.

4. Students are to be clean in body and actions. They will be expected to wash everyday and shower at least twice during their stay at camp. They are to come to meals with hair combed and hands washed. They are to wear a clean shirt or blouse when necessary. Girls are not to come with hair in pin curls.

5. Students to report to Counselors the very first signs of illness, colds, sore throat, coughs or other signs of physical defect.

6. Students are to go to bed to get proper amount of rest so they will remain healthy.

7. Students are not to rough-house, destroy or mark any of the property in camp. They are subject to state law if they do.

8. Students are to remain in boundaries of camp. They cannot go into town or to the store.

9. Students are expected to respect each other's property. Boys are to stay in their area and girls in theirs. Cabins are for sleeping quarters. No one is to trespass upon the others, at any time during the day or night.

10. Students are expected to keep washrooms clean and neat.

11. Students are expected to use good language at all times.

12. All camp fires to be carefully put out.

13. On field trips if bottle is broken it is to be buried.

14. Candy, cookies, etc. not to be brought into camp. Such items attract rats and other animals into the cabin.

15. Each camper to keep a log -
    1. Evaluation after each day's activities.
    2. This is a way for positive growth.
    3. Good way to remember new facts, names of conservation officers, and items about their subjects.
    4. Suggested outline for first evaluating session after arriving:
        a. What activity
        b. Time of activity
        c. Place - weather

Curriculum Areas

WEATHER FORECASTS

Note to Teachers:

Please make sure the students know what these terms mean prior to the camping week.

The cabin that has charge of the flag ceremonies also is in charge of preparing the weather forecast. The forecast will be read at the flag pole before or after the ceremonies.

Learning Possibilities:

Barometric pressure _____

Rising or Falling _____

Wind direction _____

Speed _____

Wind's name _____

Cloud type _____

Per cent of cover _____

Temperature _____

Relative humidity _____

Type of percipitation _____

Amount _____

Prediction:

Name the seven types of precipitation.

1. Rain
2. Snow
3. Hail
4. Ice Pellets
5. Fog
6. Dew
7. Frost

Name the basic cloud formations.

1. Cirrus
2. Stratus
3. Cumulus

CLOUD CLASSIFICATION

High Clouds

These are composed almost entirely of tiny ice crystals. Their bases average about 20,000 feet above the earth. The following three types exist:

Cirrus

Cirrus clouds, thin, wispy, and feathery, are composed entirely of ice crystals. Cirrus clouds usually form at 25,000 feet and above, where temperatures are always far below freezing. These clouds are frequently blown about into feathery strands called "mare's tails".

Cirrocumulus

Cirrocumulus clouds, generally forming at 20,000 to 25,000 feet are rarely seen. These thin, patchy clouds often form wavelike patterns. These are the true mackerel sky, not to be confused with altocumulus rolls. They are often rippled and always too thin to show shadows.

Cirrostratus

Cirrostratus clouds form at the same altitude as cirrocumulus. These are the thin sheets that look like fine veils or torn, wind-blown patches of gauze, because they are made of ice crystals. Cirrostratus clouds form large halos, or luminous circles, around the sun and moon.

Middle Clouds

These are basically stratus or cumulus. Their bases average 10,000 feet above the earth.

Altostratus

Altostratus are dense veils or sheets of gray or blue. They often appear fibrous or lightly striped. The sun or moon does not form a halo, as with higher, ice crystal cirrostratus, but it appears as if seen through frosted glass.

Altocumulus

Altocumulus are patches or layers of puffy or roll-like clouds, gray or whitish. They resemble cirrocumulus, but the puffs or rolls are larger and made of water droplets, not ice crystals. Through altocumulus the sun often produces a corona, or disk, generally pale blue or yellow inside, reddish outside. The corona's color and spread distinguish it from the cirrostratus halo, a larger ring, covering much to the sky.

Low Clouds

These have bases that range in height from near the earth's surface to 6500 feet. There are three main kinds:

Stratus
Stratus is a low, quite uniform sheet, like fog, with the base above the ground. Dull-gray stratus clouds often make a heavy, leaden sky. Only fine drizzle can fall from true stratus clouds, because there is little or no vertical movement in them.

Nimbostratus
Nimbostratus are the true rain clouds. Darker than ordinary stratus, they have a wet look, and streaks of rain often extend to the ground. They often are accompanied by low scud clouds when the wind is strong.

Stratocumulus
Stratocumulus are irregular masses of clouds spread out in a rolling or puffy layer. Gray with darker shading, stratocumulus do not produce rain, but sometimes change into nimbostratus, which do. The rolls or masses then fuse together and the lower surface becomes indistinct with rain.

Cumulonimbus
Cumulonimbus are the familiar thunderheads. Bases may almost touch the ground; violet updrafts may carry the tops to 75,00 feet wind form. In their most violent form these clouds produce tornadoes.

Cumulus
Cumulus are puffy, cauliflower-like. Their shapes constantly change. Over land, cumulus usually form by day in rising warm air, and disappear at night. They mean fair weather unless they pile up into cumulonimbus.

GENERAL RULES FOR FORECASTING

Look for fair weather to continue if:
Clouds tend to decrease in number
The winds blow gently from the directions of west to northwest
The temperature is normal for the time of year
The barometer is steady or slowly rising
The setting sun looks like a ball of fire and the sky is clear
The moon shines brightly and the wind is light
There is heavy dew or frost at night

Look for weather to change for the worse if:
Cirrus clouds change into cirrostratus, and cloudiness thickens and darkness to the west or southwest
Quickly moving clouds increase in number and lower in elevation
Clouds move in various directions at different elevations
Clouds move from the south and the southerly wind increases in speed
The sky is clear at sunset, the wind speed light, and the air moist (look for fog)
The wind blows strongly in the morning
The temperature rises conspicuously in the winter
The barometer falls steadily
There is a hard rainfall at night

Look for clearing weather when:
A cloud filled sky shows signs of clearing up
The barometer rises rapidly
The wind shifts to a westerly direction

Look for rain or snow when:
18 to 36 hours after the first cirrus clouds are spotted in the sky (provided they thicken and give way to lower clouds)
12 to 24 hours after cirrus clouds thicken into cirrostratus and a halo is seen around the sun or moon
Within 6 hours when the morning temperature is high, the air is moist and sticky
Within 1 hour in the afternoon when there are swelling cumulus clouds overhead, and a dark sky to the southwest

Look for the temperature to fall when:
The wind continues to blow from the north or northwest
The pressure rises (in winter)
The wind is light and evening sky is clear
The wind shifts into the north or northwest

Look for the temperature to rise when:
The sky is filled with clouds at night and there's a moderately southerly wind
The sky is clear all day and the wind is from the south
The wind shifts from the northwest to the south

WEATHER
HOW TO ESTIMATE WIND SPEED

Name of Wind	Speed Miles per Hour	Specifications
Calm	Less than 1	Smoke rises straight up. Trees and bushes do not move. A lake looks as smooth as a mirror.
Light Air	1 to 3	Wind Direction shown by drift of smoke, but not by wind vane. Tree leaves barely move.
Light Breeze	4 to 7	Wind felt on face. Leaves rustle slightly. Ordinary wind vane moves.
Gentle Breeze	8 to 12	Leaves and twigs in constant motion. Wind extends light flags.
Moderate Breeze	13 to 18	Dust, loose paper, and small branches are moved.
Fresh Breeze	19 to 24	Small limbs in trees begin to sway. Dust clouds raised. Crested wavelets form on inland waters.
Strong Breeze	25 to 31	Large branches in motion. Whistling heard in wires. Umbrellas used with difficulty.
Moderate Gale	32 to 38	Whole trees in motion. Inconvenience felt in walking against wind.
Fresh Gale	39 to 46	Twigs break trees. Walking is impeded.
Strong Gale	47 to 54	Slight structural damage occurs. Chimney pots and slate blown off.
Whole Gale	55 to 63	Seldom experienced inland. Trees uprooted. Considerable structural damage inflicted.
Storm	64 to 74	Rarely experienced. Widespread damage.
Hurricane	75 or more	Excessive damage and destruction.

NOTE: A wind of 75 miles an hour or more is said to be of hurricane force, although it may not be associated with a hurricane itself.

LANGUAGE ARTS

Language Arts can be incorporated in your week's program from the time you leave Toledo until you return. The students are anticipating the things that will happen at camp. After being away from their families for four days, they are anxious to get home to tell others of their experiences (although they do not admit this at camp.)

Planning a class in language arts can be very easy and enlightening to the teacher. If correct spelling is not emphasized, then the major outcome becomes the content of what is written. We have seen teachers in tears after reading some of the works of their students. They never imagined the students were capable of such deep thoughts.

Some ideas for this class could be as follows:

1. Letters Home - Most of our teachers have found this is a good cabin exercise and they do not take class time for it. Also, it can be done all week long. An excellent idea that has worked well in the past and it makes certain all students are writing letters home, is to have each student hand a letter to his teacher to be admitted to the dining hall for a particular meal.

2. Creative Writing - Disperse the students in a given area so that the teachers and counselors can keep them all in sight. Let them sit and think for awhile and then write whatever comes to mind.

3. Descriptive Writing - Pick an area and describe it in detail. This can become a game by having all the students gather and read their descriptions and have the other students guess the area or object they were writing about. Another interesting sidelight is to have them describe an object without the use of nouns (this is really a challenge).

4. Daily Log - Some teachers find this to be a good learning experience. This can be done each night before the student goes to bed (cabin activity).

5. Library - The students are encouraged to use the camp library for research reading. Identification of an item will be remembered longer if they look it up instead of being told on the spot. If they are that interested, the name will mean something to them. Also, it may get the teacher off the hook - we cannot know everything.

6. Dramatizations - These make the evening campfires more fun. This could be in the form of planned or impromptu skits. Talent shows have been a big hit with some of the schools.

7. Haiku - See the following page.

8. Story Telling - An excellent cabin exercise before they go to sleep. No ghost stories, please - that is, if the counselors want them to go to sleep.

9. Write a story in the first person of an animal and his feelings.

JAPANESE HAIKU - A LANGUAGE ARTS TECHNIQUE

Haiku is a three line, seventeen-syllable poetic form which paints a verbal picture of an experience. It is the poet's way of conveying his inner-most feelings about the world around him.

Because the poem is short, the reader must supply much of the meaning through his own past experiences. Each poem is like a pencil sketch which the observer may fill in with color or meaning. Each work that is used has a purpose and no word is used unnecessarily. For example:

The Message
Whirring wind drops in,
Gives a message of the wild,
Then passes away.

This Haiku poem was written at a time when the poet felt a deep reverence for an aesthetic experience. He wanted to convey the beauty of the wind as it pushed against everything in its path. This poem may appear, at first, to be a simple thought, hardly worth recording and passing on to someone else. However, the words were inspired by an emotion which went much deeper than the observation. Together, words show relationships of phenomena, woven into a unified whole.

A Haiku poem is difficult to write because the poet must combine acute perception, creative use of words, and a framework for the reader to relive an experience based on a few suggestive phrases. Usually, the senses of touch, taste, smell, sight, and hearing must be brought to bear on the situation.

Children in the upper elementary grades of school have found satisfaction in this form of expression. The experience is one which can help to develop attitudes and appreciation concerning the child's relationship to his world.

The words at the end of each line do not have to rhyme. In fact, the poem does not necessarily need to contain seventeen syllables. The poem is short because it expresses that brief fleeting moment of "ah-ness" which is known as "Haiku moment".

Haiku is best accomplished when the would-be writers are in direct contact with nature. The senses should first be "exercised" verbally to create greater awareness of the potentials for poetry. The use of various adjectives to describe a tree, a cloud, or a puddle may improve the perception of others in the group. Alliteration can also be used to create pleasant sounding poetic phrases. Then, the individuals in the group should sit apart from each other, concentrate on something which captures the mind's eye, and write.

The word techniques and basic nature of "true" Japanese Haiku are more complex than described in this brief article. Experimentation can lead to some satisfying results in this poetic form. Any teachers or students who are tempted to try it will be so wise to remember that the writing of Haiku is a lifelong endeavor - a lifelong striving for a greater awareness and for greater appreciation of man's habitat - the world.

Math & Measurements

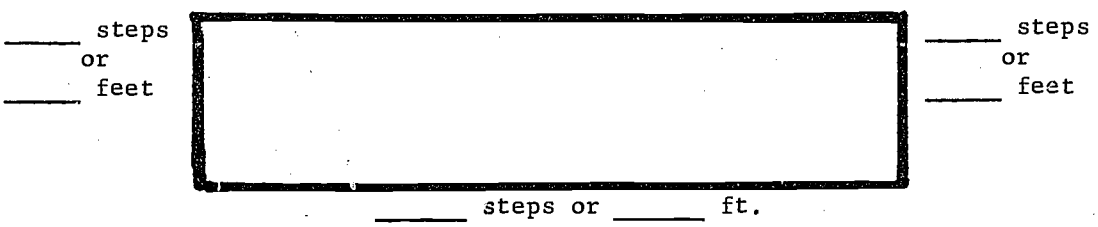
MATH HIKE

Finding the area of a field:

1. You must first find the average length of your step. It is

   _____ feet.

2. Record on the drawing below the length of each side of the field.



3. Find the area of the field in square feet.
   Area = average length X average width
   Area = _____ feet X _____ feet
   Area = _____ square feet

4. If there are 43,280 square feet in an acre, how many acres are there in this plot?

$$\frac{\text{\_\_\_\_\_ sq. ft.}}{43{,}280 \text{ sq. ft.}} = \text{\_\_\_\_\_ acres}$$

Outdoor Estimations

1. What is the height of the porch of the lodge?

   _____ Height of the top of the lodge? _____

2. What is the length of the lodge? _____

3. How far away are several distant landmarks?

   a. _____ b. _____ c. _____

4. Tree estimations.

	Tree No. 1	Tree No. 2	Tree No. 3
a. Height	_____	_____	_____
b. Diameter	_____	_____	_____
c. Age	_____	_____	_____
d. Kind	_____	_____	_____

Arts & Crafts

ART

Art has only two limiting factors: materials that you can provide and your imagination. Probably the best advice we can give would be to consult with the art instructor in your school. If this could carry over into the classroom, it would make for a better correlation. Some ideas which have worked well in the past are as follows:

1. Sketching - Charcoal, pencils, crayon, water colors, canteen of water, sketchbook, are necessary materials. The child should draw from observation, and emphasis should be on shape, color and relationships of objects. Examples of light and shadow are ever present. Subjects include trees, ponds, streams, flowers, boulders.

