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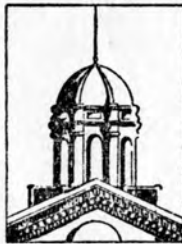
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St. Cloud State Teachers College

BULLETIN

THE CONSERVATION EDUCATION WORKSHOP

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..... Moscrip, Supervisor



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FOREWORD

There is no more important subject to which the people of this country should direct their attention than that of the conservation of our nation's resources. The two-billion acres of land within the United States; the rain and snow that fall on this land; the rivers, waterfalls, and lakes; the coal, oil, gold, silver, and other mineral deposits that lie on and beneath the land; the people that live here and their multitude of talents, skills, and activities form our natural resources. The wealth of the nation is measured in the way we conserve, use, and develop these resources.

The American schools have made a large contribution to the teaching of conservation. The teacher training institutions and the authors of textbooks have stressed not so much the technical subject matter as they have the waste of America's resources. This type of training and education tells the story of the growth of the conservation movement, classifies natural resources from the point of view of conservation, lists and evaluates the educational material available, and attempts to formulate a philosophy of conservation education.

This bulletin presents some helps for the teacher of conservation and, we believe, points a way toward which teacher training institutions may better serve the needs of their students.

Floyd E. Perkins

CONSERVATION EDUCATION WORK SHOP

Miss H. Beatrice Williams

Early settlers coming to America found a country richly endowed with natural resources—wide stretches of lofty pines, rich deciduous forests, an abundance of wild game and well stocked lakes and rivers, rich deep soil and mineral wealth untold. Today we are faced by the fact that much of our rich soil has been sadly depleted, our forests have been cut down ruthlessly, and wild life destroyed, and gradually our essential water supplies have been polluted or made less accessible to growing crops. This naturally has had its effect on man, our most valuable resource. The same destructive waste of natural resources is being repeated in man's disregard concerning his own safety, and his mental and physical health. This all presents an alarming problem to thinking people.

These problems can be and are presented to adults in graphic and forceful manner, but it still seems inadequate. To be truly effective, the appreciations, attitudes and habits needed to insure the wise use of our natural and human resources must be developed in such a way that it becomes a part of the growing child's very nature so that at every age he is aware of this vital problem. Just as lasting ideals of democracy and religion can be developed in the growing child so can ideals of wise use of our fine heritage be instilled.

This therefore becomes the responsibility of those to whom is entrusted the training of our boys and girls. Conservation education is not just the hobby of sportsmen and nature lovers, but is a vital part of a realization of our basic needs. The earlier this training is begun the more definitely does it become a part of the child's attitudes and actions. Conservation education must be not only a function of secondary and adult education but must be also a definitely planned part of the elementary curriculum.

With this viewpoint in mind plans were made for a workshop in elementary education at the State Teachers College at St. Cloud in the summer of 1947, with conservation education the major emphasis. The enrollment of the class was limited to experienced teachers on either the two or four year curriculum. The number in the group was not to exceed thirty. This was deemed necessary if individual guidance was to be given. The workshop technique seemed to be the ideal setup for a number of reasons:

1. It is democratic in form. Real needs and procedures can be best determined by the mutual sharing of ideas and experiences.
2. It provided opportunities for planning working units that would actually become a part of each member's teaching program.
3. It was felt desirable that more varied types of learning experiences be used than in the typical college course.

A faculty committee was appointed and provision was made for:

1. Conservation education information. It was felt that if a real insight into the problem was to be developed it was necessary to have an over-all view of the whole problem. Mastery of information was necessary if good units were to be developed. This was to be given through a series of or-

ganized lectures and readings in the early part of the period, supplemented by lectures by experts in different phases of conservation.

2. Guidance in establishing a philosophy of conservation education and techniques in building units of work. Well written units were to be examined and evaluated.

3. Arrangements for library research. The facilities of the Teachers College library were to be supplemented by material from the personal libraries of the staff and of the members of the class, and by publications of other states, and of the Federal government.

4. Demonstration teaching. A unit in conservation on the sixth grade level was planned with a special demonstration teacher. This room could be visited daily by the workshop group. The observation of the actual teaching of an entire unit was deemed a vital part of the program. Observation of parts of units was arranged in other grades.

The procedure was organized in a democratic way. Planning committees were chosen for each week, each member participating at some time. The planning committee had charge of the day's schedules, usually planned a week in advance. Social affairs, excursions, lectures and demonstrations were scheduled. Library and room committees were set up for each week. The enthusiastic and effective planning of the group carried the activities beyond the expectations of the committee and a rich and varied program resulted. Staff meetings were held weekly to coordinate and evaluate procedures.

During the work shop period the following activities were carried out:

I Lectures

- A. Conservation Education Information.
- B. Procedure in Building a Unit — General conservation education objectives were formulated.
- C. Conservation Projects in Sherburne County.
- D. Conservation Legislation in Minnesota.
- E. Conservation Projects at St. John's University.
- F. Conservation Education through Visual Aids.

II Demonstrations

- A. Sixth grade unit in conservation was followed daily from preliminary purposing to culminating activities.
- B. Phases of the following units were observed:
 - First Grade — Wise Use of Leisure Time.
 - Second grade — Use of Waste Materials.
 - Third grade — Bird Conservation.
 - Fourth grade — Mississippi River.

III Excursions

- A. Sherburne County soil projects.
- B. St. John's University soil projects.
- C. St. Cloud Teachers College reforestation project.
- D. Pine Point reforestation.

- E. City parks and filtration plant.
- F. An optional week-end trip to four state parks, one state nursery and one state fishery.

IV Exhibits

- A. Helpful bulletins and charts.
- B. Bulletin boards for classrooms. (A committee planned one each week.)
- C. Teaching kits of supplementary material. Each member of the group had collected a teaching kit of supplementary material.

Materials read

- A. Library references.
- B. Basic texts.
- C. Sample units from curricula in many states.
- D. Materials from state and federal conservation agencies.
- E. Commercial material with conservation information.

VI Written Materials

Each member of the group prepared two units of instruction.

- A. A reproductive unit — (the sixth grade unit which was observed.)
- B. A creative unit — this was a unit on some phase of conservation to be used in the teacher's own school during the coming year. The subjects and grades covered a wide range. Plans were made to make these available to interested people.

VII Personal and group conferences including discussion of demonstrations.

VIII Social Events

- A. Teas.
- B. Coffee hours.
- C. Picnics.
- D. Dinner

(The social affairs helped to create a social informal atmosphere.

Persons who play well together usually work well together.)

The test of a work shop is the evaluation of its members and the uses which they make of their experiences in their teaching. One member of the class in the evaluation of the work wrote at the close of the term:

"For years I have seen the great need for conservation in education and have attempted to do what little I could, at least in soil, water, wild life and human conservation. Therefore I was eager to take advantage of this workshop when I saw it was to be offered. Here at last I was able to formulate a definite plan to incorporate conservation into the curriculum. Through the instruction of the staff, the opportunity really to observe a unit in conservation from start to finish, the wonderful opportunity to exchange ideas and work in a group. I have received valuable help in planning future work in schools. I hope this workshop will be the beginning of a broad conservation set-up in the education of teachers."

CONSERVATION TEACHING UNITS

The units written by the students were chosen first, because of the needs of the school in which the student would teach the coming year and second, because of their relationship to the workshop's center of interest, conservation. Units were written covering an over view of the entire field of conservation and adapted to one grade or more. Other units developed phases of the problem such as forest conservation, wild life conservation, conservation of wild flowers, and conservation of bird life. Human conservation was not overlooked. Units were planned in safety, health, and wise choice of recreation.

The general aims or objectives of the units were set up cooperatively by the students after a discussion of the teachers' philosophy in relation to conservation education.

General Objectives of Conservation Education —

- I. To help children through conservation education to acquire habits, insights, attitudes, ideals, and a sense of responsibility that will assist them to live more harmoniously with each other.
- II. To awaken pupils to the realization that an abundant life for the present and future generations is dependent upon the wise and careful use of our natural resources and of the most valuable resource — himself and his fellowman.
- III. To develop spiritual values through the observation of the mysterious and wonderful workings of God's great plan in nature.

To create in the child the desire to preserve nature's balance.

Each student formulated the specific aims for his own unit and organized the material to realize both the general and specific aims.

