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AN INTEGRATED CONSERVATION PROGRAM  
FOR THE UPPER ELEMENTARY GRADES

by

HUBERT H. WAGNER

B. A. Montana State University, 1948

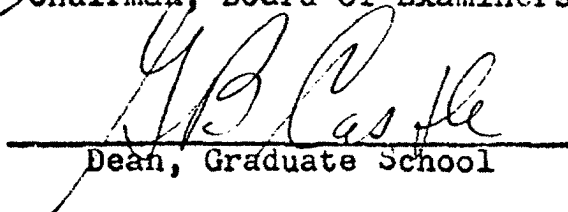
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Master of Education

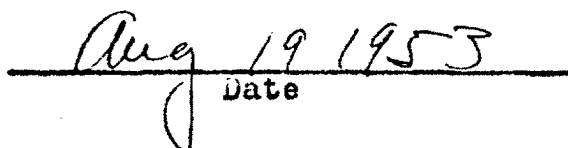
MONTANA STATE UNIVERSITY

1953

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## CHAPTER I

### THE PROBLEM OF CONSERVATION

"The problems of conservation have become of paramount importance in our national life, and the need of considering them in the program of the public schools is being increasingly recognized."<sup>1</sup>

World population has, in six centuries, increased from seven hundred million to approximately two billion persons and is presently increasing at the rate of one per cent per year. To the individual, this is mere statistical data. The belief that the infallible ingenuity of mankind can forever provide for all needs is a false state of security. The actual state of affairs, viewed in the proper perspective, would shake one from a state of lethargy.

In the world today, there are but four billion arable acres and the population is well above two billion persons. Based on the American standard of living, two and one half acres are required to support one person.<sup>2</sup> Therefore, something should be done to supplement the present food supply.

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<sup>1</sup>John W. Studebaker, U. S. Commissioner of Education, 1948, quoted in Ward Beard's Teaching Conservation (Washington, D.C.: The American Forestry Assn., 1948), p. 18.

<sup>2</sup>Fairfield Osborn, Our Plundered Planet (Boston: Little, Brown and Company, 1948), p. 37.

"Nature is being destroyed by mankind's greed and thoughtlessness. If the plundering of the past hundred years continues for another century, civilization may face its final crisis."<sup>3</sup>

Conservation in America has been preceded by waste and destruction. Only recently has conservation been brought before the public eye. The United States is as yet a beautiful and bountiful land, even though, through lack of foresight, some of the land has been exploited. Now is the time to start planning the long slow course toward reclamation; to protect that which remains and to reclaim something of that which has been lost.

Under the present Federal and state conservation plans, less than one per cent of the national income is being allotted to conservation, a very small amount considering the exigency of the problem. However, to say that nothing has been done or is being done toward conservation of our natural resources would be fallacious. In this country, there are steadily increasing grounds for hope. Within the last two decades, there has been more progress in the conservation field than in all previous years since the dawn of America. Federal and state agencies are finally coming to grips with the problem by allotting monies and by the appointment of conscientious men who are interested in saving our country for its future generations.

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<sup>3</sup>Ibid., p. 37.

The United States at one time was primarily an agricultural nation, but with the growth of the factory system cities began to appear and grow rapidly as industrial centers. Here workers and their families converged in ever growing numbers until today the country is tending toward becoming an urbanized nation. Fifty-five per cent of our one hundred and fifty-eight odd million people live in cities or large towns making no attempt to raise part of their foodstuffs.<sup>4</sup> What bearing has this on the problem under consideration? These are the people who must develop a real awareness towards the situation facing us today. This is the great mass of the American public which displays the most marked indifference to conservation. This impassive attitude has endured by reason of lack of knowledge. Without knowledge concerning a particular subject or field, little or no interest will be shown. Conservation, therefore, with all its phases must be an educational process, be it on the adult or elementary level. Dr. R. H. Eckelberry of the Bureau of Educational Research of Ohio State University advocates this approach to the problem in the following committee report.