2. Clay work - The child can form an object related to nature and take the clay back to school for firing. There is the possibility of sculpturing birds, animals, people as has been done through the ages.

3. Collages - A simple project for all grades is a collage. The children must collect sticks, flat pieces of bark, leaves, dried flower seeds, small stones, moss grasses, and other natural materials to make designs which will be glued to a board.

4. Students - Give each student a string, wire or tape. Tell them to go out and construct something. Do not tell them anything more. Let them be creative.

5. Soil Panorama - This is a simple project attuned to a child's normal desire to play with sand or mold castles on the lake beach. Assign each child an area on the ground about three feet by three feet. Ask the child to make a scene in the dirt using rocks, twigs, leaves, bark and other natural objects. Ask him to design a campsite, a farm or other meaningful scene. Frequently several children combine efforts and in a larger area complete a landscape design. This type of project is very simple to develop and permits a free range for the imaginative powers of the child.

6. Other experiences - You could get into some of the following experiences depending on your background: symmetry, harmony, contrast, dominance, forms, line, color, value, texture, etc.

7. What are your ideas?

   1. _____

   _____

   2. _____

   _____

   3. _____

   _____

ART ACTIVITIES AT CAMP

Correlate art activity with nature materials as much as possible.

1. Make a mobile using a tree branch and adding various nature materials such as - an interesting stone, various seeds or seed pods, different leaves, etc.

2. Collect fossil stones. Set in a box top lined with sand. Pour plaster paris mixture over this. Turn out and wash off sand. Dry well before shellacking and glue picture hanger on the back.

3. Collect various colored pebbles. Set in a pattern in sand. Pour over plaster of paris mixture. Makes a natural mosaic.

4. Make a picture using birch bark, mosses, leaves. Combine with water colors.

5. Collect plant skeletons, fungi, acorns, pine cones, teasles, etc. Make an interesting arrangement by glueing to a piece of plywood. Spray with lacquer to preserve. Glue picture hanger to back. Good fall or winter activity.

6. Spatter prints leaf or flower collection.

7. Blue or Ozalid Sun prints - leaf or flower collection.

8. Print with a brayer and block print ink using wrong side of leaves.

9. Prepare flower and leaf collections by ironing them between waxpaper. Make them 9" x 12" in size so this will fit into a loose leaf binder.

10. Make plaster paper weights by pouring plaster in a pint milk carton. Add acorns and/or pine cones before plaster sets.

11. Make plaster casts of bird and animal tracks.

12. Make sand pictures. Trace picture with glue. Sprinkle with dry sand colored with dry powdered tempera over lines.

13. Make a willow or basswood whistle.

14. Make a toaster rack from a forked branch and twigs.

15. Make a board with miniature sample fire building techniques.

16. Make a collection of twigs from different trees. Identify them.

17. Make a collection of fungi. Draw the various gill patterns of fungi. Use as a source of design.

18. Make color drawings or paintings of various insects collected at camp.

19. Prepare impromptu costumes for an evening skit. Good rainy day activity. Use newspapers and paint.

20. Plaster or stone jewelry.

OUTLINE FOR TEACHING CONSERVATION
SIXTH GRADE
CONSERVATION OF NATURAL RESOURCES

OBJECTIVES

To understand the meaning of the term "conservation."
To understand the difference between conservation of renewable and nonrenewable resources.
To study some methods commonly used in the conservation of natural resources.
To understand that the conservation of soil, water, plants, and animals is closely interrelated, such as conserving the birds that eat the insects that destroy our trees.
To develop positive conservation habits.
To understand how important conservation is to the wellbeing of the community and Nation.

THINGS TO TALK ABOUT

What is conservation? Someone has said that conservation is the use, care, and protection of the land and other resources. It means using these resources and, at the same time, keeping them productive. Try making a definition of your own for conservation.

Renewable and nonrenewable resources.
* Soil, water, forest, grassland, and wildlife resources are renewable and, therefore, can be used without destroying them.
* Iron, coal, oil, and many other minerals are nonrenewable.

Using land for things it can do without wearing it out.
* Some land is suited for growing crops.
* Some land is suited for pasture or range.
* Some land is suited for forest or woodland.
* Some land is suited for wildlife, recreation, or water supply.

Conserving water.
* Water that soaks into the soil aids in plant growth, furnishes water for wells, causes springs to flow, means clear streams.
* Water that runs off the land carries soil with it, causes floods, causes muddy streams, causes wells and springs to go dry.

Soil and water conservation practices that help to reduce runoff and soil loss.
* Contour plowing, stripcropping, terracing, small upstream gully-control dams, and grass waterways on land that is planted to crops.
* Planting grass, clover, and other thick-growing vegetation on land suited to pasture, but too steep for crops. Controlling grazing of pastureland and protecting it from fire.
* Planting trees on land that is suited for woodland. Protecting trees from fire, diseases, insects, and overgrazing. Cutting mature and diseased trees on established forests; leaving a good stand of healthy, growing trees.
* Protecting trees from grazing animals and overbrowsing of domestic livestock and wildlife, such as deer and elk.

Conserving wildlife.

* Homes for wildlife - trees, bushes, grass, and other natural vegetation make the best homes for many birds and animals. Clear streams and lakes are best for fish and waterfowl.
* Food for wildlife - seeds, plants, fruits, berries, insects, and animals found in nature furnish most of the food; some food may be supplied by us during winter months. Water plants, small fish, and insects furnish food for fish and most waterfowl.
* Protection of fish and wildlife by hunting and fishing laws, and wildlife refuges.

Soil, water, forests, and wildlife are interrelated.

* Soil and water are necessary for trees, grass, and wildlife.
* Trees, grass, and other plants help build and protect the soil, reduce floods, get more water in the ground, keep streams and lakes clear, and furnish food and shelter for fish and wildlife.

How wildlife helps trees, plants, and the soil.
How can city people conserve resources?
Following or during the study and discussion of these subjects, have children make maps, posters, and sketches to illustrate them.

SUGGESTED ACTIVITIES

Make field trips to farms where conservation farming is being practiced. Observe the different conservation practices and ask the farmer to explain them. Note the ways in which trees and other plants are used to protect the soil. Note the wildlife homes in shrubs and grass along field borders, streambanks, and roadsides.

Make field trips to game preserves, fish hatcheries, wildlife refuges, and tree nurseries.

Build a model farm for the display case in the hall and show conservation farming practices on the farm.

Make a trip to the community or State fair to observe conservation exhibits.

Plant trees or grass on eroding land in the schoolyard or at home.

Show motion pictures, film strips, and lantern slides on conservation.

Organize a conservation club. Choose a club flower or design an emblem for a pin or armband.

Make posters showing conservation practices.

Make a poster showing the watershed in the community.

COMMUNITY STUDY

What is a community? Webster says it is a body of people living in a certain area and having common rights, responsibilities, and interests. He also states that a group of plants or animals living together constitutes a community. For the children in Toledo, or any city for that matter, these two entries have very little in common. When you start to break down the structure of a city, you find it very complicated with each person depending upon several other people for existence.

At Storer Camps we have a very complicated community unlike anything you will find in Toledo. Only two people families populate the 969 acres. We know there are hundreds and even thousands of other families which make Storer Camps home, but we may never see them. We know these residents are not always friendly because they tolerate, fight, and even kill each other. Yet, some of the families live in harmony, each having a nice little place they call home. There are even families present that spend their entire life span in the same spot, never once venturing away from home.

Which of the two described communities is more important? Our financial substance comes from the first and our body substance comes from the second. Can we live without one or the other? Maybe we take both for granted, when we should try to understand each one.

We will give the children a chance to explore both communities at Storer Camps. Human and nature relationships are the sole reason the youngsters of Toledo are changing environments for a period of five days.

Let us look at the teaching possibilities at Storer Camps in relation to the natural environment. A teacher may choose the whole realm or a small sector of nature for a day's lesson. You may study a 12" x 12" community, a 1000' x 1000' community, or for that matter any selected community. The class may be divided into groups with each group pre-planning in the classroom how they will approach their study. In so doing, many areas can be studied at the same time. There are four main types of communities present at camp:
1. Marsh 2. Field 3. Woods 4. Lake
Each community could be broken into an unlimited number of studies. The teacher may choose one or more of the following approaches:

1. Animal ecology - habitat, food, tracking; birds, fish, insects, mammals; vertebrates, invertebrates; affects on man, conservation
2. Plant ecology - prairie, field, marsh, woods, lake; food cycle, oxygen cycle; tree, rotten log, plant structure, succession; seeds, reproduction; affects on man, conservation
3. Water ecology - animal (fish, insects, amphibians, other water organisms) life, plant life; water cycle, weather; stream, artesian wells; affects on man, conservation
4. Food chain as related to Numbers 1, 2, and 3
5. Soils - top and subsoil, affects on man, conservation; (if equipment is available - may have run tests on the soil)
6. Seasonal changes in all of the above

The following pages may give you some ideas as to how to carry out these studies. The best approach to the problem is the one that fits the needs of your class.
Suggestion: Spend the A.M. in group work. Each group takes a topic and explores all its aspects. Use the P.M. for class discussion as each group shows and explains what they have uncovered.

QUESTIONS TO GUIDE YOUR COMMUNITY STUDY

I. What is the habitat like?

A. What types of plants are found here? (trees, shrubs, grasses, etc.)
B. Which kind of plant seems to be dominant?
C. How wet is the habitat? The amount of water can be described from the extreme of standing or flowing water to desert conditions.
D. How light is the habitat? Are some parts of it lighter than others?

II. What animals are in the community? Where do they live?

A. What places in and around the plants offer living quarters for animals?
B. How are these places alike? How are they different? (consider light, water, temperature)
C. What animals do you find in each of the places? What signs of animals do you find? (tracks, partly eaten plants)
D. Which place has most animals?
E. Which place has most different kinds of animals?
F. What comes into the community from outside?

III. What are the habits of each community member?

A. What does each of the animals eat?
B. How do the animals get their food?
C. How do the animals move from place to place?
D. How do the animals take in oxygen and give off carbon dioxide? (lungs, gills, skin, etc.)
E. How do the animals change as they grow?

IV. How does the community change?

A. In what ways do the parts of the community change as the seasons change?
B. Do you find the same kinds of plants and animals and as many of them in various parts of the community in fall, winter and spring?
C. If you find them different, in what ways are they different? Can you find reasons or advantages for the changes you observe?

PLANT-ANIMAL COMMUNITIES

Have you ever asked a fisherman where to catch fish? Almost every fisherman will give you a different answer, but each will lead you to some spot where plants are growing in the water. Why are there more fish where plants grow? Perhaps the fish are finding food or hidden places. If they are finding food among the plants, what is the food? If the food is smaller fish, tadpoles, or insects, these animals, too, must live among the plants and find food.

Ask a hunter where he goes to find deer. He will tell you that deer live in young forests where leaves and buds of trees are low enough for browsing. Ask a bird watcher where to look for different kinds of birds. He points to hedgerows for catbirds, abondoned fields for song sparrows, tall trees for orioles, and marshes for red-winged blackbirds.

The fisherman, the hunter, the birdwatcher, whether they realize it or not, describe the habitats of animals in terms of the kinds of plants that are found there and, perhaps, the amount of water. These plants with animals living among them are plant-animal communities. The plants and animals depend on one another. Each kind of plant and animal gives something to the group and gets something from the group. Each kind of animal finds food, protection, and ways to reproduce. The animals are not conscious of this cooperation (and competition). They live in association because of their particular needs and their abilities to tolerate the conditions of the habitat. They live as they do because they cannot live otherwise.

Many kinds of plant-animal communities exist, some on land, some in water. Naturalists usually name these communities for the largest or most plentiful kind of food found there, because these dominant plants indicate and help to determine the conditions of light, water and other environmental factors. Sometimes community names describe the moisture conditions also. A few well-known communities are named thus: sand prairie, dry oak woods, sphagnum bog, cat-tail marsh.

All plant-animal communities differ from one another. The bottom of a pond on which water plants grow gets more sunlight than the bottom of a pond under floating mats of vegetation. These two communities offer the animals different kinds of ways of making a living. In the lighter habitat lives a kind of dragonfly nymph which burrows into the sand at the bottom of a pond. In the darker habitat is another kind of dragonfly nymph which climbs among the roots of the floating plants.