As a sample of the work done by the students of this workshop the following units are presented:

1. "Soil Conservation For Grade Five" — Marguerite Ringeisen, teacher of the fifth grade in Fairmont, Minnesota.
2. "Forest Conservation for Grade Seven" — Lloyd Quist, teacher in junior high school at Glenwood, Minnesota.
3. "A Conservation Unit for Grades Five to Eight" — Mrs. Lulu Gross, rural teacher in Stearns County, Minnesota.

This last unit contains a section in soil conservation to be taught to all the pupils. Groups are then formed to study conservation of minerals, trees, wild flowers, and wild animals. At the close of the unit as a culminating activity each group presents to the other groups the most interesting facts they have learned.

These units show the scope of subject matter, a number of possible approaches, and many activities which should develop an understanding of the subject matter and involve the use of many skills. More activities are suggested than can be used in any grade. The teacher chooses those adapted to the subject matter and skill she wishes to teach, and those which emphasize the child's needs in relation to his community. The time which can be devoted to the unit will also be a determining factor.

A UNIT ON FOREST CONSERVATION FOR SEVENTH GRADE

by Lloyd Quist

I. Specific Objectives or Aims

- A. To study in general the major forest areas of the United States in their relation to man.
- B. To gain an appreciation and an understanding of the present and the original extent of our country's forest resources.
- C. To be able to recognize many of the trees of the local area.
- D. To study the methods by which forests and forest products are used and how they have been wasted.
- E. To understand what present day industries are dependent on our forests.
- F. To know the various products we receive from our forest reserves.
- G. To understand the problems we face in forest conservation.
- H. To study the methods of forest conservation as carried on in various parts of our country.
- I. To understand how forest conservation is brought about by fire protection, selective cutting and replanting.
- J. To realize the need of frugal conservation of forest resources in regions where forests are meager.
- K. To discuss the main enemies of our forests and the destruction wrought by these enemies.
- L. To understand the relation of forests to water supply, flood control, soil conservation, and wild life preservation.
- M. To understand what can be done by the individual citizen in forest and tree conservation.
- N. To understand the work done by our state and national government to promote the conservation of our forest resources.

II. Teacher's Overview

If one can use **interest** and **attention** as an indication as to **what** to include in the 7th grade curriculum in geography it becomes apparent that the study of the forest resources of the United States and their conservation is desirable for pupils of this grade.

The children at this age are usually very much interested in the trees, the woods and the forest regions in general. Their previous simple study of trees, of their beauties and uses, has already aroused a feeling for trees and will promote an interest in studying and learning more about the great forest regions of our country.

They are at an age when we can instill into their minds the true need for conservation of our United States' forests, along with the value of forests for the welfare of mankind. To create a feeling of the need for conservation of our United States' forests, along with the study of forestry, lumbering, wood for fuel and the pulp and paper

industry should challenge the pupils to study the forest resource problem. The children will realize that trees serve and benefit the community the state, the nation and the world at large and therefore should be protected and appreciated.

This study should lead the pupils to see not only the relation of man to man, but the relation of man to nature. The dependence of man for his food, his shelter and his clothing, on the forest resources of the world can be clearly understood.

The class activities can not be limited to any local area or state but necessitate a general overview of the forests of the United States in their relation to the welfare of man.

III. Approach

The teacher could lead the boys and girls to imagine what our world would be like if everything made of wood was gone. Then list the articles or things they would miss most. The children might be asked to name regions in the United States that produce much wood. Slides could be shown of a lush, green, coniferous forest and a deep, rich hardwood forest. In contrast to these, slides showing a cut-over forest and a burned-over forest could be shown. Questions could be asked to make certain each child interpreted the pictures correctly. Two maps could be shown on the screen, one showing the original forest area of the United States and the second showing the forest area today. This should lead to the problem, "How can we take care of our forests and use their products in such a way that our forests will not be depleted?"

IV. Scope of the Unit

A. Conditions necessary for the growth of forests:—

Most of our wood comes from forest logs. Forests are not just woodlots such as we see on most farms. They are really extensive tracts of land covered with tree growth. The growth is usually natural, although sometimes trees are planted by man. The forest from which big timber has never been cut is called virgin timber or forest. When a virgin forest is cut away, there follows a young stand of trees which for many years remain small and unimportant. This is called a second growth forest.

1. Type of soil suitable for forest growth
 - a. Soils not suitable for agricultural crops.
 - b. Places too rough and steep for agriculture.
 - c. Southern sandy soils.
 - d. Southern very wet regions.
 - e. Rocky slopes and ravines.
 - f. Steep slopes of mountain areas.
 - g. Very sandy soil regions (jackpine).
 - h. The steep slopes on windward side of mountains.
2. The needs for good forest growth
 - a. A fairly long growing season.
 - b. Warm weather during growing season.
 - c. Abundant but evenly distributed rainfall for growth during

growing season.

- d. Effect of altitude on tree growth.
 - e. Effect of latitude on growth of trees.
 - f. Firm soil needed for substantial growth.
 - g. Effect of severe winter climates.
 - h. Control of enemies—fire, man and insects.
 - i. Water table at height where roots of tree can reach water.
- B. Types of forests for study
1. Coniferous or softwood.
 2. Deciduous or hardwood.
- C. Great natural forests are found on every continent, but the bulk of forests are found in the North Temperate regions. From our study of grazing we know there are certain parts of the United States where trees do not grow. In other parts of the United States there are extensive woodlands. Using our maps of forest regions of our country we will study the following five leading forest belts of the United States.
1. The Northeastern forests.
 2. The Central forests.
 3. The Southern forests.
 4. The Rocky Mountain forests.
 5. The Pacific forests.
- D. Types of trees, kinds of wood, uses and characteristics
1. Soft woods.
 2. Hard woods.
- E. Causes of diminishing forest areas
1. In early days—
 - a. Early people thought fuel, logs and lumber so plentiful it would last forever.
 - b. Early pioneers thought of the forest as a barrier, which had to be cut away before the land could be cultivated.
 - c. The early people carved out and mined out and destroyed unknowingly the early forests.
 - d. Ruthless destruction was caused by the early logging companies.
 - e. Much cutting in early days was necessary to make room for fields and homes.
 - f. In early days $\frac{2}{3}$ of U. S. area was covered by timber.
 2. Forests today
 - a. Recent lumbering for commercial purposes has destroyed valuable timber.
 - b. Only $\frac{1}{5}$ of U. S. area is today covered by timber, much of which is of inferior quality.
 - c. At the present rate of the depletion of forest areas they can not last much longer. Present rate of depletion is about $1\frac{1}{2}$ times as rapid as growth.
 - d. Forest fires, insect pests, diseases, and man are all enemies of today's forests.

- e. Three-fourths of a tree is wasted before it becomes lumber.
 - f. Only $\frac{1}{4}$ of tree becomes good lumber.
 - g. Cutting forests for wood pulp and paper has greatly decreased acreage.
3. Sources of waste causing depletion of forested areas.
- a. Reckless logging.
 - b. Overpasturing (eating seedlings).
 - c. Forest fires (crown fire and surface fire).
 - d. Cutting only select timber.
 - e. Waste of much of tree.
 - f. Burning slash (value as a fuel).
 - g. Too high stumping (best log of tree wasted).
 - h. Young trees broken and killed by logging.
 - i. Clean cutting (no small trees left).
 - j. Less desirable species destroyed.
 - k. No seed trees left to produce seedlings.
 - l. Slash left as fire hazard.
 - m. Wasteful methods at sawmill.
 - n. Waste by consumer.
 - o. Non-control of tree diseases and insects.
 - p. Carelessness of man (fires chiefly)
 - q. Destruction caused by beaver.
 - r. Depletion of farm wood lots.

4. Results of forest destruction

A. Forests are so very important that we should use every possible means of maintaining them. Their destruction means loss of advantages which cannot be made up in other ways. Apart from their value for summer playgrounds for millions of people, forests affect people thousands of miles away.

- 1. Forests control moisture and preserve watersheds.
- 2. The rain on reaching the ground sinks in among the tree roots and seeps gradually down to feed the valley streams.
- 3. Forests cause the run-off to be greatly slowed down.
- 4. The removal of forests on steep slopes is exceedingly disastrous.
- 5. The rain runs over the surface washing fertile top soil into streams, pouring great amounts of water into valleys, causing disastrous floods.
- 6. The melting of the mountain snows have no check.
- 7. No reserve water is left to keep the streams at desired levels during time of little rain.
- 8. This feeble flow at various times of year hinders water power, recreation, irrigation and the work of paper and pulp mills.
- 9. Life, property and crops are destroyed when river is at flood stage.