The committee should recognize that its principal job is to educate the educators. Schools will not teach conservation effectively until school people have become informed and concerned about conservation problems. Perhaps you think that this ought to go without saying. I admit that it

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<sup>4</sup>Ibid., p. 198.



ought to; but it doesn't. Many persons sincerely interested in conservation education seem to believe that the great need is to get good teaching materials into the hands of teachers. These persons say that very few textbooks give adequate attention to conservation problems and that almost none deal satisfactorily with soil conservation districts. Hence, they say, we must get into the hands of teachers materials that will make up for these lacks in the textbooks. So it is recommended that the Education Committee of each district see that teachers get copies of "The Why, What, and How of Soil Conservation Districts." Now this is an excellent leaflet and it ought to be in the hands of teachers. But merely placing it there will do very little good. The same thing goes for "Down the River," and for many other examples of good teaching materials that might be cited. If we hand them out to teachers and do nothing else, at best they will be "taught" in a formal, lifeless manner; at worst, they won't even be read. Teachers will not use conservation-education materials effectively unless and until they themselves have had experiences that have developed in them genuine interest in, and understanding of, conservation problems.<sup>5</sup>

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<sup>5</sup>R. H. Eckelberry, National Association of Soil Conservation Districts, Annual Convention (Cleveland, Ohio, 1952), p. 2.

## CHAPTER II

### MAJOR NATURAL RESOURCES

To understand our basic conservation problems, the educator must first have some idea of the broad scope included in the field of conservation. "Primarily there are five major natural resources: (1) soils; (2) water; (3) forests, grasses and other vegetation; (4) wildlife, including bird and aquatic life; and (5) minerals."<sup>1</sup>

In each of the primary natural resources, there are many subtopics. To include all subtopics in this limited study, would be impossible. However, the following subject matter should be given particular consideration.

1. Soils: Soil or land is considered to be important.

Much life related to man is derived from the land.

(a) Soil formation: The earth's top soil averages about seven inches in depth.<sup>2</sup> It is a combination of vegetable, animal, and mineral matter mixed in various proportions.

(b) Erosion: Soil is constantly being eroded away by action of wind and water. Man's destruction of

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<sup>1</sup>Ward P. Beard, Teaching Conservation (Washington, D.C.: The American Forestry Assn., 1948), p. 29.

<sup>2</sup>Fairfield Osborn, Our Blundered Planet (Boston: Little, Brown, and Co., 1948), p. 37.

grasslands has destroyed, in a few years, that which has taken countless thousands of years to build up.

(c) Humus: One of the factors determining soil fertility is humus. Humus, in the main, is decayed plant matter, and we recognize it by the darker color it imparts to the soil.

(d) Cover crops: Cover crops hold moisture during heavy rains, keeping the valuable soil from eroding into deep ditches and gullies.

(e) Strip farming: Strips of close growing crops are set between alternate strips of clean-tilled row crops. The close growing strips hold water and keep the cultivated strips from eroding.

(f) Fertilizing land: Fertilizing is the giving of life and strength to poor land by use of manure, green manure, and the newer methods of commercial fertilization.

(g) Shelter belts: Trees and shrubs are planted in strips. This deflects wind currents, thus reducing erosion and holding drifting snow.

(h) Crop rotation: Rotation is the process of alternating crops. Each individual type of crop demands different minerals of the soil. Leguminous crops put nitrogen back into the soil. Rotation is a soil saver.

2. Water: Next in importance to soil, is water. The

combination of the hydrologic cycle with the process of photosynthesis, makes plant life possible. This, in turn, makes animal life possible.

- (a) The hydrologic cycle: Basic to the conception of conservation is the knowledge of how water is evaporated, condensed and precipitated in a continuous cycle.
- (b) Water pollution: The problem of sewage in our streams is extremely serious. Forty per cent of the sewage produced by seventy million people is discharged into streams without chemical treatment.<sup>3</sup> Other pollution problems include the industrial wastes and silt control.
- (c) Reservoirs: Small dams or reservoirs are used to store water for wildlife and to aid in the control of water runoff.
- (d) Flood control: Man has greatly increased the runoff problem by cutting forests, draining natural swamps and lakes, and by removing soil cover through plowing. This greatly increases the flood control problem.
- (e) Water for power: Vast amounts of cheap power can be developed in the United States, which, in turn, might bring industries and cheap electric power to

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<sup>3</sup>W. Crosby Steele, Conserving Our Resources (New York: Oxford Book Co., 1951), p. 33.

areas which theretofore have been developing slowly or not at all.

3. Forests, Grasses, and Other Vegetation: Today, timber is being cut twice as fast as it is being grown. Reliable authorities are in agreement that the timber supply will be exhausted within another twenty years, unless conservation and scientific forestry are immediately put into practice.

(a) Forest products: Lumber is the primary forest product, but other products are of great commercial importance, including pulp and paper, rayon, tanning materials, nuts, naval stores, and veneers.