In a plant-animal community, such as a pond, there are different kinds of places where animals live. Some animals such as worms, water sow bugs and beetle larvae, burrow into mud or sand or into the bodies of plants. Animals such as adult dragonflies and spiders fly or crawl around the tops of plants above the water surface where there is more light. Other animals remain hidden in dark crannies among the roots and branches. The number of animals and the number of different kinds of animals in a community depend, to a large extent, on the number and kinds of plants.

All plant-animal communities have some characteristics in common. Certain types of food relationships, for example, exist in all communities, although the kind of plant or animal which occupies a specific niche will differ from one community to another.

Green plants play a key role. They furnish the animals with food, some oxygen, and places to live. While the sun shines, the green plants make sugar from water and carbon dioxide. The plants use this sugar and minerals from the soil to make other substances they need. While manufacturing sugar, the plants release oxygen into the water or air. Some of the animals in the community eat the plants, and other animals eat the plant-eaters. All the animals give off waste materials and carbon dioxide, which go into the soil and water on air and nourish the plants. All the animals take in oxygen from the water and air. Thus do the plants and animals depend on one another.

As the plants change from one season to another, the animal life associated with them changes so. If leaves and stems die and crumble during cold weather, the animals which eat green leaves will have no food. What happens to these animals? Some dig into the soil or into crevices in dead or dormant plants and hibernate. Others migrate. Still others lay eggs, assuring the next season's generation, then die. Some birds and mammals remain active through the winter, feeding on fruits and seeds.

You will best understand these relationships if you undertake your own study of a biotic community during a period of a few weeks or months. As you study a community during a time, you will find out how the animals within it survive cold or dry seasons when there is little food for them. Nearly everyone can find a pond, stream, field border or woods near home. If you live in a large town or city, your plant-animal community may be a small one: a park, a corner of a back yard, an empty lot, or just one tree in a lawn or school ground. Wherever there are plants, there are almost certain to be animals. As you explore and observe, you should keep records of the things you find. Perhaps you can bring a few of the plants and animals into the classroom, keep them in terraria or aquaria, and observe them more closely.

The fact that communities have characteristics in common makes it possible for you to organize an investigation of any community, even one which you have never explored before. You will look for the food producers, the plants which produce food by photosynthesis. Then you will look for the plant-eaters. You will look for a variety of niches where animals can make a living.

Because each community is different, you will find many shapes and textures of plants. You will find many kinds of plant-eaters and a variety of animals which prey upon the plant-eaters. You may discover remarkable adaptations for getting food and oxygen, for reproducing, for survival over unfavorable seasons. You can observe how plants and animals react to changes of temperature, light, and available water. There are thousands of different kinds of plants and animals. Each kind possesses a combination of structures and ways of functioning which compels it to live within definite environmental conditions. There is no end to the discoveries you can make.

by Beth Schultz
Department of Biology, Western Michigan University
Reprinted from Metropolitan Detroit Science Review
February, 1961, Pp. 121-123

ANIMAL HOME STUDY

In classroom preplanning, the class should first decide on simple objectives. For example, thought should be given as to the possible activities the group could become involved in. The type of activities will suggest helpful equipment to take. (Collect pail, tape measure, field guide, thermometer, trap, etc.)

Thought should also be given as to the most logical places to locate the types of homes sought. Factors such as food and water sources, and the need for protection should be considered when plotting out the direction to pursue. It is also important to relate to the children that animals prefer southern slope areas where direct sunlight grows more food and offers more warmth in cold weather. Eastern and western slopes are next in favor. North sunless slopes are poorest, although you may see many tracks where game crossed.

Activities for Studying Animal Homes

1. Determine location and number of entrances to home. Discuss possible reasons for their particular location.

2. Measure and compare size of holes, size of nests, etc., and distances between the different entrances when present.

3. Gather and analyze food scraps (bones, feathers) discarded outside home.

4. Determine differences in air temperature and temperature within each entrance.

5. Determine whether home is in use (lay small pieces of materials, grass, fine sand, etc., if in doubt).

6. Discuss whether the animals living habits would change throughout the year.

7. Make plaster casts of tracks around the home if available.

8. Set a trap to capture the animal. Seek further instructions on suggestions for this activity.

Additional Items for Group Discussions

1. Did the animal using it, build the home?
2. Is it placed so the animal can observe without being seen?
3. Is it in a spot for warmth?
4. Does its location reveal the habits of the owner?
5. What possible enemies might the animal have in this particular area?

Tips

1. Most animals are active year round. Many animals slow down their activities in the winter and spend a larger portion of time sleeping. Most animal movement is in search of food and each animal has its own preference. There are more nocturnal (night) feeders than diurnal (day) feeders.

2. Food - Look for evidence of what animals feed on: cut twigs, empty nut husks, chewed plants, remains of feathers and bones, ground digging, bark stripped from young trees. One of the best ways to study animals is to bait an area and play upon curiosity and hunger. Clear a ten foot diameter circle of all vegetation. In the center of the circle, place the bait in a small container set in the ground. (A tin can makes a good container). This will prevent removing of the bait easily. Smooth out the ground in the circle so any visitors will record their presence in the form of tracks. A good universal bait is peanut butter with molasses or honey on whole wheat bread.

THE WILD ANIMALS AND PLANTS OF THE STORER CAMPS AREA

Storer Camps is fortunate in its natural endowment of wildlife and plants. The camp lands include, in addition to fine lake and surrounding marshland, extensive area of abandoned (or unworked) farm land, some of which remains as grassland or open fields, and a good portion of the camp is now second-growth forest. This state of the land provides four main types of natural communities: the lake, the marsh, the field, and the woods, plus plenty of edge or borders between these main communities. Several artesian wells provide water for small streams except in dry years, and each spring, small temporary ponds form in low areas in various parts of the camp. Each type of natural community has a different set of plants and animals that are normally found only in that community. A variety of communities will provide a great variety of wildlife and plants. This is the situation at Storer Camps.

In the following lists, an attempt has been made to compile the most common representatives of various major groups of animals and plants. The lists are not intended to be complete, but to serve as a guide for classroom study before arriving at camp. If you are very observant and on the lookout for these species, you will find them. We would encourage you to notify the director if you find a species that is not on the list.

MAMMALS

Opossum
Eastern Mole
Least Shrew
Bats
Raccoon
Mink
Skunk
Red Fox
Woodchuck
Squirrels - Thirteenlined Ground, Red, Fox
Eastern Chipmunk
Mouse - Deer, House
Vole
Muskrat
Norway Rat
E. Cottontail Rabbit
Whitetail Deer

AMPHIBIANS and REPTILES

Turtles - Mush, E. Painted
Snakes - N. Water, E. Garter, N. Ringneck, Blue Racer, E. Milk
Salamanders - Spotted, E. Tiger
Toads - American, Spring Peeper
Frogs - Gray Tree, W. Chorus, Bullfrog, N. Leopard, Pickeral, Wood

TREES

Pines - White, Norway, Scotch
Hemlock
Aspen - Quaking, Largetooth
Black Walnut
Yellow Birch
American Elm
Sycamore
Locust - Honey, Black
Box Elder
Red Cedar
Black Willow
Cottonwood
Shagbark Hickory
Oaks - White, Bur, Red, Black, Pin
Sassafras
Black Cherry
Maples - Sugar, Black, Red, Silver, Norway
Ash - White, Black

WINTER ANIMAL TRACKING

The winter months offer excellent opportunities for animal tracking. Through the media of television, today's children are well acquainted with policemen and their clever use of fingerprinting. Nature has a way of fingerprinting her children, whether they be ants or horses, caterpillars or cows. She takes their prints in snow, dust, mud, and sand. You can not move in soft snow or earth without leaving a track. Animals, big and small, leave tracks that anyone can follow.

Animal study can be greatly augmented with an activity on animal tracking.

Tips:

1. Discuss places that tracks are most likely to be found (along a stream, around puddles, near food source, along a game trail).
2. Caution group that upon discovery of a track not to damage other nearby tracks in their excitement.

There are many things you can tell from animal tracks. One of the first things you should be able to recognize is the front footprint from the rear footprint. This can be difficult in some cases since the rear foot comes down in the tracks of their front foot (foxes). In the case of the rabbit, squirrel, raccoon, mouse, and opossum, the hind foot is larger than the front. A little practice will make this easier to read.

Clues you can read from tracks:

Examine a single track for:

1. Length of track
2. Width of track
3. Number of toes - front and back
4. Age of track - old or fresh
5. How far apart are the prints? Clue to the size of the animal, and manner of movement (walking, bounding, running, moving slowly or quickly for its size)
6. How deep are the prints? Clue to weight of animal
7. Does the animal walk flatfooted or on its toes?
8. Was he searching for food? What does he eat?
9. Was the animal using two or four legs?
10. Where does it sleep or rest? Raise the young?
11. Was he alone? Was he being hunted?

Tracks made by wild animals are usually made at night. Therefore, the A.M. is better for observations because the tracks may be smudged in the P.M.

MAKING A PLASTER CAST OF AN ANIMAL TRACK

Equipment:

1. Cardboard strips 12" to 15" long
2. Paper clips
3. Two tin cans (one for water - one for mixing)
4. Dental plaster or plaster of paris
5. Mixing stick

Procedure:

1. Select a clear track.
2. Carefully remove all sticks or straws from track.
3. Press cardboard strip into earth around track.
4. Mix plaster (ratio: approximately two parts of plaster to one part of water)
   a. sift plaster into water, this causes less lumping
   b. thump container from time to time to make air bubbles rise.
   c. mix to consistency of pancake batter.
5. Pour mixture into the track.
6. Allow plaster to run into the deeper parts. (Don't pour directly)
7. Place a few crossed sticks in plaster to reinforce (if necessary).
8. As plaster hardens fashion a hanger from a paper clip and insert so track may be hung.
9. After plaster has hardened (1-2 hours) tear away cardboard strip and wash mud or earth from the cast.
10. Track may be painted if you desire.

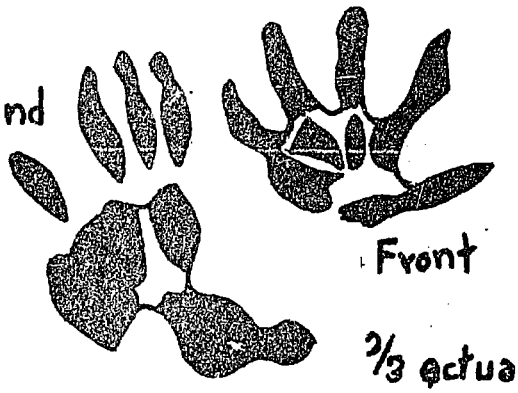
Tips:

1. Dusting track lightly with talcum powder will help keep coat from retaining mud or sand.
2. Salt will speed up the hardening of the plaster. Vinegar has the opposite effect.
3. An interesting way to secure animal tracks is to select a flat open space in some quiet place. Place a low flat stone or board in the center of the open space. Sprinkle a covering of fine sand on the earth in a broad area around the center stone. Place seeds, or bits of other food on the rock and carefully smooth out the area around the stone so that any creature walking over it will leave a clear print.

Follow Up:

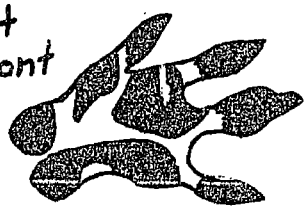
1. Bulletin boards can be made using the plaster casts or drawings of tracks.
2. Discussion leading to the realization that much information about the animal kingdom can be learned by studying animal tracks.
3. Impressions of small tracks may be made in wet clay of various ceramic objects which will become permanent when fired.
4. The above procedure will yield a raised track. If you want a replica of the track, coat the cast with a thin coat of vaseline. Place on flat surface and surround casting with strip of cardboard as before. Pour plaster of paris over cast and allow to dry. If it is to be hung up, add a paper clip as before. Separate the two layers and scrape any rough places with knife blade, or use fine sandpaper to smooth. Wash in running water. Paint inside of track with India ink or black poster paint. A coat of clear shellac or clear plastic may be applied to protect and preserve the casting.