F. Remedies for forest depletion

1. Protect forests from
 - a. forest fires
 - b. insect pests
 - c. tree diseases
 - d. overgrazing
 - e. destruction by moss
2. Reduce taxes to encourage conservational logging by lumber and paper companies.
3. Permit no high stump cutting.
4. Good disposal of slashings.
5. Leave seed trees to produce seedlings.
6. Do not allow clean cutting.
7. Reforest burned-over and cut-over areas.
8. Reduce fire hazards.
9. Have more forest rangers look-out towers.
10. Hire extra fire labor during critical forest fire period. (usually fall)
11. Provide better equipment for fire fighting.
12. Build roads or trails to secluded forest areas.
13. Reforest non-restocking areas.
14. Get rid of the destructive methods used in turpentine industry.
15. Pass legislation eliminating advantages to logging companies.
16. Regulate the lumber industry to prevent overproduction.
17. Practice efficient milling, industrial utilization of waste, and use of wood preservatives.
18. Establish more state and national forests.
19. Establish municipal forests.
20. Encourage farm woodlots.
21. Educate the public to demand conservational logging on all public forest lands.
22. Promote the use of substitutes for wood—brick, concrete, etc.
23. Educate the public to use proper precautions against fires while hunting, fishing, camping or touring in forested areas.
24. Acquire publicly all watershed areas, reforest them where they are denuded of tree cover, or afforest them if not originally timbered.
25. Prevent fires, overgrazing and other abuses of watersheds.
26. Forbid logging on all crucial or erosive watersheds.
27. Block up all state and national forest areas to any kind of settlement.

Summary

What is needed is to supply to all forests the kind of care now applied to our national forests. This, we know, is called conservation, which really means careful use. It includes three important principles. First, we should cut from our forests only as much wood as the forests grow in a year. Second, we should cut our timber in a way that leaves favorable con-

ditions for the growth of new timber. Third, we should make full use of all wood cut.

The amount of wood cut each year from our forests should not exceed the amount grown. The cutting will be of two kinds. Mature trees will be felled for lumber, and partly grown trees will be cut to give other trees the opportunity to grow to a good size. This last kind of cutting is called thinning. The two kinds together should not on the average exceed the amount of replacement growth of all trees.

The cutting should leave conditions right for further growth. The ground should be cleared of waste. Partly grown trees should not be damaged by careless felling of mature trees and should not be cut at all unless thinning is necessary. Enough growth should be left to provide right conditions of shade and protection for young trees. Making full use of all wood cut will mean that less timber will need to be cut and that waste will not be left on the ground to feed forest fires. The use of small wood useful for shingles, clothes pins, matches and other articles, the making of pulp from softwood waste, and the careful grading of lumber as to size and shape will reduce waste and will add nearly one half to the usefulness of the wood cut. Conservation can also be increased by applying preservatives to wood to be used for poles and posts and exterior finish of buildings. This application will prevent decay and add years to the life of the wood.

In addition to conservation the United States is beginning the replacement of exhausted forests with young trees and the planting of forests on lands once used for agriculture but now abandoned. This is called reforestation. Reforestation prevents erosion and pays well even in deep gullies where erosion has become dangerous. Forest nurseries are maintained in most states, from which young trees are transplanted to new areas. If left to themselves, the forests will also renew their own growth and extend themselves. With proper care and careful cutting, we can prevent further serious depletion of our forest resources. Wood plays an important part in our daily lives. Unless we take some very definite steps to preserve our supply, we may soon have to get along without some of the many benefits it now brings to us.

IV. Activities

A. Reading skills

1. Have pupils skim reading material to find desired answers.
2. Help pupils to take concise notes on material read.
3. Outline material briefly (in way instructed) before any oral report.
4. Instruct pupils in correct way of finding material to be read.
5. Have pupils read for information—stories on early Minnesota forest fires.
6. Guide, give definite instructions in all outside reading.
7. Work type reading guided and questioned by teacher.

B. Language skills

1. Write a short article to tell how lumber is transported from the producing area to the consuming area (definite instructions).

2. Special oral reports on how wood pulp is produced (outline).
3. Have each pupil write a short tree poem (instruction on how to write a poem).
4. Collect poems, and paste in a scrapbook.
5. Assignment of special reports (oral) on various phases of forest conservation.
6. Write short articles on forest conservation for a school paper.
7. Write a short story called "How a Tree Becomes a Board" (correct instructions in paragraph writing).
8. Instruction in letter writing—write a letter to a lumber company asking for information about how lumber is produced, or write a letter to the Department of Agriculture asking for free material on forest conservation.
9. Class discussion on selective cutting and clear cutting of forests (sentence structure).
10. Prepare a short skit on forest conservation, (punctuation, sentence structure, indentation, paragraphing).

C. Visual Aids

1. Pictures which show how logs are made into lumber.
2. The use of graphs, charts, tables and maps in the study of forests and forest conservation.
3. Have children make a collection of pictures for study of forest destruction (post pictures).
4. Study pictures of surface and crown fires to determine results.
5. Have pupils collect pictures and clippings from magazines and newspapers for a group scrapbook.
6. Show films about lumbering, forest destruction and conservation (discuss after showing).
7. Use slide machine to show various phases of forestry industry.
8. Arrange attractive bulletin boards for different phases of forestry (pupils decide on and put up material).
9. Use state map to locate our state forests (showing extent).
10. Have pupils collect pamphlets and booklets containing pictures of products and conservation of forests.

D. Tours and trips—

1. A trip to a local sawmill just south of town where farmers bring their own logs to be sawed into lumber.
2. An excursion to our deciduous woods for tree identification.
3. A visit to a local house under construction to learn the varieties of lumber used in building a home.
4. A tour of a paper mill to see how paper is made from pulp (discussion follows).
5. Visit a local lumber yard to inspect varieties of lumber on hand. (Collect small samples to take back to school for wood collection)
6. If possible visit a nearby forest ranger station or lookout tower for observation and information.
7. If possible have a planned trip to Itasca State Park.
8. Visit a local shelter belt to find out how they are planned, types

of shrubs and trees planted, purpose and benefits.

9. Visit the local nursery to find out about seedlings and kinds of trees grown to be sold for transplanting.
10. Secure and plant some small trees on school ground (care for same to assure growth).
11. A tour of local school ground to learn names and identification of trees and shrubs planted there.
12. Plan a trip to a local farmer's wood lot to learn kinds of trees and uses.
13. Visit wooded pasture to show effect of grazing on small tree growth.

E. Art and Music

1. Draw and color a picture of a tree above and below ground. Name parts of tree and learn.
2. Draw a picture and put in the parts of a cross section of a tree (learn).
3. Have pupils draw and color a free hand poster about some chosen phase of forest conservation.
4. Have pupils draw large map of Minnesota or the U. S. Illustrate with trees cut from magazines—placing each tree in its correct region.
5. Collect green and colored leaves to press, mount and name for tree border.
6. Free hand drawings of farms and well planned shelterbelt or woodlot.
7. Using outline maps, shade in and name the five forest belts of the United States.

F. Miscellaneous Activities

1. Have pupils gather a small exhibit of articles made of wood that were formerly made of metal—(display).
2. Cut slices of the cross section of a 5 inch poplar tree for study of tree rings and other parts of tree.
3. Tap a tree to show correct way of tapping to secure sap.
4. Have pupils make a list of unusual products of the forest and name the tree from which each is received.
5. Have pupils report to authorities any violation against trees or forests.
6. Get birchbark from cut birch and make some chosen article—canoe, tepee.
7. Make birdhouses for certain birds—know kind of wood being used.

G. Culminating Activities

1. The Assembly program (suggestive only)
 - a. Song—all—"America the Beautiful"
 - b. Piano Solo—"Wind in the Willows"
 - c. Short original talk—"What the 7th grade is studying in geography"

- d. Original article to read—"The Meaning of Forest Conservation"
- e. Vocal solo—"Trees"
- f. Oral report—"What We Observed at the Sawmill"
- g. Demonstration—Parts of a tree, tree charts and cross section of tree—illustrative talk.
- h. Trees and uses—10 children—each represent a tree—Give name, characteristics and uses
- i. Slide pictures of forests and conservation
- j. Song—"America"

V. Materials

A. Maps

1. Original extent of U. S. forests.
2. Present extent of U. S. forests.
3. Deciduous and coniferous forests.
4. Production of lumber by states.