(b) Grasslands: The plowing of natural grasslands in areas in which rainfall proved inadequate to sustain crops has caused many acres to be wasted, eroded, and to be lost agriculturally.

(c) Fire: Fire is the tragic waste of our natural resources, in that it can be controlled to a great extent. Through man's carelessness, mature trees, young trees, wildlife habitat, and recreational areas are destroyed for years to come.

(d) Smoke jumpers: This group of fire fighters is a highly trained organization which fights the fires in hard to reach areas. The training is similar to that given World War II paratroopers.

(e) Control of grazing: Livestock and grazing land must

be balanced. Overgrazing of an area can kill the grasses and cause extensive erosion.

(f) Tree and grass diseases: Control of diseases and insects in grass and timberland has become a major problem. The control of these attackers requires concentrated human effort and watchfulness. Chestnut blight and white pine blister in the forests, and fungi in grasses, are some of the major problems.

4. Wildlife, Including Bird and Aquatic Life: Wildlife includes all animal life found in a natural state. The wildlife which remains should be guarded, lest they go to extinction.

(a) The growing population and wildlife: Rapid population increases in an area force wildlife to move out. The natural habitats of the animals should be preserved.

(b) How wildlife serves us: Wildlife serves man in many ways, and has both economic and social value. It provides recreation for those who enjoy outdoor life, fishermen, hunters, and sight seeing tourists. The fur and fishing industries are examples of wildlife's economic value.

(c) The Fish and Wildlife Service: The Federal government established what today is known as The Fish and Wildlife Service to do research on fisheries and game. Later the program was expanded to include the

maintenance of wildlife refuges, to establish fishery and game management programs, and to provide leadership in the field of conservation.

(d) **The balance of Nature:** Nature, over a period of millions of years, has set up a balance of life. Competition for survival was the basis for the balance. Man has introduced new elements into nature's balance. Man must learn how to control these elements and follow the laws of nature to guard against further depletion of the earth's resources.

5. **Minerals:** Soils may be improved to some extent, trees may be replanted, but minerals are non-renewable. Once minerals are mined, they are gone from the earth.<sup>4</sup>

(a) **Mineral supply:** "In the case of only nine of our major minerals, do we have known reserves large enough to last one hundred years or more at the present rate of consumption. The known reserves of twenty-one others will last only thirty-five years or less."<sup>5</sup>

The five basic natural resources may be supplemented further by the addition on Conservation of Human Resources and Chemurgy. The school safety program, one of the most

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<sup>4</sup>Ward P. Beard, Teaching Conservation (Washington, D.C.: The American Forestry Assn., 1948), p. 31.

<sup>5</sup>W. Crosby Steele, Conserving Our Resources (New York: Oxford Book Co., 1951), p. 42.

important extra-curricular activities in the elementary schools can be helped immensely by the study of Human Resources. Waste products in industry and agriculture, such as wood pulp, sawdust, and cotton seed being reclaimed and processed to new materials is the basis for studying chemurgy.

The problems outlined in this chapter are immense in their potentialities. To cover the problems completely, in an elementary school conservation program, would be impractical. Therefore, in Chapter III some methods of presenting conservation education will be outlined.



## CHAPTER III

### VARIOUS METHODS OF PROCEDURE

"A visitor to the area of the Tennessee River watershed observed a very large gully. The unusual size of the eroded area caused the traveler to ask questions. The answers revealed that once this field had been fertile and productive and that formerly the community schoolhouse had stood at the bottom of the slope. Now the gully not only replaced the once useful field but also the school site. The visitor was impressed with these explanations and thoughtfully commented, 'I wonder what they taught in that school.'<sup>1</sup>

In developing a program of conservation education for an elementary school, the problem arises as to the most effective way of presenting the material. Regardless of the type of curriculum a school follows, a conservation program can be had and can be made effective.

The following plans, with their advantages and disadvantages, have been taken from Ward P. Beard's Teaching Conservation.<sup>2</sup> However, they do not include an integrated

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<sup>1</sup>Maurice F. Seay, University of Kentucky; quoted in Ward Beard's Teaching Conservation (Washington, D.C.: The American Forestry Assn., 1948), p. 18.

<sup>2</sup>Ward P. Beard, Teaching Conservation (Washington, D.C.: The American Forestry Assn., 1948), pp. 39-40.

unit plan. A summary of this correlated plan will follow Beard's descriptions.

Plan 1. A separate course in conservation, either required or elective.

a. Taught by a specially trained teacher.