Animal Tracks



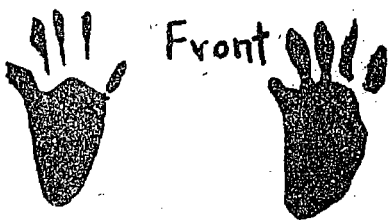
2/3 actual size

Opossum



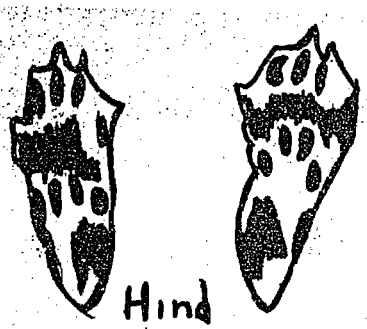
2/3 actual size

Woodchuck

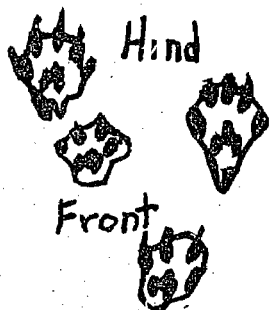


Chipmunk

Beaver



(Deer Mouse)



Actual size

White-Footed Mouse

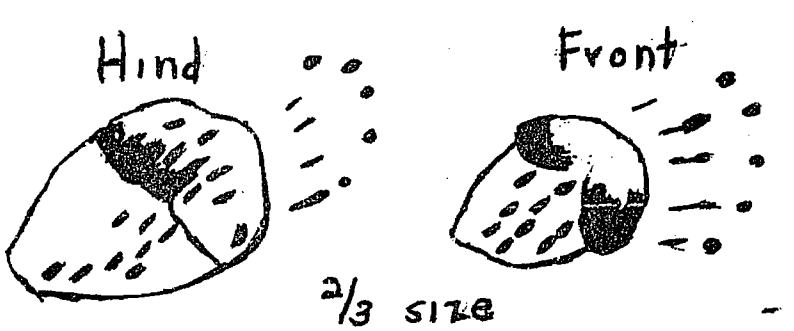
1/4 size

White-Tailed Deer

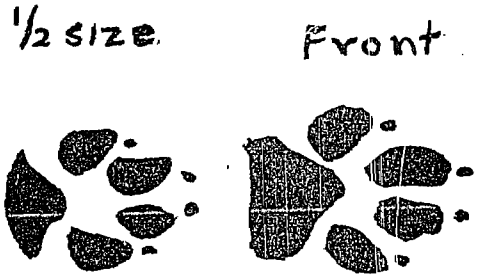
2/3 size

Squirrel

Muskrat

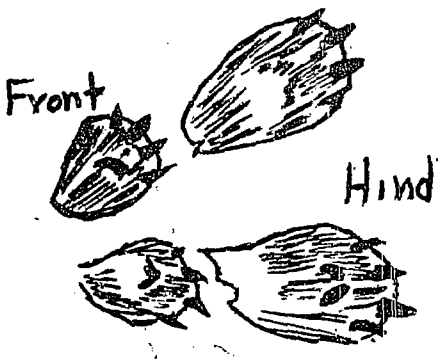


Porcupine

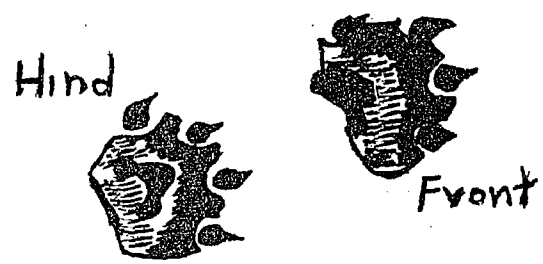


Coyote

Raccoon



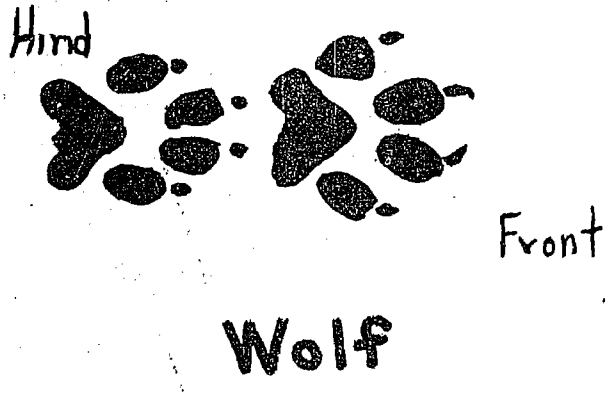
Weasel



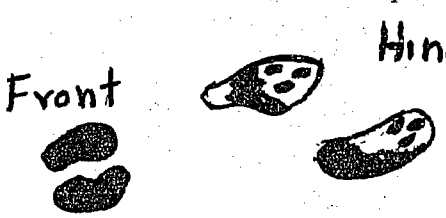
Mink

Badger

Skunk

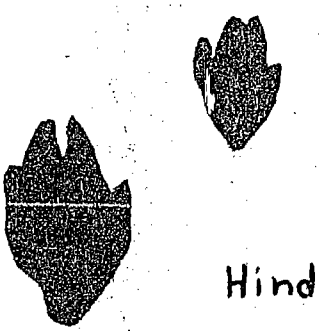


Wolf



Rabbit

Marten



Rabbit

Front

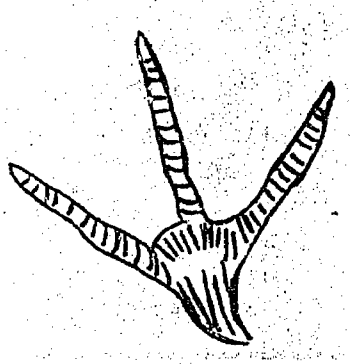
Hind

Fox

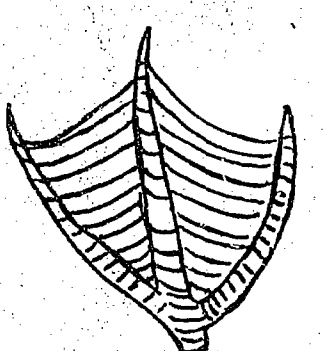
Front

Hind

Dog



Pheasant



Duck

INSECT STUDY

We probably have more direct contact with insects than any other members of the animal kingdom with the possible exception of other humans. Insects are fascinating to children and you need very little equipment to study them.

Where to Find Insects

Trees and shrubs: Insects feed on leaves and hide in bark furrows.

Grasses and weeds: Serve as a hiding place for numerous crawling and jumping insects.

Flowers: Attract numerous flying insects.

Mud puddles: Attract butterflies, bees, and other insects.

Lakes and streams: Hundreds of species, surface and burrowing insects.

Under rocks, leaf litter, rotting wood, loose bark: Hiding places for many insects, especially beetles.

IN ORDER TO FIND INSECTS YOU ONLY HAVE TO LOOK

When to Find Insects

Certain stages of various insects are evident at all seasons of the year. Spring offers an excellent opportunity to locate larva, nymph, and adult stages of numerous insects.
Insects that move by day are more active on warm sunny days. Cool mornings tend to make these day movers sluggish.

Equipment for Insect Study

1. Magnifiers - for study of minute insects and to distinguish between species.
2. Knife - to dig out insects that live in bark or dead wood.
3. Insect books - for positive identification purposes.
4. Notebook - for field notes.
5. Insect net - if you desire to collect insects.
6. Insect cages and jars - for future observation of live species.

INSECTS FOR WINTER STUDY

Insects are cold-blooded and least active in cold weather; hence, finding specimens for study can be difficult in the winter. Since they are present at all times, of course, the problem is one of getting to where the insects are located or in recognizing them as insects.

Each species seems to have a stage in its life cycle that is better fitted to resist cold weather. Unfortunately for the winter entomologist most insects winter as eggs or as hard to find larval or pupal stages.

Adult insects of many sorts hibernate under logs and rocks, in weed clumps, grass tufts, bark and rock crevices, and among fallen leaves and litter. In the coldest weather, it is possible to find fairly active insects among the downy leaves of mullen plants.

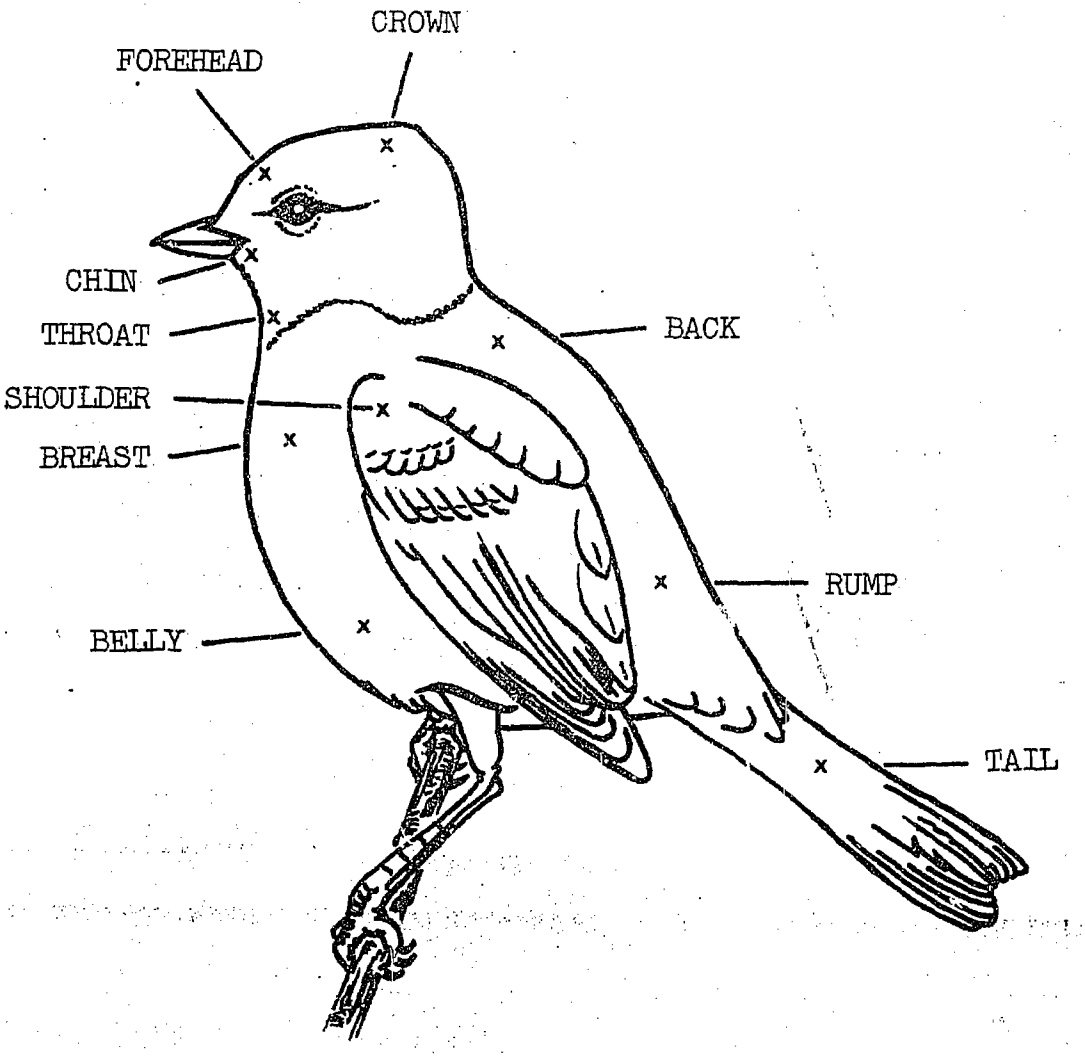
One way to obtain insects almost any time of the year is to place a mass of dry leaves and other forest floor litter into a separator of some sort. One of these is a modified Berlese (Bur-laz'y) funnel (see sketch). To construct this device use a funnel with a screen of about 1/4" mesh part way down to hold the litter. Next place a light (hopefully with an inverted funnel-shaped reflector) above it. As the litter dries out from the heat of the lamp, insects, etc. will work their way down the spout tending to avoid the light and heat from the bulb. A bottle of preservative or an empty jar should be under the funnel.

Soil insects. If a section of hard-frozen earth is taken indoors and allowed to warm a bit, a surprising number of insects may emerge. Often soil from areas covered by water in the spring contains large numbers of mosquito eggs. They can be hatched by placing the soil in a dish or water for a day or two. Other forms of life may come out of their dormant condition when this is done so expect to be surprised.

Fallen logs harbor many sorts of animals in winter and insects can be found here in all stages. Some will be between the wood and the bark while others will be in the wood itself. Beetles, ants, wasps, and bees may be found here. Examining them outdoors is an excellent way to study many of the insects with powerful venom in comparative safety as they are quite sluggish when cold. Often the ants, bees, and wasps found in these places are fertilized queens capable of producing new colonies.

Rock cracks harbor many insects, especially beetles and Hemiptera (true bugs) hibernating for the winter. On bright and sunny winter days many dormant insects revive a bit and fly or crawl about. Exposed surfaces radiating heat are good places to look for insects on such days. The south-facing sides of rock out-croppings and stone buildings are likely spots. The entomological literature contains many descriptions or insects hopping or crawling on the surface of snow on warm winter days.

Insects can also be found in buildings through the year. High sheltered areas are the best place to look. It is likely that the flies taking shelter in man's buildings produce most of the young that plague him in the summer. For insects that are parasites of warm-blooded animals, life is as usual through the winter.



This sketch will help you to learn some of the parts of a bird. If you will learn where they are located, it will help when you want to identify a particular bird.

The next page is designed to help you make some of the major observations that are necessary to identify birds. After you have filled in as many of the blanks as possible, you will want to use one of the simple bird identification books from our library. The best one available is Roger Tory Peterson's book A FIELD GUIDE TO THE BIRDS. Compare your observations with the pictures and descriptions in the book, then name the bird.

BIRD WATCHING

Equipment for Bird Watching

1. Binoculars (helpful but not essential)
2. Bird books
3. Note taking materials

Finding Birds

1. Listen for song
2. Listen for rustling of leaves (as they search for food on the ground)
3. Look for branch movement
4. Look for movement in the sky

How to Look in Order to See Birds

1. Stay alert, continually looking
2. Scan the whole out-of-doors
3. Look from sky to ground
4. Look in a complete circle

When to Look for Birds

1. The old saying "an early bird catches the worm" can be applied to seeing birds. The early watcher sees the birds. Birds are more active in the early morning and late afternoon.
2. Cool clear mornings are the best.
3. Rainy, gray days birds seem to hide.
4. Look with the sun to avoid glare.
5. Upon location freeze and move closer cautiously when the bird does not notice.

Rules for Going on a Trip to Study Birds

1. Walk quietly. No loud talking.
2. Follow your leader.
3. When you see a bird, stop. When the leader stops, everyone stops.
4. When you see a bird and want to show it to the rest of the group, tell them, without pointing, where it is. Birds see better than they hear and are startled by quick motions.
5. When you are looking at a bird, stand with your back to the sun.