B. Charts

1. Parts of tree.
2. Products received from trees.
3. Superior and inferior tree chart.

C. Graphs

1. Original and present forests.
2. Amounts of lumber cut each year.
3. Growth and use of trees.
4. Industrial value of our forests.

D. Tables

1. Showing great forest fires and destruction.
2. Forest areas and types of trees.
3. Stand, growth and depletion of saw timber.
4. Types and amounts of timber cut each year.

E. Pictures

1. Areas of lush forest growth.
2. Areas of virgin timber.
3. Areas of denuded timber.
4. Phases of conservation.

F. Slides

1. Destructive forest fires.
3. Denuded forest areas.
3. Reforestation.
4. Virgin timber.

G. Newspaper clippings and current events

1. Articles on forest depletion.
2. Articles on forest conservation.

H. Articles from farm papers.

- I. Bulletin boards—various phases of forest conservation.
- J. Encyclopedia—conservation.
- K. World Almanac—forest statistics.
- L. World Atlas—maps for study of forest areas.
- M. Mimeographed Maps—forest regions.
- N. Pieces of cross section of tree for study. Experiment—destructive distillation of wood.
- O. Magazines.
 - 1. **The Conservation Volunteer.**
 - 2. **Holiday for June '47.**
 - 3. Copies of **National Geographic** containing articles on trees.
- P. Texts
 - 1. Atwood, Thomas, **The Americas.** Ginn and Company.
 - 2. Barrows and Parker—**United States and Canada.** Silver Burdette.
- Q. Tree list for identification—See **Forest Trees of Minnesota** Published by Conservation Department, State of Minnesota.
- P. Bulletins (See bibliography—sources of conservation material).

A UNIT OF STUDY ON CONSERVATION OF THE SOIL FOR GRADE FIVE

by Marguerite Ringeisen

I. Overview.

The children of today are the citizens of tomorrow. Therefore it is necessary that they be well versed in conservation practices. Soil is the most important of all natural resources and so it seems that our future citizens should know how to care for this resource.

Soil erosion occurs in almost every community. It cannot be stopped completely, but it can be controlled. It will be the purpose of this unit of study to bring to the children the fact that soil erosion is not a problem of a distant community, but a problem in their own community and state and can be controlled by proper methods of agriculture.

It must be made apparent to the children that conservation of the soil is not a problem for rural people alone, but a problem which is vital to every city dweller. The child must understand that it is only through the wise and careful use of the soil by the people in both city and rural areas that he is able to live.

II. Desired Outcomes.

A. Understandings

1. Of the fact that all human and animal life is dependent upon the soil.
2. Of how soil is formed.
3. Of the length of time it takes to make an inch of top soil.
4. Of the different kinds of soil.
5. Of why we must use soil wisely.
6. Of how soil erosion may be prevented.
7. Of farming practices which will prevent soil erosion, such as strip cropping, contour plowing, and terracing.

B. Appreciations

1. Of the importance of soil as a natural resource.
2. Of the interdependence of man and the soil.
3. Of the knowledge that there is no substitute for the natural resource, soil.
4. Of the fact that soil conservation is a problem of the people in both the city and rural areas.

C. Abilities

1. To recognize clay, loam, and sandy soil.
To recognize the evidences of soil erosion.
3. To recognize sheet, gully, wind, and stream erosion.
4. To know that sheet erosion is the most destructive but least noticeable.
5. To know the best methods of preventing soil erosion.
6. To recognize contour plowing, strip planting, gully control, and flood control.

D. Skills

1. To encourage good oral expression by:
 - a. reports on methods of controlling soil erosion
 - b. reports on types of soil erosion
 - c. interviews
 - (1) telephone
 - (2) personal
 - d. announcements
2. To write in well constructed English
 - a. a business letter
 - b. paragraphs on control of soil erosion
 - c. paragraphs on types of soil erosion
 - d. an outline
 - e. notes on material read
 - f. riddles
 - g. poems
3. To find through reading, answers to problems raised.
4. To read to locate information.
5. To skim to find the answer to a question raised.
6. To organize material.
7. To work together in group projects.

III. Suggested Approaches

A. The children's interest in the problem of soil conservation may be aroused by referring to the blizzards of last winter. There were three or four times when school was not in session because of storms. It was evident that much dirt as well as snow was blowing as they observed the amount of dust on the window ledges, books, desks, and floor of the school room. People's faces and clothing were dirty.

Later in the spring evidences of dirt drifts were seen throughout the countryside. These things may be brought to the children's attention, and questions similar to the following may be asked of the children.

1. How many of you remember the half holidays we had last winter because of the snow-storms?
2. What did you do to amuse yourselves on those days?
3. How many of you were outdoors for any length of time during the storm?
4. Did you notice anything strange about your faces and clothing when you went indoors?
5. Did any of you help Miss Aakre clean your schoolroom after the storm? Did you help your mother?
6. I think all of us agree that the storms were no fun even though we had time off from our school duties. We had extra snow to shovel, our faces and clothing were dirty, and we had extra cleaning to do both at home and at school.

As you were driving throughout the countryside last spring after the snow had melted did you notice any evidences of how the dirt had blown during the storms?

7. From where did this dirt come?
8. Is this dirt that was blowing any concern of ours? Why?
9. Does anyone have an idea why so much dirt was blowing?
10. Does anyone know a name people use when they see evidences that soil has been moved from one place to another where it will do no good? If the term **erosion** is not given, refer to the material in **How and Why Experiments**, p. 296-297.
11. Often you hear your mother say that you must save foods. We have talked about saving paper and other materials. Is there another word we can use instead of save? (If the word **conserve** is not in the children's vocabulary give it. Preserve may be given. Explain the difference.)
12. We have learned to use the two words **conserve** and **erosion**. They are challenging words. Think of them in regard to the dirt which was in the air last winter and the dirt banks you saw in the spring. What problem in regard to the soil do these two words raise in your mind?

The children will undoubtedly raise a question which is somewhat like the following one:

How can we conserve our soil?

- B. Pictures of soil erosion, dust storms, and floods may be placed on the bulletin board. The caption "What caused these conditions?" may be used. This caption will lead to questions by the children. Discussion may follow and the problem "How can we conserve our soil?" may be set up.
- C. An excursion may be planned which will include the school grounds. On every school ground there will be evidence of some type of erosion. There will probably be gullies and wind erosion. If the playground is gravel, evidences of wind erosion can be felt on one's legs as he is on the playground. As the school ground is toured, it can be shown how grass will hold the soil in place. During the excursion questions will be raised by the children and the problem "How can we conserve our soil?" may be set up following the tour.

IV. Scope of Subject Matter

- A. Soil is the resource on which we depend for —
 1. Food
 2. Clothing
 3. Shelter
- B. The dependence of soil on other resources.
 1. Soil provides food for animal and plant life.
 2. Soil depends upon trees and grass to anchor it.
 3. Soil depends upon water for the growth of plants.
- C. How soil is made
 1. The breaking up of rocks by freezing, blowing wind, pounding rain, running water, and ice sheets formed mineral soil. The

above will be spoken of as agents of erosion.

2. Bacteria working decayed plant and animal life formed humus or organic matter.
3. Organic matter added to mineral soil is soil as we know it today.
4. Soil scientists estimate that it takes 400 to 1000 years to form one inch of top soil.
5. Soil is mixed by the work of earthworms, ants, beetles, and moles.

D. Kinds of soils

1. Clay
 - a. Made of rock ground to powder
 - b. May be yellow, red or other colors
2. Sandy
 - a. Soil which contains much sand
3. Loam
 - a. Mixture of sand, clay, and decayed plant and animal matter
 - b. Dark color
 - c. Soil containing large amounts of decayed plant and animal materials are rich.
4. Peat
 - a. Found in sloughs, ponds, and lake beds
 - b. Usually contains large amounts of organic matter
 - c. High in nitrogen content, but often deficient in phosphorus and potassium
 - d. Drainage is usually needed to make these soils productive.