#### Advantages

1. Centralizes responsibility in one teacher.
2. The best qualified teacher in the school could be selected and given the opportunity to specialize.
3. Students would be more conservation-minded because of the importance given the subject when on a plane coordinate with other subjects.
4. Its vocational guidance value would be greater.
5. Some students who have little interest in other subjects could be interested in a properly taught course in conservation.

#### Disadvantages or Difficulties

1. Because of ramifications of conservation into many fields it would be difficult to get a well-qualified teacher.
2. The difficulty of scheduling a separate course in an already crowded schedule.
3. Unless made a required course all pupils would not be able to schedule it.

b. A separate course in conservation, either required or elective, taught cooperatively by several teachers.

#### Advantages

1. Same as 3, 4 and 5 under Plan 1-a.
2. Should provide enriched content and broader viewpoint for students.
3. Group planning of conservation course by teachers should have beneficial influence on the teaching of the regular subjects.

#### Disadvantages or Difficulties

1. Same as 2 and 3 under Plan 1-a.

2. Difficulty of scheduling the time of several teachers.
3. Difficulty of placing responsibility of the course and developing sustained pupil-interest with changing teachers.

Plan 2. Instruction through a core curriculum--conservation concepts taught in a variety of units, not as separate units on conservation.

**Advantages**

1. All pupils get instruction in conservation.
2. Cooperative planning by teachers is necessary.

**Disadvantages or Difficulties**

1. Difficulty of a reorganization of the school from the conventional subject curriculum.
2. Teachers in core curriculum are not likely to have much training or background in conservation.

Plan 3. Conservation units in standard subjects or courses.

**Advantages**

1. Responsibility is assigned.
2. Gives individual teachers an opportunity to develop strong units in conservation.
3. Avoids administrative problems.

**Disadvantages or Difficulties**

1. Possible lack of training and background in conservation of some teachers.

Plan 4. Conservation taught incidentally in standard subjects or courses.

**Advantages**

1. Same as 3 in Plan 1-b.
2. Same as 3 in Plan 3.

**Disadvantages or Difficulties**

1. Instruction in conservation likely to be non-existent or ineffective.

A fifth plan not mentioned in Ward Beard's Teaching Conservation is a correlated plan in which conservation is taught in units integrated with broad subject fields.

A conservation workshop, which under certain circumstances, may grow from any one of the above plans, may be used to promote the conservation program.

A correlated unit on soils and a conservation workshop is presented in detail in Chapter IV of this paper.

## CHAPTER IV

### THE UNIT AND WORKSHOP

The unit to be developed is based on "Soils" as outlined in Chapter II of this paper. The unit is to last five to seven weeks, and in actual practice would be followed by the rest of the resources in their order.

In developing any unit, the first consideration is the objectives, both main and specific. These are followed by the introduction, the main body of the unit, and the means of evaluation. The remainder of this chapter will deal with the setting up and teaching of an integrated unit on soils.

#### Main Objectives

1. To develop an understanding of the importance of soils in conserving the natural resources.
2. To show how soils influence present living conditions and will continue to influence them.
3. To work together in groups to obtain an understanding of solving problems.
4. To make the pupils feel the need for action in the soil conservation program.

#### Secondary Objectives

1. To develop an understanding of the fact that many

natural resources stem from soils and that soil is the basic resource.

2. To develop a rich and usable conservation vocabulary.
3. To correlate and integrate subject matters in science, English, art and music.
4. To understand the basic problems in soil conservation.
5. To develop leadership, fellowship, and initiative in each pupil.

### Introduction

The teacher brings a portion of soil to school. By means of the question and answer method, an interest in the make-up of soils and soil formation develops.

#### Questions:

1. What are some of the materials which make up soils?
2. How can soil be made?
3. What are some of the things which soil gives us?
4. What are some of the things we use every day which come directly from the soil?
5. Why is soil one of the basic natural resources?
6. How does soil respond under proper and improper management?

In answer to the last question on land management, a Soil Conservation Service film is shown with the following objectives in mind:

1. To develop an interest in soils.
2. To try to show that soil conservation is everyone's job.
3. To show the differences between good and poor practices in conservation.
4. To develop a basic conservation vocabulary.

The class is prepared for the twenty minute film,

Yours Is The Land.<sup>1</sup> Questions continue on the topic of land management. The questions are written on the board along with new words to be found in the showing of the film.