Hints on Bird Watching

1. Birds are shy.
2. They have excellent eyesight and hearing.
3. To get close to birds in the field, move slowly and easily to an area that birds visit. Pick a comfortable place to sit or stand, so that you can see the birds and they will not be frightened of you.
4. Wear clothing that blends with the landscape so that you will not attract unnecessary attention when you move.
5. For field trips, a six to eight power prism binocular with a central focusing wheel and one adjustable eyepiece to take care of individual eye differences is best.
6. The lower powered glasses are preferable in that they have a wide field of view and are easier to hold steady. Try to get a lightweight glass for the greatest enjoyment.

7. Where does one look for birds? The answer is literally everywhere. Every one of the many different plant communities with which nature clothes the earth from swamp and marsh to forest and desert provides a home for certain species of birds. In fact, the habitat in which one sees a bird and the things it is doing can be a most helpful clue to its identity.
8. Of course, one doesn't have to take field trips to see birds. They can be encouraged to come close to your window or visit your feeder by providing a variety of seeds for them.
9. Birds are attracted to water and will visit bird baths, even a small puddle, to drink and bathe.
10. Bird houses are valuable in that they hold the birds near your home and you will be able to see them close-up for long periods of time.

Winter Bird Watching and Feeding

1. Winter months offer an excellent opportunity for observation of local resident birds.
2. Lack of foliage makes it possible to see more birds in their natural habitat.
3. Birds seem to come more readily to feeders during the winter when food is scarce. Feeding is important because the natural food is covered by snow. Since they have a high body temperature, they will survive as long as they have food.

Clue Chart for Bird Identification

A game can be made about bird identification by the construction of a clue chart. The six S's of field identification can be used as the clues.

Bird Characteristics -

Size - Is the bird larger than a sparrow (6 inches)? or a robin (10 inches)? or a crow (20 inches)?

Shade - Areas of the body where colors are located (variations in color at the throat, belly, wings, tail, and markings of feathers).

Shape - a. body shape (plump, sleek, thin, short and stubby, or streamlined)
b. head and bill shape (bill is thick or thin or long or short)
c. tail shape (rounded, wedge, square, notched)
d. wing shape (rounded, pointed, ragged)
e. leg shape (long or short)

Surrounding - Where was the bird located? (tree top, vertical position of tree trunk, in a wooded area, meadow, telephone wire, fence post, prairie, along the country road, swimming or floating on water, other)

Sweep - What were the flight characteristics? (jerky, darting, swooping, irregular flight)

Song - Art there phonetic sounds such as "raspy, chip-chip, peter-peter"? or a trill?

BIRDS

Spring and Fall	Winter
Most Common	
Great Blue Heron	Turkey Vulture
Mallard Duck	Red-tailed Hawk
Red-tailed Hawk	Bobwhite Quail
Bobwhite Quail	Ring-necked Pheasant
Mourning Dove	Mourning Dove
Screech Owl	Screech Owl
Ruby-throated Hummingbird	Belted Kingfisher
Yellow-shafted Flicker	Yellow-shafted Flicker
House Sparrow	Red-headed Woodpecker
Red-winged Blackbird	House Sparrow
Brown-headed Cowbird	E. Meadowlark
Cardinal	Redwinged Blackbird
Goldfinch	Grackle
Downey Woodpecker	Brown-headed Cowbird
E. Phoebe	Cardinal
Barn Swallow	Goldfinch
Blue Jay	Tree Sparrow
Crow	Downey Woodpecker
Black-capped Chickadee	Blue Jay
Tufted Titmouse	Crow
White-breasted Nuthatch	Black-capped Chickadee
House Wren	Tufted Titmouse
Catbird	White-breasted Nuthatch
Brown Thrasher	Cedar Waxwing
Robin	Starling
Cedar Waxwing	
Starling	
Song Sparrow	
Less Common	
Green Heron	Grackle
Canada Goose	Towhee
Wood Duck	Vesper Sparrow
Turkey Vulture	Chipping Sparrow
Ring-necked Pheasant	E. Kingbird
Kildeer	E. Flycatcher
Sandpiper	Tree Swallow
Black Tern	Bank Swallow
Red-headed Woodpecker	Purple Martin
Warblers	Marsh Wren
E. Meadowlark	E. Bluebird
Baltimore Oriole	Vireos

BIRD OBSERVATION

Size should be one of the first things to be noticed when bird watching. Bird watchers most often refer to three of the most common birds as examples of size. They are the sparrow, robin and crow.

Certainly the next thing that you will notice about a bird is his color. Every species of bird is colored differently than every other species. Therefore, color is probably the most helpful method of identifying a bird. There are two things that will sometimes make it difficult to positively identify a particular bird. They are (1) birds having similar colors or color patterns; and (2) the female of a species is either duller in color or the color pattern is actually different. In each case special care should be taken when observing each bird.

Sometimes a bird is so far off that even with binoculars his image is very small. Sometimes there is not enough light to see his colors. At these times it is helpful to know the silhouettes of some of the more common birds. Learn the silhouettes on this page, and see if they will not help.

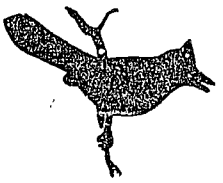
As a person becomes more interested in bird watching he will, with more and more practice, learn to identify birds by their song.

Some birds have a flight pattern that is also of some help in identifying them. This method is especially helpful when identifying a general category of birds such as the gliding flights of the hawks.

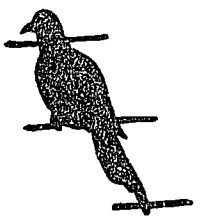
Habitat is the particular place where any animal lives, including birds. If you think about it you will notice that certain groups of birds are most often seen along a large body of water. Others are seen on or near the ground in a woods while still others live in layers of the trees in the woods. Some live in the lower branches, some partway up the trees and others in the uppermost parts of the trees. Each group lives where it is best suited to survive.

Silhouettes by permission. Roger Tory Peterson, A Field Guide To The Birds. Houghton Mifflin Company, Boston, Mass.

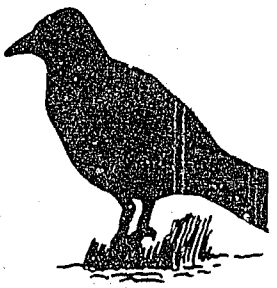
CARDINAL



BLUE JAY



MOURNING DOVE

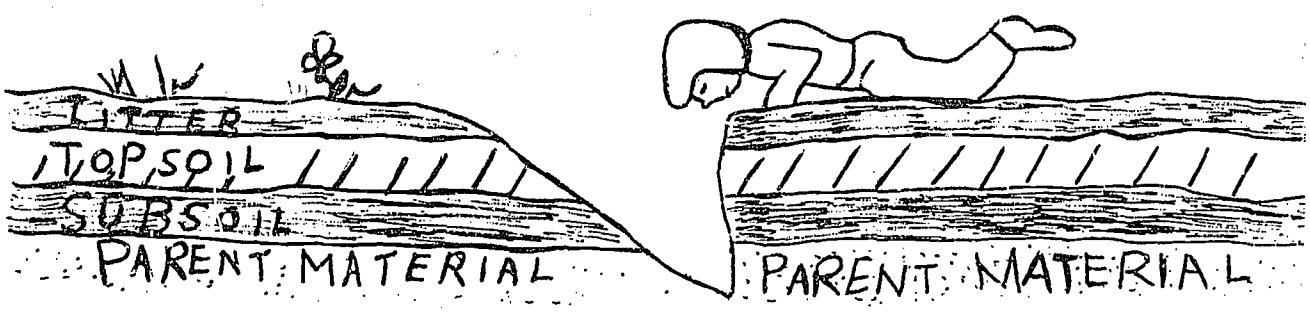


CROW

BELTED KINGFISHER

EXAMINING SOIL

Select the particular location of soil you wish to examine. Dig a hole about three feet deep (or less in shallower soils) with one side vertical and the other at a slope (see sketch). This exposes the profile to the view of the class and allows an examination.



Using the SENSES to examine this soil:

A. Gather information like this about the soil and this site:
   1. Depth of soil
   2. Slope of land
   3. Vegatative cover
   4. Use history
   5. Evidences of erosion

B. Have each student take a "fist full" of soil from near the surface and squeeze and ball it. Do the same from the lower levels. Describe the sensations - which is stickiest - wettest - coldest, etc.? Try to make a ribbon by working between thumb and finger.

C. Scrape the vertical side of your exposure so you have a smooth surface to examine. Notice the colors of the various layers in the profile. Sketch the profile, measuring the thickness of each layer and describing the colors. Don't forget to include the "layer" of litter at the surface if any are present.

D. Examine the profile for visual evidences of organic matter:
   1. Is there an accumulation of undecayed litter on top and a definite layer of humus present?
   2. Do you find any roots in the soil? At what levels are they concentrated? Are there some evidences of root and insect penetration in the lower or subsoil layers?
   3. What do the differences in color indicate? ("Organic matter wise?")

E. What other things do you see in your exposure that are not really a part of the soil?
   1. Rocks and gravel
   2. Rubbish or trash

THE IMPORTANCE OF SOIL

Land takes up only 29% of the entire surface of the earth, (and not even all of this is usable). On this amount of land man must grow the things he needs to make everything that he uses for food, clothing and shelter. All of this comes entirely from the sun and the soil. The sun gives off energy in the form of light. This energy is needed by everything that lives and grows. The soil is necessary for two reasons: 1) it is the foothold for the plants we grow; and 2) it is the place where plant nutrients are made and stored.

SOIL PARTS

Soil is made up of four basic and fairly common parts. They are: AIR, WATER, MINERAL and ORGANIC MATERIAL.

MINERALS	AIR	WATER
especially	21% OXYGEN	HYDROGEN & OXYGEN
QUARTZ	78% NITROGEN	(H_2O)
FELDSPARS	1% ARGON	

MINERAL MATERIAL

What is the most important source of mineral material? Rocks! We all know that plants can not grow on the surface of a rock. Something must happen first. The rock must be broken down into smaller and smaller pieces until the pieces are the size of a grain of sand or even smaller. This breakdown is called WEATHERING. There are three kinds of weathering: 1) CHEMICAL 2) MECHANICAL 3) ORGANIC. The three most common examples in same order as above are: 1) RAIN - when falling through the atmosphere picks up CARBON DIOXIDE and forms a mild acid known as CARBONIC ACID. 2) ICE - causing pressure in cracks much like that of a wedge, and 3) EARTHWORMS - in an acre area will often pass 40 tons of material through their bodies in a one year period. (In addition to these we should include sunshine, wind, frost, heating and cooling, freezing and thawing, and wetting and drying. All of these in some way cause a weakening of the rock. Often the minerals inside the rock react with air and water. These changes within the rock then set up stresses and strains which weaken the rock even more). This process releases elements which by themselves, or in combinations called minerals, provide plant nutrients.

Of the 92 known natural elements only 8 are commonly found in rock formations. If we could weigh the earth's crust, these 8 elements would make up 98% of its weight. The element most often found is oxygen. It makes up 47% of the earth's crust. Silicon is next, making up 28% of it. (See glossary for complete list).

ORGANIC MATERIAL

After rain has caused a weakening of the rock surfaces and freed plant nutrients, very primitive plants begin to grow there.

Among the first of these will be the LICHENS followed by MOSSES and FERNS. These are known as PIONEER PLANTS. It is these plants, as they live and die, which make possible the animal life that will soon follow them.

But after a short length of time these first plants and animals will die and other plants and animals will follow them - and die. And so the cycle continues. However, as we know the remains of these plants and animals do not just pile up. These, too, are broken down into simpler parts which in time return to the soil, air, and water. This decay process is caused by BACTERIA, MOLDS, and FUNGI which are called DECOMPOSERS. As the decomposers work they produce HUMUS, which is the name for the dead and decaying plant and animal material, and organic wastes, needed to make soil.

SOIL PROFILE

Of the five layers shown on the soil profile sketch only three are really soil. They are: SURFACE SOIL more often called TOPSOIL, SUBSOIL, and SOIL PARENT MATERIAL. (Both HUMUS and BEDROCK lack one of the four necessary parts of true soil. Also, bedrock is solid and unweathered.)

Soil depth around the world averages between five and eight feet. Topsoil depth averages between six and eight inches. The time needed to form one inch of topsoil probably averages about 500 years!

* * * * * * * * * * * * * * * * *

The old log in the woods will never be a great tree again. . . things never go back . . . yet, lying there . . . covered with moss . . . it is creating new life . . . which in turn will be great and beautiful. . .

The fish eats the insect. . . the bird the fish. . .the mammal the bird. and. . . the insect the mammal. . . as each in a universal rhythm is creating new life. . . . . for there is no life except life which comes from life. . . . .

waters flow where daisys grew . . .
Trees grow where swans once swam . . . .
All things upon this earth are developing into new things. . . from what is here must come what is to be . . . there is no other material.

This is the fulfillment of the promise of life . . .
. . . nothing can be destroyed . . . .
everything is being created . . . .