E. Elements of the soil

1. Nitrogen
2. Potash
3. Phosphate
4. Others

F. Causes of soil losses

1. Leaching
2. Erosion
 - a. wind erosion
 - b. water erosion
 - (1) sheet erosion
 - (2) gully erosion
3. Floods
4. Overgrazing
5. Overplanting

G. Wise use of land to prevent erosion

1. Grass waterways
2. Contour farming
3. Strip cropping

4. Terracing
5. Diversions
6. Winter cover crops
7. Gully control
 - a. Earth fills
 - b. Tree and grass plantings
8. Well planned pasture program
9. Crop rotation and fertilization
10. Shelter belts

V. Skills developed in the unit

A. Language abilities

1. Oral reports
2. Written compositions
3. Correct language usage
4. Well-organized outlines
5. Business letters
6. Taking notes

B. Reading abilities

1. Read to comprehend material
2. Skim to find answer to specific question
3. Read to organize material
4. Locate material by use of:
 - a. Index
 - b. Table of contents
 - c. Dictionary
 - d. Encyclopedia
 - e. Card Catalog
 - f. Pamphlets

VI. Suggested activities

A. Science

1. Collect specimens of soil from different areas. Place in jars and label. Notice difference in soils.
2. Test soil for ability to hold water.
3. Test soil for fertility. Plant corn in different types of soil.
4. Test soil for air.
5. Collect a sample of water from a muddy stream and one from the faucet. Place in a glass jar and let stand. Explain the difference.
6. Collect and label crop plants best suited to control of soil erosion.
7. Fill in a gully on the school ground. Plant grass and trees if possible.
8. Make a list of all things in your home which come directly from the soil.

B. Language

1. Construct an outline based on questions raised during discus-

sion of soil conservation.

2. Write to the State Department of Agriculture for pamphlets on soil conservation.
3. Write to the United States Department of agriculture for pamphlets on soil conservation.
4. Write to the United States Department of agriculture for canning factory, for an interview and information on what the company does to prevent soil erosion and what it does to build up the fertility of the soil on their own farms.
5. Write for the school paper and local newspapers an account of the excursions taken, emphasizing the soil conservation angle.
6. Write articles on the seriousness of soil erosion.
7. Write articles on the methods of control of soil erosion.
8. Interview the county agent to learn what Martin County does in regard to soil conservation.
9. Make a soil conservation scrap book.
10. Collect pictures and articles pertaining to soil conservation for the bulletin board.

C. Reading

1. Skim to locate answers to questions.
2. Read in reference to find answers to questions set up in outline.
3. Read to organize material.
4. Use index, table of contents, dictionary, encyclopedia, card catalog, and pamphlets to locate material in reference reading.
5. Develop a conservation vocabulary.

D. Excursions

1. Plan an excursion of the local school ground. Examples of erosion prevention will be seen in terracing and in use of a retaining wall.
2. Plan an excursion under the guidance of the county agent to see the actual work being done in regard to soil erosion.
3. Plan an excursion through the local canning factory to learn how products of the soil are preserved.
4. Plan an excursion to a shelter belt.
5. Plan an excursion to see the effects of overgrazing on pasture land. Compare with a good pasture.
6. Plan an excursion to see the effects of overcropping the fields. Compare with a field of good crops.

E. Visual aids

1. Plan a bulletin board on soil conservation.
2. Collect pictures on soil conservation for class use.
3. Show soil conservation slides which may be obtained from county agent.
4. Show these films:
 - a. **Conservation of Natural Resources**
Audio-Visual Aids - U. of Minn. Bulletin
1 reel - \$1.00

- b. **Science and Agriculture**
Audio-Visual Aids (Erpi) U. of Minn. Bulletin
1 reel - \$1.00
- c. **Wise Land Use Pays**
2 reel sound - free

F. Music

- A. From the music book **Blending Voices** these songs may be used:
 1. Harvest Hymn - p. 49.
 2. Nicole, Go Feed Your Goose - p. 69.
 3. Farmer Jack - p. 137.
 4. Four Grains of Corn - p. 157.
 5. Children may write words for a favorite melody.

G. Art

1. Illustrate strip cropping, contour plowing, and shelter belt.
2. Illustrate crop plants which are soil builders.
3. Make a poster which draws attention to soil conservation.

H. Arithmetic

1. Use problems pertaining to soil found in **Conserving Our Soil Resources** by V. L. Nickell - An Outline for Teachers in the Elementary School, p. 46.

I. Spelling

1. Learn to spell the words in conservation vocabulary.

VI Evaluations or Culminating Activities

- A. Through pictures, shown by an opaque lantern or numbered and posted about the room, identify the following:
 1. Gullies
 2. Strip cropping
 3. Contour plowing
 4. Dust storm
 5. Pasture land - good and poor
 6. Good crops - poor crops
 7. Shelter belt
 8. Terracing
 9. Grassed waterways
 10. Diversions
- B. Articles written on the various types of soil erosion control.
- C. Oral reports on excursions.
- D. Oral reports on methods of erosion control.
- E. Construction of an outline after reading specified material.
- F. Prepare for an assembly oral reports on the work done and the excursions taken during the study of soil conservation.
- G. Completion and multiple choice test on vocabulary developed and information gained during study.

VII. Pupil references

- A. Texts

1. Beauchamp, Blough, Melrose - **Discovering Our World Book III** Scott Foresman - p. 193-195
2. Carpenter, Bailey, Tuttle - **Adventures in Science with Jack and Jill.** Allyn and Bacon p. 193-196
3. Craig and Coudry - **Learning About Our World** - Ginn & Co. p. 287; 290-292
4. Frasier, Dolman Shoemaker, Van Noy - **How and Why Experiments**—Singer Co. p. 292; 296; 242; 245; 247
5. Whipple and James - **Using Our Earth** - Macmillan p. 254-256

B. Readers

1. Stone - **Mustang Gray Story - Rivers That Build Islands** p. 219-223
2. Stone - **Pine Knots - Story - The Mississippi's Natural Wonder—The Delta** - p. 242-248
3. Stone - **Pine Knots Story - In the Tennessee Valley** - p. 289-295

C. Pamphlets

1. Crim Burson, **Well Managed Pastures** - U. of Minn. Agric. Extension bulletin 241
2. International Harvester Co. **Let's Practice Soil Conservation for Permanent Agriculture** - Chicago, Illinois
3. Parker - **Windbreaks for Field Protection** U. of Minn. Agric. Extension bulletin 140
4. Roe and Neal - **Soil Erosion Control** U. of Minn. Agric. Extension bulletin 201
5. Thorfinnson - **Contour Strip Cropping** U. of Minn. Agric. Extension Ser. Bulletin 108
6. Thorfinson - **Wind Erosion Control** U. of Minn. Agric. Extension Ser. bulletin 235
7. **Grassed Waterways** U. of Minn. Agric. Extension bulletin 107

VIII. Teacher references

A. Books

1. Bathurst, Effie - **Visualized Curriculum Series - Conservation of Natural Resources** - Creative Education Society - Mankato, Minnesota.
2. Brem, Peter - **Science Experiments for Children** - Kenyon Press
3. Comstock - **Handbook of Nature Study** - Comstock Publishing Co.
4. Craig - **Science for the Elementary School Teacher** - Ginn & Co. p. 114-29; p. 770-5
5. Flynn and Perkins - **Conservation of the Nations Resources** - MacMillan
6. Perkins and Whitaker - **Our Natural Resources and Their Conservation** - Wiley
7. Renner - **Conservation of Our Natural Resources** - Wiley

B. Pamphlets

1. Burson - **Soil Fertility and Conservation** U. of M. Agric. Ex-

- tension Service bulletin 254
2. Fink, Ollie - **The Teacher Looks at Conservation** - State of Ohio - Division of Natural Resources.
 3. Fonda, Morris E. - **The Lord's Land** - U. S. Soil Conservation Serv.
 4. Hartnett, Ellen - **Helps for Teaching Science in the Primary and Elementary Grades** - Klipto Loose Leaf Co., Mason City, Iowa
 5. McMiller - **Soils of Minn.** U. of Minn. Agric. Extension Ser. Bulletin - 131
 6. McMiller - **Principal Soil Regions of Minn.** U. of M. Agric. Extension bulletin 392
 7. Miller, M. F. - **Topsoil: Its Preservation** U. S. Dept. of Agriculture
 8. Muehr, Alice (Chairman) **Conservation Highlights - Source Material for Teachers for Conservation Education**—Duluth Pub. Schools, Duluth, Minn.
 9. Swanson, Gustav - **The Farmer Tackles Conservation** Minn. Dept. of Conservation - Bulletin 4
 10. No author - **On the Level - Contour Cultivation** U. S. Dept of Agric.
 11. Nickell, Vernon L. - **Conserving Our Soil Resources - An Outline for Teachers in the Elementary Schools** College of Agric. -

A CONSERVATION UNIT FOR RURAL SCHOOLS

by Mrs. Lulu Gross

I. Objectives:

To develop an understanding of what soil is composed of and how it is formed.