Word List:

- |             |                   |
|-------------|-------------------|
| 1. erosion  | 6. gullying       |
| 2. depleted | 7. fertile        |
| 3. contour  | 8. strip cropping |
| 4. humus    | 9. shelter belts  |
| 5. top soil | 10. rotation      |

The film is shown and the followup is made immediately to find if some of the questions raised in class were answered in the film. Discuss these. Look over the word list to see if the meaning of some of the words was discovered in the showing of the movie. The teacher may further stimulate discussion by asking questions pertinent to the film.

Questions:

1. What is meant by farm management?

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<sup>1</sup>Yours Is The Land, Encyclopedia Britannica Film, available from U. S. Forest Service, Missoula, Montana.

2. What are some of the differences between good and poor farm management?
3. Would you like to live on a farm?
4. What are some of the things you would like to do on a farm?

### Body of the Unit

Some of the subjects mentioned will be discussed further, and from these topics, plus some additional ones, the body of the unit will be built. The students aid in setting up the unit through developing interest in some phase of soil conservation and adding it to the body of the unit.

#### 1. Soil formation

- a. The make-up of the soil
- b. Time required in building soil.
- c. Differences between top soil and subsoil.

#### 2. Erosion

- a. The forces which cause erosion.
- b. The areas of eroded lands in the United States.
- c. How erosion affects the farmer.
- d. Conditions favorable to erosion.
- e. How can erosion be checked?
- f. How does erosion affect the people in this community?

#### 3. Humus

- a. Humus; what is it?



- b. What does humus do for the soil?
- c. How can humus be added to the soil?
- 4. Cover crops
  - a. How do cover crops keep the soil from eroding?
  - b. Some good cover crops.
- 5. Strip farming
  - a. What are some clean cultivated crops?
  - b. How do strips of cover crops hold the soil?
  - c. Why isn't strip farming used generally in farm operation?
- 6. Fertilizing land
  - a. Common ways to keep soil fertile.
  - b. The make-up of commercial fertilizers.
- 7. Shelter belts
  - a. In what areas are shelter belts used?
  - b. How do shelter belts help stop erosion?
  - c. Kinds of trees used in shelter belt planting.
- 8. Crop rotation
  - a. How does crop rotation help the soil?
  - b. Leguminous plants and crop rotation.

The Body of the Unit Integrated with the Broad Fields Type Curriculum

The activities will be listed here under broad subject fields, as it is impossible to know what specific subject matter is being studied in any one field at the time the unit

is in progress. The integration of the conservation unit will be left to the judgment of the individual teacher. In case of a departmentalized Junior High School, lists of the activities derived from the body of the unit can be presented to the instructor. With a cooperative attitude between teachers, a successful integration of those activities can be had.

The broad subject fields are:

1. Language Arts; which include reading, spelling, writing, speaking, grammar, language.
2. Social Studies; including history, geography, and science.
3. Arts; which include drawing, music, both creative and recreative.

It was found to be more effective to use mathematics where found in the unit, rather than integrate the arithmetic with conservation problems.

#### I. Language Arts Integrated Activities

(1) Write letters to the United States Department of Agriculture asking for material on soil conservation. Such pamphlets as Our American Land and Conquest of the Land Through Seven Thousand Years provide excellent material for the unit.

#### (2) Debate--

Resolved: That to have the best possible program in conservation, the conservation program should

not rest in the Federal government, but in the education of the people.

- (3) Write themes on what the individual can do to make conservation possible.

Other topics:

- a. Soil erosion--A National Menace
- b. Soil Erosion in Our Community
- c. Conservation or Poverty
- d. Why People in the City Should Study Conservation

- (4) Speeches on conservation, including:

- a. Creating a Soil Conservation District
- b. Using the Soil Properly
- c. Soil Conservation in Other Countries
- d. How Trees, Grass, and Other Plants Protect the Soil

- (5) Soil conservation vocabulary:

- |                 |                |
|-----------------|----------------|
| 1. conservation | 10. furrows    |
| 2. erosion      | 11. renewable  |
| 3. contour      | 12. vegetable  |
| 4. humus        | 13. mineral    |
| 5. resources    | 14. scientists |
| 6. terracing    | 15. natural    |
| 7. gullies      | 16. dissolved  |
| 8. eroded       | 17. destroyed  |
| 9. cultivated   | 18. fertilizer |

- |                  |                    |
|------------------|--------------------|
| 19. protected    | 27. nitrogen       |
| 20. agriculture  | 28. districts      |
| 21. damaged      | 29. exhausted      |
| 22. over grazing | 30. essential      |
| 23. depleted     | 31. top soil       |
| 24. irrigated    | 32. strip cropping |
| 25. rotation     | 33. shelter belts  |
| 26. leguminous   |                    |

## II. Social Studies Integrated Activities

### 1. Topics for discussion:

- (a) Differences in standards of living in good and poor land areas.
- (b) How can farmers band together to prevent soil erosion?
- (c) What the Government does toward control of soil erosion.