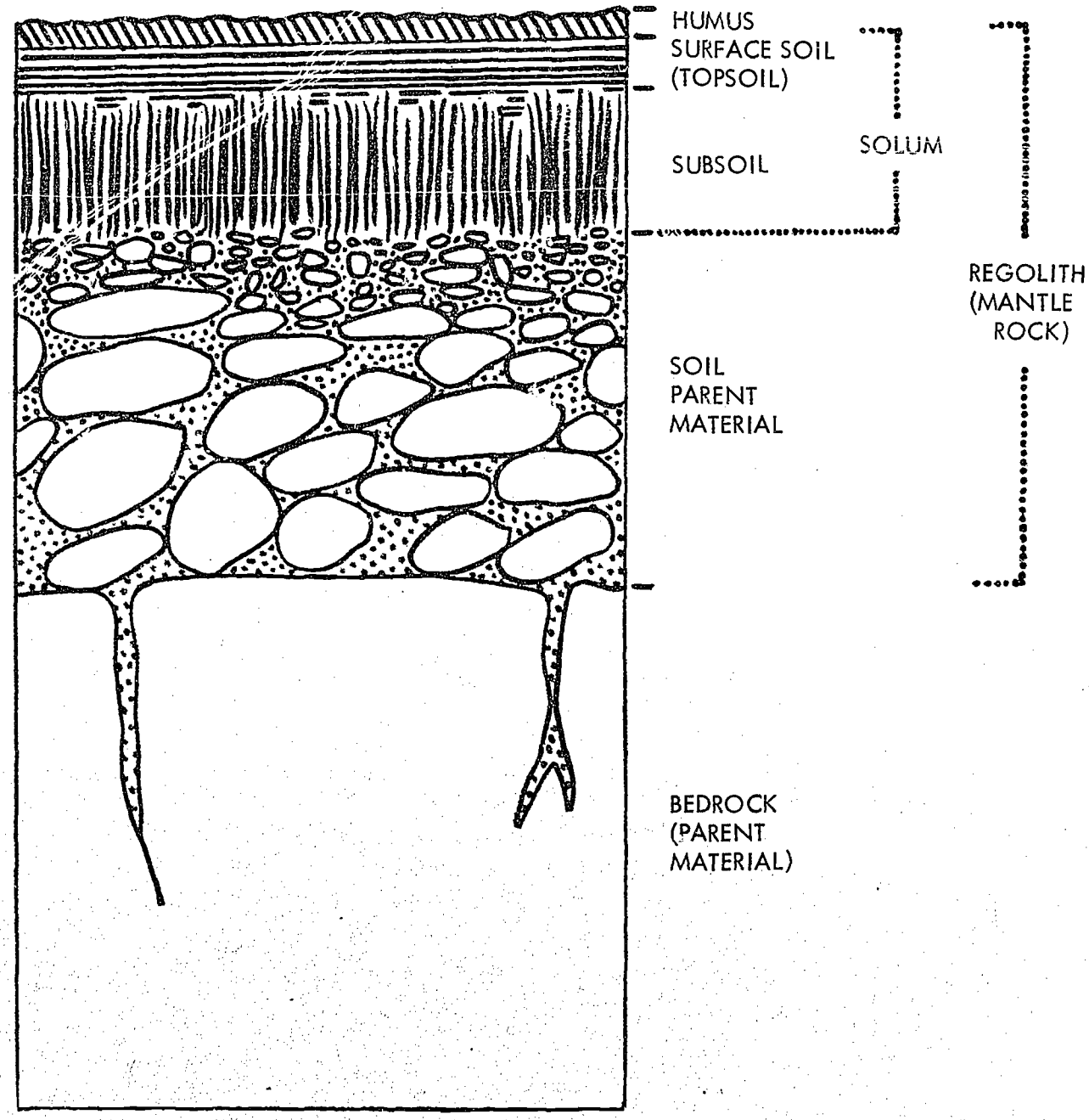
- Gwen Frostic

* * * * * * * * * * * * * * * * * * * *

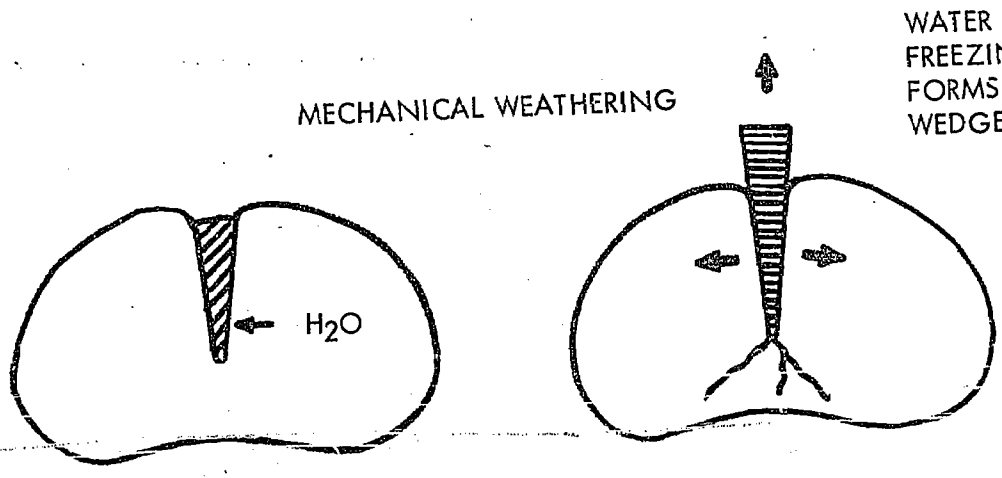
Before these fields were shorn and tilled
Full to the brim our rivers flowed;
The melody of waters filled
The fresh and boundless wood;
And torrents dashed and rivulets played,
And fountains sprouted in the shade.

- Bryant

SOIL PROFILE

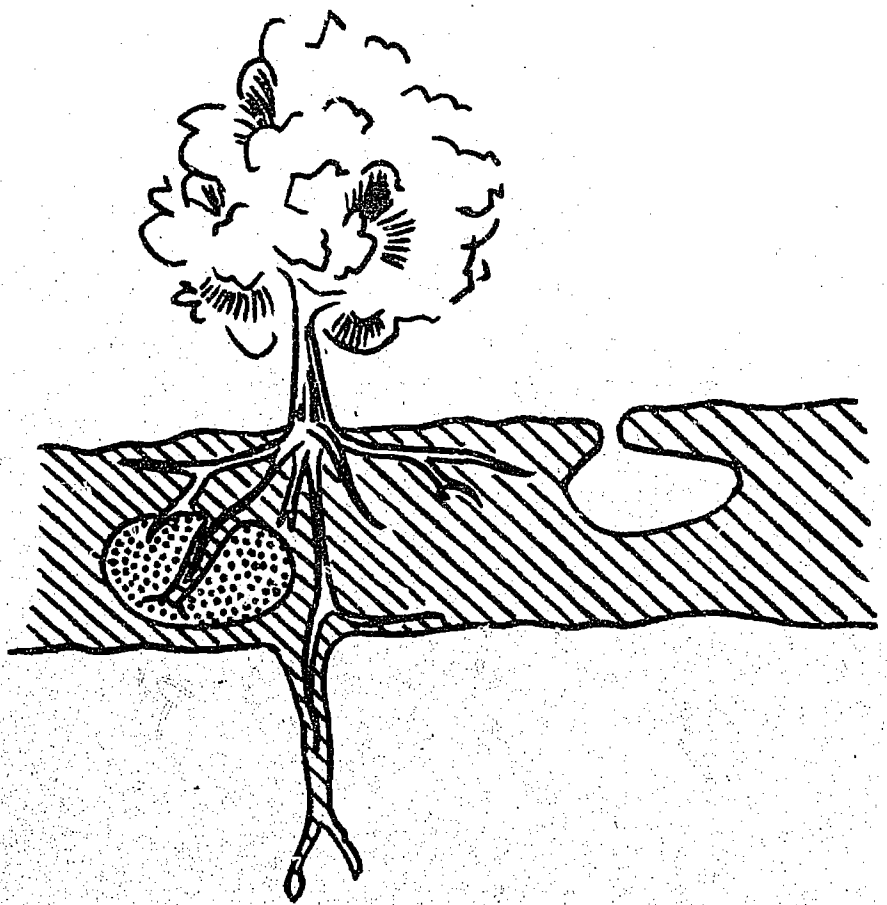


MECHANICAL WEATHERING

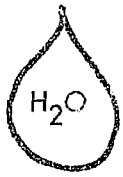


MECHANICAL WEATHERING ALSO INCLUDES DIFFERENTIAL HEATING AND COOLING.

ORGANIC WEATHERING



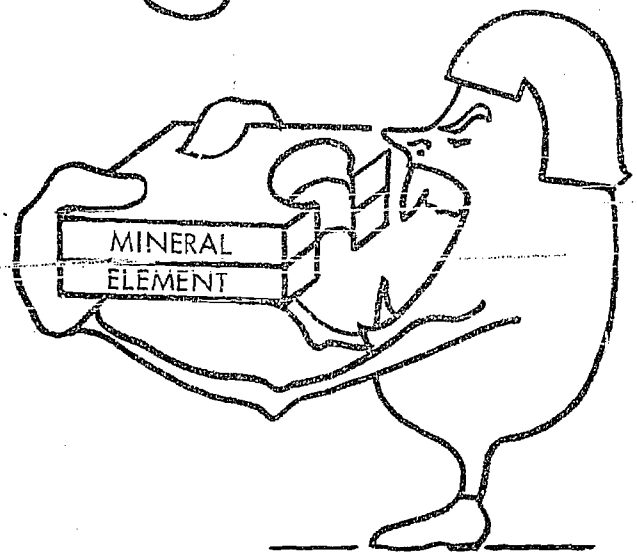
AIR CONTAINS 21% OXYGEN



+ CARBON DIOXIDE = (CO_2)