To teach the different kinds of soil and how they differ.

To teach the fact that animals, trees, and all life depend on soil.

To teach the child that the need of soil conservation is a serious matter to all of us.

To teach how the needs of conservation can be met.

To teach the child that other natural resources are becoming depleted very rapidly.

To develop understandings of the importance of mineral resources in the development of the country.

To develop a cooperative spirit in the conservation of and the appreciation of the beauty of wild flowers.

To study the general nature of wildlife resources and their usefulness to man.

Overview:

Conservation is a study of the wise use of our resources to the end that the greatest possible number of people and future generations may best be served.

To give the children a broader insight in the value and wise use of our community's natural resources is important because the nation's wealth is measured in the way we conserve and use these resources.

This unit will be used in the fifth, sixth, seventh and eighth grades. We will all work together on our basic unit on soil, then each grade level will work in groups on the other units. Eighth Grade, "Minerals," seventh grade, "Trees," and fifth grade, "Wildlife," (animals of our community).

Time: from six to eight weeks.

II. Approach:

T.—"What is the most important thing you would consider if you were buying a farm?"

P.—"Water."

T.—"Water most certainly would be a necessity, but where does the water go?"

P.—"Into the ground."

T.—"Could we call the ground something else?"

P.—"Yes the soil. That is the thing I would want to consider first if buying a farm."

T.—"Is all soil alike?"

P.—"No, some soils are heavier and some are lighter."

T.—"Of course you all know the difference between sand, clay, and loam. Why is soil so important?"

P.—"It is necessary to grow food."

T.—"Could you have a very good farm out in the middle of a desert?"

P.—“No because we have little plant life there.”

T.—“Why is this true?”

P.—“Because it has little moisture and is mostly sand.”

T.—“Then if you were going to buy a farm what kind of soil would you choose?”

P.—“Good black dirt.”

T.—“Does this black dirt always stay in one place?”

P.—“No, sometimes it washes away, and sometimes it blows over to your neighbors.”

T.—“Do we like to have our neighbors own something that should belong to us?”

P.—“No.”

T.—“Then if this soil is necessary for us, don't you think we should try to keep it?”

P.—“Yes we should.”

T.—“Soil is one of our natural resources. There is a word that means the taking care of and the wise use of the natural resources that are given into our keeping. Do you know what that word is?”

P.—“Conservation.”

T.—“What can we as individuals do to aid in conservation?”

P.—“Study about how we can help conserve our soil and other natural resources.”

III. Subject Matter:

A. Soil - its nature and composition.

1. True soil.
2. Subsoil.
3. The four important parts of soil.
 - a. Water, air, organic and inorganic matter.
4. What are the differences in soil depth? Why?

B. How soil is formed.

C. Kinds of soil.

1. Sandy soil.
2. Clay soil.
3. Loam soil.
4. Peat soil.

D. Qualities of different soils. How the soils vary in texture, color and organic matter.

E. Soil and plant foods.

1. What are the chief things plants get from soil?
 - a. Organic matter, nitrogen, phosphorus, potash and minerals.
2. What part do plants play in building the soil?
3. How does crop rotation help preserve soil fertility?
4. How can we put back into the soil plant food removed by erosion and cropping?

F. Changing soil.

1. What has made us aware of the need for soil conservation practices?

2. How did our forefathers and the American Indians practice soil conservation?
 - a. What did the early settlers do when the soil wore out?
 - b. Why is this practice no longer practical or possible?

G. Man's dependence on soil.

1. The ways man is directly or indirectly dependent on soil for:
 - a. Food.
 - b. Clothing.
 - c. Shelter.
 - d. Recreation.
2. How fertility of soil affects man's standard of living:
 - a. Schools.
 - b. Churches.
 - c. Homes
 - d. Recreation.
 - e. Health.
 - f. Income.
 - g. Social life.
 - h. Security.

H. Causes of depletion.

1. Erosion
 - a. Sheet.
 - b. Gully.
2. Up and down hill plowing.
3. Clearing steep slopes.
4. Overcropping and overgrazing.
5. Fall plowing.
6. Fires - prairie, forest.
7. Burning straw.
8. Climate.

I. Conservation of soil and water.

1. What does conservation really mean?
2. Why is conservation of soil and water necessary?
3. What is a water table?
4. What is happening to the water table in many parts of the United States?
5. What is happening to the water table in our own community?
6. Does this indicate anything of particular importance?
7. How do the following conservation practices save the soil?
 - a. Contour farming.
 - b. Deep plowing.
 - c. Strip cropping.
 - d. Crop rotation.
 - e. Terracing land.
 - f. Grass waterways.
 - g. Use of fertilizer - manure and commercial.
 - h. Controlled grazing.
 - i. Farm woodlots.

IV. Activities:

- A. Field trip to observe the following:
 - 1. Grass covered yards and hills.
 - 2. Creek bank and gulying.
 - 3. Eroded fields - sheet wash and wind.
 - 4. Overpasturing.
 - 5. How fields are laid out.
 - 6. Streams before and after rains.
 - 7. Preparation of soil for planting.
- B. Bulletin boards on soil.
- C. Slides on conservation.
- D. Have the county agent talk on what is being done to help farmers.
- E. Write letters for pamphlets and information.
- F. Discuss with different farmers what they are doing on their own land.
- G. Make out a five year rotation of crops plan.
- H. Draw diagrams of how they would like their farms to look.
- J. Plant some easy growing plants in different soils and watch the outcome.
- K. Prepare talks to give to others.
- L. Plan and prepare illustrative material such as graphs, maps and pictures to use with talks.

Minerals 8th Grade

I. Objectives:

- 1. To familiarize children with the amounts of minerals left to be used.
- 2. To realize the very great need of conserving these minerals to the best of our ability and to decide what we can do to help.
- 3. To find out if there are some minerals wasted more than others.
- 4. To see if scientists are helping in any way with the conservation program.

II. Approach

Graphs, newspaper articles, or figures will be presented showing common minerals and the alarming way we are depleting unrenewable supplies.

III. Scope of nonrenewable mineral materials of the United States.

A. Iron ore

- 1. Uses - old and new.
- 2. Amounts left.
- 3. Ways of conserving ore.
- 4. Uses of low grade ore.

B. Coal

- 1. Uses.
- 2. Kinds.
- 3. Amounts of each kind.
- 4. Source of energy.

5. Conservation to minimize waste in mining and use.
- C. Petroleum
 1. Uses.
 2. Amount and rate of depletion.
 3. Need for conserving it.
- D. Building material.
 1. Granite.
 2. Limestone.
 3. Sandstone.
 4. Clay.
 5. Use of waste materials.

IV. Activities:

1. Pictures of by-products of coal or other minerals for a bulletin board.
2. Collect different types of building stones and label them.
3. Collect pictures of the petroleum industry.
4. Display different types of coal.
5. Make a graph showing the amount of coal uses and also the amount left.
6. Compare the prices of coal.
7. Make maps showing the location of mineral deposits.
8. Make graphs comparing amounts of mineral resources available twenty-five years ago and now.
9. Make a table showing problems in mineral conservation and possible solutions.
10. Prepare talks to present information about mineral conservation to other boys and girls.

Trees 7th Grade

I. Objectives:

1. To develop an appreciation of the values of trees to man.
2. To recognize that trees may have both an aesthetic and an economic value.
3. To be able to identify certain trees.
4. To realize the need of forest conservation.
5. To make the children conscious of the value of growing trees.
6. To build up a knowledge of some of the important by-products of trees.

II. Approach

We have a saw mill in the near vicinity and many of the farmers in the community are hauling logs to be sawed. This easily leads to a study of trees and how they can be conserved.

III. Subject mater

- A. The aesthetic value of trees.
 1. Shade.
 2. Recreation.
 3. Hiking.
 4. Camping.
- B. Uses of growing trees.

1. Hold and enrich the soil.
2. Prevent floods.
3. Act as a windbreak.
4. Produce food.
 - a. Cultivated fruit trees.
 - b. Wild fruits. (birds and animals).
 - c. Nut trees.
5. Homes for animals.

C. Uses of the forest product.

1. Fuel.
2. Lumber.
3. All wooden articles.
4. Paper.
5. By-products.
 - a. Maple sugar.
 - b. Charcoal.
 - c. Wood alcohol.
 - d. Turpentine, etc.