OXIDATION

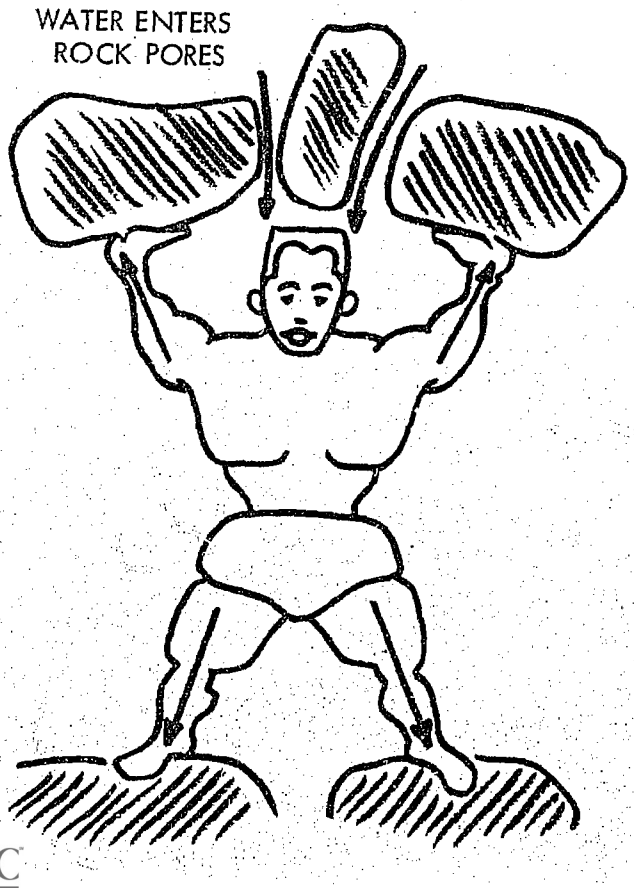
HYDRATION

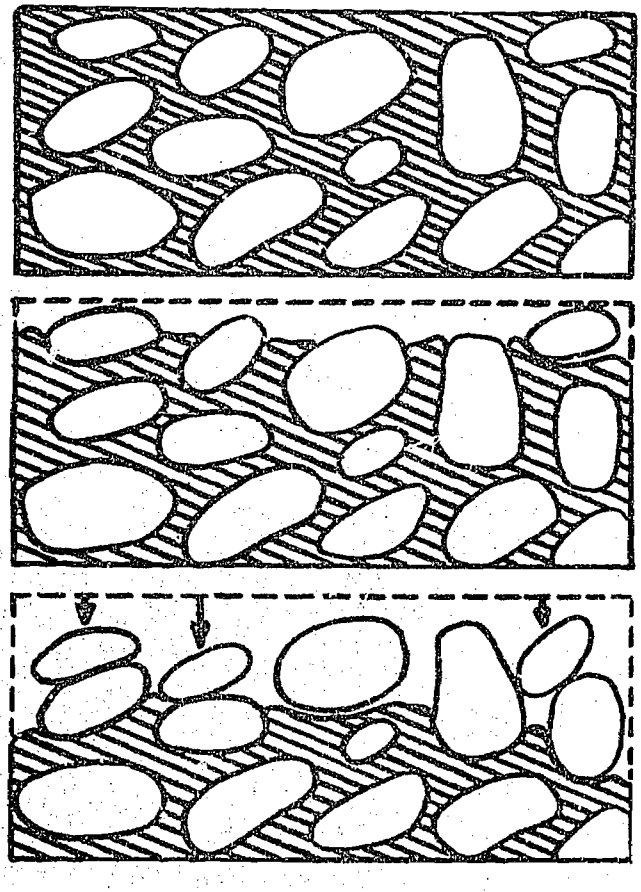


CARBONIC ACID

CARBONATION

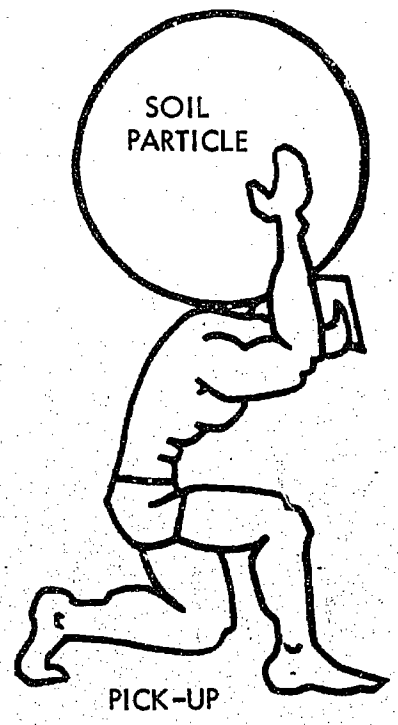
SOLUTION

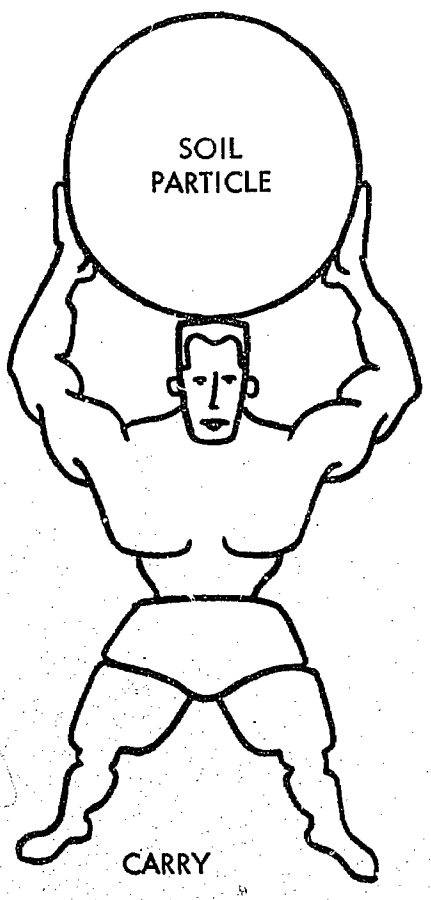




EROSION

After the breakdown, (weathering), of rock material into smaller and smaller particles, and with the addition of air, water, and decaying plant and animal materials, the soil which results is then capable of making valuable contributions in the support of man and his methods of making a living. However, where there is soil, especially UNCOVERED soil, there is erosion. (The three basic types of erosion are: (1) SHEET EROSION - the top several layers of particles over a large area are removed, (2) RILL EROSION - miniature gullies up to 10 inches deep, and (3) GULLYING a channel whose depth is measured in feet rather than inches.) Erosion is defined as the "pick-up and carry" of soil particles. There are four methods of moving soil particles. GRAVITY is definately the most common over the entire earth. The remaining three are: MOVING water, MOVING air, and MOVING ice. In climates such as ours, except for gravity, moving water is probably the most common agent of erosion. Some natural erosion is bound to occur. However, unnecessary man-caused erosion as a result of plowing, over-grazing, or use of forest resources without reforesting, has cost man unnumbered acres of producing land. While it takes 500 years for nature to form one inch of topsoil, it takes only a few short years for man to allow 500 years of natural soil formation to be washed down our river drainage system. Since soil is an irreplaceable natural resource, this type of erosion must be stopped! This can only be done by a wiser management of the land resources which still remain. This is the responsibility of each and every citizen.





DECOMPOSITION OR CHEMICAL WEATHERING includes:

CARBONATION	Certain elements unite with CARBONIC ACID (water + carbon dioxide) and the chemical reaction which results weathers the rocks apart.
HYDRATION	Hydration is the taking on of water in chemical combination; the accompanying "swelling," or increase in bulk, causes the rocks to "give" and fall apart.
OXIDATION	When oxygen in the air unites with certain elements in the rocks causing the original material to weaken and rot.
SOLUTION	Solution is the removal of materials which cement the rock particles together.

DIFFERENTIAL WEATHERING Under a given set of conditions, different kinds of rock will ordinarily weather at different rates because of differences in mineral composition and the degree of ease with which water may penetrate into the rock. Even on an outcrop of a single type of rock the rate of weathering may vary from place to place, either because of minor variations in the composition or texture or because of local differences in the numbers and sizes of joints and crevices that allow penetration of water. If the weathered material is continually being removed, the places of most rapid weathering gradually are etched out to form low spots in the surface, while places where weathering is particularly slow come to stand above the rest.

ELEMENT A substance which has resisted being broken down by CHEMICAL means. Of the 92 known chemical elements which exist in the earth's crust, only 8 are really abundant. These 8 elements make up 98% of the known crust of the earth. They are: OXYGEN - 47%; SILICON - 28%; IRON - 5%; CALCIUM - 4%; and SODIUM POTASSIUM, and MAGNESIUM - 2-3% each.

EROSION Is the "pick up and carry" process of weathered materials.

FAULTING The displacement (which means to put out the place, move from its usual place or position) of large blocks of the earth's crust along cracks in the earth called joints.

FOLDING Is the wrinkling of the earth's crust, in tight folds, very much like a corrugated roof.

HUMUS It is important to note that the humus is PARTIALLY decayed organic matter; if decay is complete, there is no humus. Humus is usually black in color.

IGNEOUS ROCKS Igneous rocks are those which are molten or have cooled and become solid after being in a molten state. Such rocks are formed within the earth, where temperatures are high enough to melt solid rock. As they cool and solidify, there is time for crystals to grow to relatively large sizes and therefore the rocks are usually coarse grained. Common examples are: GRANITE and BASALT.

JOINT Also, cracks or fractures. But in this case, the joints permit the water of the ground to circulate more freely within the rocks.

METAMORPHIC ROCKS These are rocks which have undergone marked change from their original condition. Most of the change is the result of HEAT and PRESSURE happening occasionally as a result of burial within the earth, assisted by the cementing action of underground waters and quite often by crystal deformation. Changes include: SANDSTONE into QUARTZITE; LIMESTONE into MARBLE; and SHALE into SLATE.

MINERAL Any natural component (part) of the earth's crust. In minerals, the elements are united to form substances which are very different from any of the ingredient elements.

ORGANIC WEATHERING Expanding roots ferret out cracks and crevices and split the rocks; burrowing animals wedge, pry and remove materials.

SEDIMENTARY ROCKS These are made up of sediments, or particles. They represent the accumulation through time of layer on layer of deposited materials. Some are carried and laid down by the wind, others by moving water or glaciers. Most of them are finally laid down in the great accumulation basins of the oceans. Each depositional layer is a STRATUM, and a series of them are STRATA; hence sedimentary rocks are normally referred to as STRATFIELD. Common examples are: SANDSTONE, LIMESTONE, SHALE, CONGLOMERATE.

STRATA Two or more associated stratum; a series of layers.
STRATUM A single depositional layer.

VULCANISM Has to do with molten rock which may become a volcano or a lava flow or any number of structures UNDER the earth's surface crust.

WEATHERING Is simply the breaking up of rocks by chemical and mechanical means. Basically it is making little pieces of rock out of big ones.

VOCABULARY FOR ECOLOGY AND WEATHER

CLIMATE The average weather conditions of an area
DECOMPOSERS Bacteria and fungi
ECOLOGY The study of living things and their environment
HABITAT The place where a living thing lives
HIBERNATE To spend the winter in a dormant or near dormant state
HUMUS Organic matter, partially decomposed, which is found in soils
PRODUCERS The green plants which supply the basic food for life
CONSUMERS The animals which subsist upon food produced by other organisms
DECIDUOUS A plant that sheds its leaves annually during the same growing season
CONIFEROUS Cone bearing plants
PARASITE An organism living on or within the body of another at expense of host
WEATHER The general condition of the atmosphere at a particular time and place
ATMOSPHERE The air surrounding the earth
BACTERIA Non-green, one celled tiny organisms
FUNGI or FUNGUS A group of plants including mildew, molds, mushrooms, rusts and toadstools. They have no leaves, flowers, or green color
ENVIRONMENT All the conditions which surround a living thing
ORGANISM Any living thing
FAUNA The animals living in a certain place
MAXIMUM The highest degree or point recorded
MINIMUM The lowest degree or point recorded
HUMIDITY The amount of moisture in the air
BAROMETER An instrument for measuring atmospheric pressure
THERMOMETER An instrument for measuring temperatures
ATMOSPHERIC PRESSURE The pressure due to the weight of the earth's atmosphere
PRECIPITATION Rain, snow, sleet or moisture

ROTTEN LOG STUDY

Learning of plant and animal life present in a limited environment can readily be done by studying a rotten log. A plus feature of this type study is the availability of rotten logs. There is no need to go deep into the woods for study material. A roadside fence post will rot and exhibit study organisms.

If several logs can be located, the class can begin an interesting study of micro-succession. Be sure the logs are of the same species and in various stages of decay. This enables the class to examine many stages of decay in a few hours rather than just one or two stages.

Field Study

The following questions can be investigated by the class:

1. Is the bark still on the tree?
2. Are borings present?
3. Are nest of birds and other animals evident?
4. Has the tree fallen?
5. How long has the tree been dead (estimate)?
6. How did the tree die?
7. What is the tree species?
8. Are there any mammal runways?
9. Is the wood moist or dry?
10. Make a list of all organisms (plant and animal) seen.

Conclusions

1. What will eventually become of the log?
2. What effects do the animals have on the log?
3. What effects do the plants have on the log?

Remember - - - Do not tear the log apart. It is the home for many organisms and will provide a study source for many years to come if left undisturbed.

Many conservation principles should be brought out in a rotten log study. An attempt should be made to connect the rotting of this living organism to others around it and the whole significance of the dying tree on the environment.

CLASSROOM COOK-OUT

Doesn't everyone know how to build a fire? It is true that to extinguish a fire properly requires diligence but under camping conditions few are successful in building an appropriate fire for the intended use or selecting proper materials for a good fire.

An ideal program in the out-of-doors has been experienced by Toledo schools when using orienteering and compass methods to find the outdoor cooking area, building cooking fires, and combining language arts while the fires are burning.

The combination of orienteering, cook-out, and language arts would start at 9:30 a.m. and end late in the afternoon with the group returning to camp in time for skill hour.

Learning Possibilities

1. Teach the child to select dry timber, thin small sticks for kindling and larger sized pieces of wood before lighting the fire. Arrange these materials to permit air to circulate through the fire. Such materials as dry grass, pine needles, birch bark and dry leaves provide tinder, or it might be necessary to make shavings from a dry piece of wood if ordinary tinder is scarce. A wise precaution is to carry a candle and some kindling to use as a replacement for tinder. The type of wood used in a fire is important. Pine, spruce, fir, and other conifers burn quickly, create flame but leave few coals. Woods such as oak, hickory, maple, and beech provide fine coals after burning, but do not burn as quickly as soft woods.

2. The site for a fire, even a small cooking fire is important, Leaves, twigs, mulch, and forest litter must be cleared from the fire site and for three or four feet circumscribing the site. The fire should be laid on bare soil, or gravel or flat rocks. A frequent cause of forest fires are camper's fires that smolder through the litter and in a few days surface many feet away from the original site. In order to extinguish a fire properly, small amounts of water stirred with a stick to reach all coals if effective. Or burying the fire with earth is also a desirable technique.

If a youngster builds a cooking fire, he wants to finish the task and cook. In a group situation single meals may be prepared without elaborate equipment or even grills, fire irons or pots and pans. Here is a simple meal which requires only foil as cooking equipment and naturally, the ingredients for the meal. The meal consists of a tinfoil pack. The students wrap these themselves:

Ingredients - Hamburger, carrots, onions, cheese, potatoes and butter. Also included is fruit, milk, and cookies.

Directions - Place a hamburger patty on a piece of foil twelve inches square. Place potatoes and onions sliced very thin on the meat patty. Top with a generous slice of cheese. Fold the foil to make an airtight seal, allowing some air above the ingredients so the juices may collect without being forced against the foil. Place the foil packet on a bed of coals, cover with coals and in fifteen minutes dinner will be ready.

LEADERS' CLUES FOR COOKOUTS

Menu Planning:

These items seem to have been the most popular in the past:

hamburgers, hotdogs with cheese and bacon, stew, spaghetti
potatoes, corn, celery and carrot sticks, tomatoes
milk, cocoa, coffee (leaders only)
apples, marshmallows, chocolate bars, graham crackers,
raisins, gingerbread mix, pie mix, biscuit mix, jelly
onions, mustard, catsup, pickles, relish
eggs, pancake mix, bread, rolls, butter, oleo

Don't forget the matches, salt, pepper, sugar, cinnamon, napkins, paper plates, wooden spoons, paper cups, and straws.

Some Techniques for the Leaders:

1. With ten campers, two or three fires would be good. With twelve or more campers there should be at least four fires.

2. By having enough fires, with about four members at each one, all of the campers will be able to cook without depending upon the leader or one of their own group to do all of the work.

3. It has been best in the past to have enough jobs for each of the four people at the fires.

   Suggested jobs:
   1. wood gatherer
   2. fire builder and lighter
   3. food organizer - chairman
   4. clean-up (also put fire out)

4. Firebuilding:

   The leader can select either of these two methods for building the cookout fire:
   1. The leader can build a fire and show the campers how to do it, or,
   2. The leader can let the fire builders in each group learn as they go along. (The firebuilders may be girl or boy scouts.)

   The second method may be time consuming and the leader should not let things get to a point of frustration so that the whole group falls apart.