D. Causes of waste of forests.

1. Cutting and milling.
2. Clearing lands for farms.
3. Methods of extracting turpentine.
4. Fires.
5. Insects.

E. How we can conserve the trees and forests.

1. Reducing waste.
2. Protecting young saplings.
3. Leaving seed trees.
4. Using dead timber.
5. Utilizing the entire tree.
6. Reforesting burned over areas.
7. Reducing fire losses.
8. Utilizing by-products.

F. Identification.

1. Parts of the tree.
2. Kinds of trees.
 - a. Coniferous.
 - b. Deciduous.

IV. Activities.

- A. A hike to study the trees nearby and to identify them.
- B. A leaf identification booklet using blue prints or splatter paints.
- C. Visit the saw mill while men are working.
- D. Study cross section of trees.
- E. Visit the paper mill.
- F. Visit a nursery to see how trees are raised.
- G. Discussion on how our school grounds could be planted and

- where the trees should be placed.
- H. Collecting of newspaper or magazine articles on trees or forests.
 - I. Reading of poems and stories.
 - J. Giving talks illustrated by slides and pictures.

Flowers—6th Grade

- I. Objectives:
 - 1. To gain new and varied information on wild flowers.
 - 2. To give the children an appreciation of the beauty of wild flowers.
 - 3. To teach what flowers need protection.
- II. Approach.

A child had brought a bouquet of wild flowers very carelessly picked. Have a class discussion on how flowers should be picked, and what flowers may be picked.
- III. Subject matter.
 - A. Identification of common kinds of wild flowers in Minnesota.
 - B. Wild flowers that should not be picked.
 - C. Wild flowers that can be picked sparingly.
 - D. Wild flowers that may be picked.
- IV. Activities.
 - 1. Identify the different flowers common to Minnesota by pictures, reading and gathering of a few specimens.
 - 2. Discuss and draw on the board different parts of the flower. (aid to identification.)
 - 3. Make a collection of pictures of wild flowers.
 - 4. Discuss the protection of wild flowers and why.
 - 5. Read poems and stories.
 - 6. Show slides of flowers and have the children name the kinds and tell where they would look for them.
 - 7. Plan and plant a wild flower garden in the school yard.

Wild Animal Life—5th Grade

- I. Objectives:
 - A. To teach that all animals depend upon the products of the soil for their food.
 - B. To teach that animals have protective coloring and adaptations.
 - C. To teach children about various animal homes.
 - D. To teach children that animals and their natural habitat must be protected if they are to be maintained and increase.
- II. Approach:

On the field trip a muskrat had been discovered. The children felt they would like to find out more about the animals of their community.
- III. Subject matter:
 - A. To teach identification, habitat and foods of following animals:
 - Deer
 - Rabbit
 - Beaver

Muskrat
Squirrel
Fox

- B. Reasons why we conserve animals.
 - 1. Beauty.
 - 2. Benefit to future generations.
 - 3. Economic value.
- C. How we conserve animals.
 - 1. Restrictions on hunting and trapping.
 - 2. National Parks and Zoos.
 - 3. Game refuges.
 - 4. Maintaining desirable habitats.

IV. Suggested activities:

- 1. Collect and identify animal pictures. Use slides and movies if possible.
- 2. Visit an animal habitat as pond, meadow or a farm that raises wild life.
- 3. Make a scrap book to present to the rest of the room.
- 4. Give a short discussion to the rest of the children on special observations.
- 5. Visit a game refuge.

Culminating Activity:

This activity will be in the form of a program on, "What We Have Learned about Conservation."

We have been invited by the 4 H Group to take charge of one program in the spring. The children will plan and give the program. Much use will be made of pictures and graphs. We will give it for the lower grades, first, and at this time the work will be evaluated.

Correlated Subjects (Skills developed)

I. Reading of

- 1. Magazines.
- 2. News articles.
- 3. Pamphlets.
- 4. Basic texts to develop (a) rapid comprehension, (b) location of material, (c) organization and, (d) retention.

II. Language

- 1. Writing letters.
- 2. Outlines.
- 3. Scrap books.
- 4. Written reports.
- 5. Oral reports.

III. Arithmetic

- 1. Plotting fields (diagram).
- 2. Measuring.
- 3. Graphs.
- 4. Figuring of some of the different products.

GENERAL BIBLIOGRAPHY

Work Shop

- Diedrich, Paul B. and Van Til, William. **The Work Shop.**
Hinds, Hayden and Eldredge, Inc. 1945.

Teacher's References

Books

- Flynn, H. E. and Perkins, F. E. **Conservation of the Nation's Resources.**
MacMillan, New York. 1941.
- Parkins, A. E. and Whitaker, J. R. **Our National Resources and Their Conservation.** Wiley, New York. 1938.
- Renner, George T. **Conservation of National Resources.**
Wiley, New York. 1942.

Pamphlets

1. Conservation Planning Committee. **Conservation Highlights.**
Duluth Public Schools, Duluth, Minnesota. 1945.
2. Curriculum Bulletin. **Helps in Teaching Conservation in Wisconsin Schools.** Department of Public Instruction, Madison, Wisconsin. 1938.
3. Department of Public Instruction. **Teacher's Outline for Teaching Conservation Units in Iowa Rural Schools.** State Superintendent of Schools, Des Moines, Iowa. 1946-47.
4. Fink, Ollie E. **The Teacher Looks at Conservation.**
The Ohio Division of Conservation and Natural Resource, Columbus, Ohio, 1942.
5. Friedrich, George. **The Study of Conservation.**
6. Bathhurst, Effie G. **Teaching Conservation in Elementary Schools.**
Bulletin # 14, U. S. Office of Education. 1938.
Conservation Excursions. Bulletin # 13, U. S. Office of Education.
Visualized Curriculum Series.
Conservation of Natural Resources. Creative Education Society, Mankato, Minnesota.

Sources for Conservation Materials

1. Agricultural Extension Division. University of Minnesota, Minneapolis, Minnesota.
2. American Tree Association, 1214 16th Street North West, Washington, D. C.
3. Little Wonder Books. (see list of titles)
Charles E. Merrill Co. Inc.
4. Minnesota Department of Conservation, St. Paul, Minnesota.
Conservation Bulletins.
Conservation Volunteer. (Magazine)
5. National Audubon Society, 1000 5th Avenue, New York City.
6. **Unitex Series.** (see list of subjects.)
Row Peterson and company, Chicago.
7. Soil Conservation Service, Milwaukee, Wisconsin.
8. U. S. Department of Agriculture, Washington, D. C.
 - a. Forest Service
Send for booklet - **Materials of Interest to Teachers.**
 - b. Farmers Bulletins. (send for list of titles.)
9. U. S. Forest Service, Milwaukee, Wisconsin.

Pupil's Texts

Books containing units —

Beauchamp, Wilbur L.; Melrose, Mary,; and Blough, Glenn O.

Discovering Our World. Book III. (5-6)

Scott Foresman and Company, Chicago. 1939.

Carpenter, Bailey, Smith and Tuttle. **Adventure in Science Series.** Grade VI.

Allyn and Bacon, Chicago. 1943.

Carpenter, Harry A. and Wood, George C. **Our Environment: How We Adapt Ourselves to It.** Allyn and Bacon, Chicago. 1943. (7-8)

Craig and Hurley. **Exploring in Science.** (4)

Ginn and Company. 1946.

Craig and Lewis. **Going Forward With Science.** (7)

Craig and Urban. **Science Plans for Tomorrow.** (8)

Ginn and Company. 1947.

Freeland, George E.; Adams, James Truslow; Clark, James W.; and Lindquist, Maud L. **Social Studies for Minnesota.** (8) Charles Scribner's Son's New York. 1946.

Reference Books

Cadwell, John C., Bailey, James L., Watkins, Richard W. **Our Land and Our Living.** The L. W. Singer Company, Syracuse, New York. 1941. (5-8)

Hofstad and Hofstad. **Use Without Waste.**

Weber Publishing Co., St. Louis. 1944. (5-8)

My Land and Your Land Conservation Series.

Would You Like to Have Lived When? (grades 3, 4, 5)

Rain Drops and Muddy Rivers. (grades 4, 5, 6)

Plants and Animals Together. (grades 5, 6, 7)

Nature's Bank, the Soil. (grades 6, 7, 8)

National Wildlife Federation, Washington, D. C.

Tippett, James S. **Paths to Conservation.**

D. C. Heath and Company, Chicago. 1937. (5-8)

Wales, Basil H. and Lathrop, H. O. **The Conservation of Natural Resources.**

Laurel Book Co., Chicago. (8) 1944.

Whipple and James. **Using Our Earth.**

MacMillan.

Vandercal and Graham. **Land Renewed.**

University Press. New York. 1946.

Young, Paul R. **Elementary Garden Graphs.**

Advanced Garden Graphs.

Educational Publishing Corporation. Darien, Connecticut. 1944.

A SCHOOL NEWSPAPER AS AN ACTIVITY IN THE CONSERVATION UNIT

One of the principal objectives in teaching any unit is giving children experiences in oral and written expression. No better medium presents itself for that development than the planning and writing of a little newspaper. Skills in oral English are developed by means of class discussions, oral reporting, and committee meetings. As considerable skill in written English is demanded by the qualities inherent in a good news article, i.e., definite organization, varied sentence structure, and interesting, appealing style, the writing of a news article is a splendid means of developing those skills.

Not only does this activity give opportunity for developing oral and written expression, but it also serves as a summary of the most important points of the unit to remember. The following newspaper highlights the experiences of sixth grade children in the study of a unit on conservation. It was planned and written by the children under the supervision of their teacher.

Ruth M. Moscrip

Supervisor in Intermediate Grades

Conservation Journal

Sixth Grade

RIVERVIEW SCHOOL

St. Cloud, Minnesota

July, 1947

Number 1

SIXTH GRADE LEARNS WAYS TO PROTECT SOIL

Soil Crop Rotation

Why is our soil wearing out from planting the same crops in the same place year after year? This is true because the same crop takes out the same minerals until they are all gone, so naturally the crop gets poor and so does the soil. Corn and rye will take almost the same thing from the soil so it is better if you plant corn one year and a legume such as alfalfa the next year to build up the soil. Each year more farmers are using these practices.

—Jimmie Reimer

Shelter Belts

A good way to keep and protect your soil is by strip cropping. Strip cropping as you might guess from the name is planting crops in strips. To start it out you might plant a strip of corn, then you would have a strip of some kind of grain, maybe a few rows of soy beans, then more grain. The idea of planting grain next to these other crops is that the grain will keep the wind from blowing away the soil. The reason they use grain is that it grows so fast.

—Walter Cates

Contour Farming

Contour farming is another way of holding and saving our top soil, which is disappearing rapidly. It is outlining the land on which it is used or plowing at right angles to the slope so erosion will not set in. Contour farming is used mostly in hilly places.

—Janet Borsheim

Children Learn to Use Soil Augur

The soil augur is a tool about four feet long with a handle about two feet across and a drill about eight inches long at the bottom end. The soil augur is used to see how deep the topsoil is. Mr. Wilson used the soil augur in a field of rye. He found that the topsoil was very thin. Then he went into a woods which was there next to the field, and the topsoil was much thicker and darker because the trees and dead grass add humus to the ground making it richer and helping prevent erosion.

—Kenneth Houg

THIRD GRADE STUDIES CON- SERVATION

The children of the Third Grade have studied birds, reptiles, and amphibians. They have learned that most of these animals are helpful to man because their food consists chiefly of insects and small animal life that is harmful to plant life. For this reason all these animals should be protected.

 Conservation Journal

Published by the Sixth Grade

July, 1947

No. I

 EDITORIAL STAFF

Editor-in-Chief

Walter Cates

Assistant Editor

Janet Borsheim

Student Teacher

Hilma Morfitt

Supervisor

Ruth Moscrip

 HELP SAVE OUR SOIL

Soil conservation is the biggest problem of the United States. For years people have taken from the soil and have not put anything back into the soil.

Our soil is compared with a bank. If everyone took out of the bank and no one put back, the bank would "go broke." That is just the way our soil is. People have taken out and never returned anything to the soil.

There are eleven different elements which are needed for plant growth. These elements are nitrogen, phosphorus, sulphur, manganese, zinc, boron and silicon. The four that are used in great quantities are nitrogen, phosphorus, potassium and calcium.

Our people are just waking up to the fact that our soil must be conserved. They are helping to conserve soil by means of crop rotation, strip cropping, terracing and fertilizing.

What are you doing to help con-

serve? Can you think of other things which we should save?

—Connie Schwartz

 SHELTER BELTS HELP

 FARMERS

A shelter belt is composed of several trees strung out across farm land to protect it from wind erosion. There are rows of trees that make up a shelter belt. They plant these trees, when they are two to four years old. Some of these shelter belts run from north to south while others are from east to west. Some of the plants they use are poplars, spruces, pines and maple trees and shrubs such as honeysuckle and lilac.

For good protection of the fields, shelter belts should be planted about every eighty rods. In the shelter belt we saw on our trip they were trying to see which were best.

—Walter Cates

 SIXTH GRADE STUDIES ABOUT SOIL

The Sixth Grade thought it would be fun if we could study about soil. We learned that everything we eat or wear comes from the soil. You also can learn about soil in books and going on trips. Miss Moscrip told us we were going to take a trip. We went to some farms and there we saw different soils, mostly sandy loam. It was very interesting to see the crops and how they are cultivated. We saw that some of the fields were contoured, that is, planted to follow the contour of the land.

—Lorraine Kramer

SAFETY RULES HELP PROTECT CHILDREN

These are a few rules which we followed when we went on our bus excursion. We all believe in the Safety Rules. It is better to have obedience and order than to be rowdy and not pay attention. It pays to pay attention.

1. Obey without argument.
2. Listen when someone is talking.
3. Stay in a group.
4. Keep your voice down.
5. Don't leave your place in bus.
6. Be courteous and thank people.
7. Keep safe on and off the bus.
8. Doin't push or try to get into a certain seat.

To obey without argument we obeyed Miss Moscrip when she told us to do something, and we didn't ask questions about it.

To listen when someone was talking we could think better, and it wouldn't go in one ear and out the other.

If we wouldn't stay in a group we would miss out on most of the things Mr. Wilson would tell us.

To keep our voices down we could hear Mr. Wilson better and be more polite.

If we would leave our seats in the bus it would disturb the passengers and the driver.

To thank Mr. Wilson was most important, because otherwise he wouldn't want to take us on another trip or think we appreciated his kindness.

—Gretchen Fandel

CHILDREN LEARN IMPORTANCE OF TOPSOIL

Topsoil is the surface layer of soil. The day the Sixth Grade went on an excursion they stopped by a farm. Mr. Wilson tested the soil. It had eight inches of topsoil. There was a forest close by so Mr. Wilson tested the soil there. It had eighteen inches of topsoil. That shows how much topsoil had been lost in the field. Then we stopped by another farm. Mr. Wilson said that fifty per cent of the topsoil there was gone. Next the Sixth Grade went down a little farther and at that place there was from one to two-thirds of the topsoil gone. We know that topsoil is the layer in which most of the feeding of roots and plants takes place. Without good topsoil people could not make a good living.

—Carol Schnettler

ALL CONSERVATION IMPORTANT

The Sixth Grade was studying about soil conservation but decided there were other things to conserve beside soil. They decided they would study wild flowers, game birds, trees, and human conservation. They decided wild flowers should be conserved for their beauty. Game birds should be conserved because they are helpful, good to eat and also beautiful. Trees should be conserved because of their beauty and lumber. Human life should be conserved to keep up the world, to keep safety always for the safety of others.

—Gretchen Fandel

SIXTH GRADE GOES ON CONSERVATION EXCURSION

Mr. Wilson took the Sixth Grade and the workshop class on an excursion so they could see what was happening to the soil around St. Cloud. They saw several places where the topsoil was worn away by wind and water erosion. They went into some woods and measured the topsoil. They found that there was more topsoil in the woods than in an open field. That is because the soil was held down by trees and grass and it could not be blown or washed away. The trees and grass also help the topsoil by decaying and making the soil richer with humus.

—Robert Redding

SIXTH GRADE SEES CONSERVATION PRACTICES

The Sixth Grade started from St. Cloud in Benton County and went from Benton County into Sherburne County. First they went about one mile southeast of Riverview School. Here they tested the topsoil with a soil augur to see how deep the topsoil was. Next they went to a windbreak about five miles east of St. Cloud. The children looked through a slope finder to see if the slope was too steep to be farmed or not. The Sixth Grade then went to Mr. Goman's to see some terracing. Then they crossed over to Clear Lake. After that they came back to the Reformatory. Later they came back to school.

—James Reimer

—Joseph Backes

—Jon Lawrence

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