Tips which may be helpful to the leader:

1. Gather dried weeds, grasses, or shavings that stand above the ground for tinder.

2. Make a hole in the ground about four inches deep and four inches in diameter.

3. Place thin, small branches (toothpick size) across the hole. At one end place a stick (inch thick) so that other smaller ones lay off of it.

4. Place a good handful of the dried tinder across the sticks making sure that there is air between the hole, the sticks, and the tinder.

5. Place larger sticks (size of a split pencil) over the dried tinder.

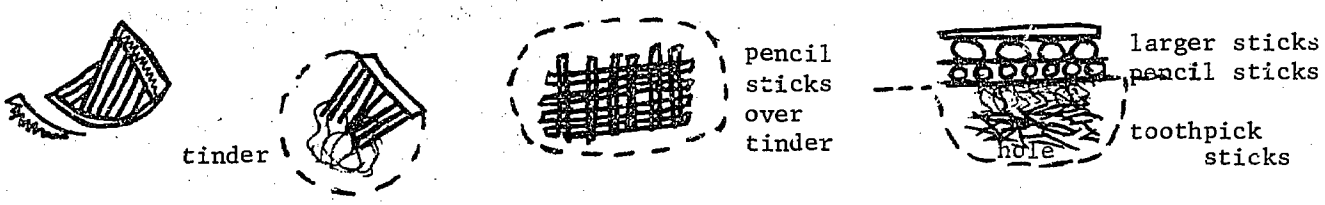
6. Place larger twigs (size of a pencil) over next.

7. Build so that air can pass through the wood and make sure it is dry.

8. Leave a spot for the match to light the wood and tinder, under the toothpick size sticks.

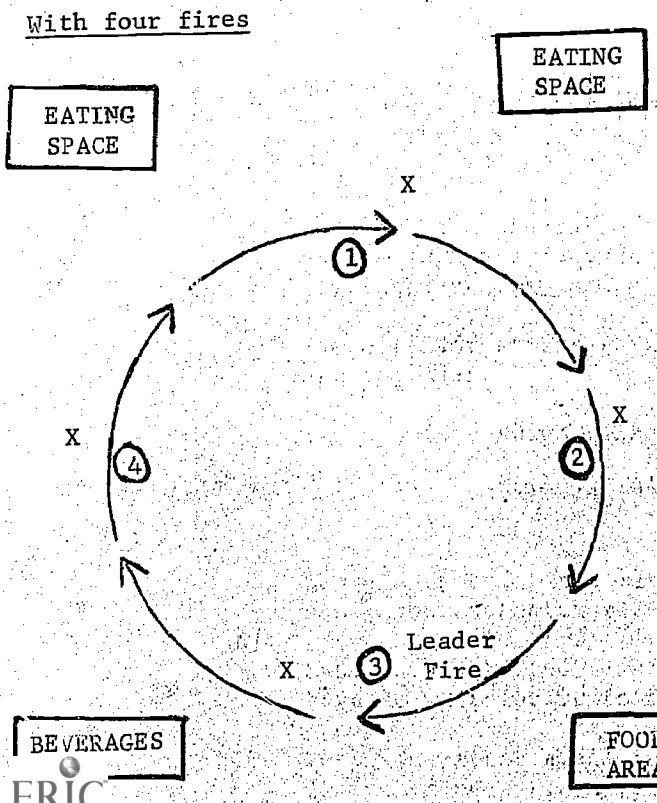
9. Make the fire flat in appearance so that you will not have to wait for it to fall as the tepee style does.

10. Keep your fires small in diameter. Not more than 12 inches across. A large fire is impossible to cook on.



COOKOUT PLAN

With four fires



1. Chairman for each fire.

2. Keep people moving in one direction.

3. Campers should stay out of middle circle area.

4. "X" woodpile for each fire (knee high).

5. Eating away from the fire is important.

6. Cleaning up the cooking area is easy when the leader can see all of the fires going.

7. When a group has finished the cooking and eating, each one should clean up his area. Standing back to see if the job has been completed is something the group can do before leaving. The area should be left better than they found it and not a trace left of where they were.

FISHING

I. Hiking Time

From one to three hours depending upon weather conditions.

II. Description of Activity

A. Fishing with home made equipment

Children start from "scratch" and make their own equipment by cutting sumac poles or finding a suitable dead stick to which they attach string, a hook, and a sinker. Worms are dug in the worm bed or other types of bait such as grubs and larvae are gathered. Fishing is done along the shore line of the lake or from the docks.

B. Fishing with manual equipment

Some children bring their own poles from home; other children may borrow a pole from the camp lodge. Hooks and bait need to be attached. No fishing is permitted from boats.

III. Equipment Available

A. Hooks, lines, sinkers
B. Bait (that is found naturally in the camp area)

IV. Learning Possibilities

A. Location and identifying different types of bait according to season.
   1. Winter: wood grubs and galls
   2. Other seasons: worms, crickets, grasshoppers
B. Where do fish feed?
C. What do they eat?
D. What are the feeding habits which will help in catching them? (Much of this type of information can be investigated before coming to camp.)
E. What are the fishing seasons? What are game laws? Why are game laws necessary?
F. Finding out what skills are necessary to fish properly.
   1. Proper way to hook the bait
   2. Cleaning a fish
G. Learning about the fish's body
   1. Identifying parts of the body
   2. Learning the function of the gills, fins, tail, and other parts of the body
   3. Identifying lungs, heart, stomach, intestines, etc.
   4. Gaining some knowledge of the physiological systems in fish

RAINY DAY ACTIVITIES AND SOCIAL HOUR IDEAS

Rainy Day Hike or Walk:
A special hike through the rain, stopping to look at a frog, animal tracks, etc.

Rainy Day Film:
Projectors, screens, and educational film dealing with the "out of doors" will be available at camp.

Individual Activities:
Letter writing, working on a nature project or special craft, reading, painting, drawing, learning camp skills such as lashing, tying knots, and how to use a knife, working on camp log.

Small Group Activities:
Board games, checkers, dominoes, card games: Hearts, old maid, rummy, crossword and jigsaw puzzles, mental games, games without equipment such as buzz and ghost, make up a camp song, general song-fest, change the bulletin board, make a terrarium, make a map of camp, mount leaves.

Large Group Activities:
Running and singing games, relays, quizzes, stunts and skits, charades, contests, making a toy pet show (animals being made out of wood, clay, paper), story telling, amateur program.

Surprises:
It's nice for the leaders to plan a surprise for the campers if rain continues for several days. The surprise could be an unexpected kind of meal, a costume party, etc.

Scavenger Hunt:
At least two groups are necessary to play. Each group is given the same list of objects or equally difficult lists of different articles such as, a fishing worm, a mushroom, etc., to bring back within a given time and whithin given boundaries, if you wish. The first team back with the largest number of correct articles is the winner. The winners can be awarded a prize or the losers can present a skit.

Treasure Hunt:
One group makes up a set of clues which is placed by them at different spots around camp. Each clue leads to the next until the treasure is found. The order of placement of clues can be changed for each group participating so that several groups can hunt the treasure at the same time. Instead of clues, maps can be used.

Charades:
Can be played in several different ways. Usually players are separated into at least two groups.

Word Charades
Each group decides on a word to act out for the other team to guess. When each group has worked out their actions for describing the word the groups come together and take turns acting out their word while the other side plays audience. The game is more successful if the word is pantomined easily. Suggestions: eyelash, fingernail, bandage.

Proverb Charades:

Act out proverbs such as: "The early bird gets the worm." "All that glitters is not gold."

Movie and Song Charades:

Act out titles such as: "Dragnet," "Paper Doll," "Scared Stiff," "White Witch Doctor."

Paper Bag Charades:

The group is given a paper bag containing five to ten miscellaneous articles. With these articles the group plans a skit that will involve the use of all of them.

Costume Charades:

The players don costumes to help make their pantomimes more vivid.

Picture Charades:

The groups write on paper proper nouns, titles of songs or books, names of famous people, slogans, movie titles, or proverbs. Each title is written on a separate sheet of paper. The leaders from each group exchange titles and one by one, in turn, they try to illustrate for their group a title. They may not talk, use numbers, or write words. The only concession is that they may shake their heads in response to questions from the members of their own team. Suggestion: Not more than three minutes for the team to guess a title.

Suggestions:

1. Charades may be done in pantomime or acted out with dialogue.
2. Time limits may be set for a team to gain their answer.
3. In deciding titles the group may choose their own.
4. In deciding titles the group may write down several and these are exchanged with the other group and drawn one by one as they are acted out.
5. An individual or several may decide titles for each group participating in the charades.

TREASURE OR SCAVENGER HUNTS

I. Time

Usually two to two and a half hours including time for preparation.

II. Description

A. Treasure Hunt: Involves preparation, placement, and following of several clues designed to lead searching party to a "treasure" at the end. A variety of materials may be employed such as a compass, maps, pictures, and limericks.

B. Scavenger Hunt: Consists of searching for and collecting a list of objects designed to develop the participants' powers of observation and knowledge of their natural environment.

III. Learning Possibilities

A. Common to both:
   1. Development and application of imagination
   2. Development and application of reasoning powers
   3. How to work as a group
   4. How to use nature as recreation
   5. How to be a good sport

B. Treasure Hunt:
   1. How to follow directions
   2. How to use the compass
   3. Knowledge of communication through pictures
      a. Indian and primitive pictures writing
      b. Evolution of written communication
      c. Natural objects

C. Scavenger Hunt:
   1. Knowledge of different nature areas (if nature objects are used)
   2. Trees, rocks, flowers, wild animals, etc.

IV. Possible Implications for Curriculum

A. Provides an experience from which children can analyze what contributes to the enjoyment of a situation and consequently they can plan other such situations for themselves.

B. May lead to further studies in these areas:
   1. Communication
   2. Living of primitive man
   3. Uses of symbols
   4. Development of symbols
   5. Exploration of what nature tells us

HIKING

The great natural desire of individuals for hunting, chasing, exploring, tracking, and trailing can find outlet through appropriate activity and games in the woods and camp. Nature activities, tracking, trailing, hunts, and the various types of hikes are not used as much as their universal popularity would seem to warrant.

Nature activities add keen interest to hikes when an interesting leader is in charge to point out the different ways in which various birds build their nests, to help identify flowers and birds, and to explain how to collect specimens for museums without disturbing plant and animal life. The making of collections of rocks, flowers, and specimens of various kinds for the playground museum may be made the prime purpose of a number of hikes.

Tips for the Leader:

These ideas may help keep things interesting.

1. Hike should have a goal.
2. Campers should be dressed for the weather.
3. Discussion beforehand should prepare hikers for what they are to see.
4. Campers should consult the maps and compass as they go.
5. Pace should not be too fast or too slow.
6. Campers should walk on the right side of the road.
7. Campers should respect others' property along the way.
8. Campers should know plants to stay away from near the swamp areas.
9. Campers should not pick plants or flowers of destroy the natural beauty of the countryside in any way.

Types of Hikes:

A few suggestions on various kinds of hikes, hunts, and games.

1. Nature Hike - A contest in the identification of grasses, trees, flowers, birds, and insects.

2. Discovery Hike - A journey leading to many points of interest, the discovery of unusual things in the nooks and by-ways of the trail. The group may be divided, each taking a different route in the search of adventure. All may return to a final "stamping ground" and report their findings.

3. Compass Hike - Conducted with a compass. The course should be carefully laid out in advance.

4. Camera Hike - Each hiker may bring his camera, taking pictures along the way, choosing subjects which are important and characteristic. One may then conduct a picture contest or hold a picture exchange.

5. Holding the Front - Hikers travel in single file. Line is occasionally halted and the first person is asked to identify a tree or plant by the side of the road or some distance ahead. If the hiker fails he is sent to the rear of the line and the second becomes the first and is asked the next question. The person able to answer the most questions and remain at the front for the greatest period of time wins the game.

6. Spot Spy - This game is great fun when resting on a hike or when loitering along the way. The leader says, "I can see five white oaks." The group is given one or two minutes to spot the white oaks. All those who see them may indicate it by sitting down, taking off their hat, or by some other agreed signal. All those who see the object get a point.

7. Pitch Pine Tag - Something like Puss in the Corner except player cannot be tagged while touching a pitch pine or some other tree agreed upon.

8. Nature Sounds - The group is given five minutes to see who can make the longest list of things heard in the woods during that time. It may be a raindrop, crow, cow, rooster in the distance, rustling of leaves of oak or swish of the pine, tapping woodpecker, or song of the brook.

9. A-B-C Hike - Divide the players into five groups (fewer groups if the number of players is small). Give group No. 1 the first five letters in the alphabet, the second the next five, etc. Each group is to go out and find some things in nature to represent each letter it has and bring them back. For instance, an apple for A, buttercup for B, rock for R, and toad for T. Some of the letters will be extremely hard to find, or as hard to bring back. In a half hour, the group returns and arranges the nature alphabet in order.

Songs for the Hike:

Among countless numbers of songs which can be sung on the hike or around the evening council fire, many of these listed below have proven very popular:

America, the Beautiful
Yankee Doodle
Dixie
Old Black Joe
Stars of the Summer Night
Carry Me Back to Old Virginny
There's Music in the Air
Auld Lang Syne
Juanita
Deck the Hall
Woodman, Spare That Tree
My Bonnie
MacDonald's Farm
Ham and Eggs
Alouette
The Long Trail
Smiles
It Isn't Any Trouble Just to Smile
End of a Perfect Day
Morning Comes Early
'Til We Meet Again
The World is Waiting for the Sunrise
Pack Up Your Troubles in Your Old Kit Bag
Mistress Shady