### 2. Reports to class or themes:

- (a) The History of Conservation of Soils in the United States; state and local areas
- (b) Why the government is interested in conservation
- (c) How long will the soil of the world continue to feed and clothe the human race at present rate of soil depletion and increase in population?

### 3. Field trips:

- (a) Field trip to local eroded area to study means of conservation

(b) Field trip to local farm to study conservation practices used by the farmer.

(c) Field trip to study soil formation.

4. Debate:

Resolved: That a farm owner has the right to use the land as he wishes.

5. Experiments:

(a) Growing of plants in different soils in class room.

(b) Show difference in growth of plants with and without fertilizers.

(c) Perform simple acidity tests on various soils.

III. Art Integrated Activities

(1) Printing of conservation pledges

(2) Writing original conservation songs and poems

(3) Sketch examples of local eroded areas, contour farming, farmers at work, and strip cropping.

(4) Write original songs on conservation. Use them in group singing.

(5) Keep a scrap book on modern soil practices, along with the student's own art work on conservation.

(6) Draw conservation posters and cartoons on wasted areas in the surrounding vicinity.

In connection with these activities, lantern slides, strip film and motion pictures may be used, when advantageous. The visual aids should be used in the classroom

and must be directly related to the topic under discussion, or the aids become entertainment in place of supplementary material.

### Evaluation

The evaluation of the unit serves several purposes. In order that the students may gain an interest in subject matter, the students must have a background of facts to serve as a basis for understanding.

The test and unit also puts the conservation unit on a letter grade basis if that is desired. The test and unit can be given a letter grade in the following fields: grammar, spelling, writing, and art.

CONSERVATION TEST

I. If the statement is true, place a + (plus) in the blank. If the statement is false, place a 0 (zero) in the blank provided.

1. Soil conservation is not a job for the individual. Rather, soil conservation should be left up to the government agencies.
2. Soil is one of the renewable resources, therefore, it can be replaced in a very short time.
3. The present population of the world is about two billion people.
4. The protection of the soil is basic to the development of some of the other natural resources.
5. Soil management is the proper usage of soil under certain circumstances.
6. In general, good farm practices are found, where the people feel a need for conservation.
7. The section of the United States which has the greatest erosion problem is the east central states.
8. The people in large cities should be interested in soil conservation because conservation of soils directly affects this group.
9. The farmer should protect the soil from erosion because it means added income for the individual

as well as the nation.

- \_\_\_ 10. The history of soil conservation shows that conservation has long been practiced by a few, but very little by the great mass of the people.

II. Matching: place the letter of the statement which describes the word, in the space provided.

- |                       |  |
|-----------------------|--|
| ___ fertilizers       | a. plants grown to furnish nitrogen to the soil.                     |
| ___ humus             | b. the transporting of soil by wind and water.                       |
| ___ rotation of crops | c. crops grown in rows with areas of clean soil between the rows.    |
| ___ contour farming   | d. an organic or inorganic material added to the soils.              |
| ___ erosion           | e. that part of the earth which has been eroded or depleted.         |
| ___ shelter belts     | f. planting a different crop on a given piece of land every year.    |
| ___ top soil          | g. the practice of ranging too many cattle on a given piece of land. |
| ___ legumes           | h. trees and shrubs planted in strips.                               |
| ___ over grazing      | i. fields are plowed and cultivated along the contour of             |
| ___ cultivated crops  |  |



the slope.

j. the decayed plant and animal matter in the soil.

k. ridges or embankments built across sloping fields.

III. Write in a sentence, the meaning or worth of the following:

1. Natural vegetation
2. Soil Conservation Service
3. Strip cropping
4. Gullying
5. Renewable resources.

IV. Put yourself in this farmer's place. You own two hundred acres of land which are under cultivation. Several hundred other acres are in pasture. Describe what you could do, as a farmer, to help control erosion on this farm. Drawings may be made to supplement the discussion.

V. The conservation of soils directly and indirectly affects the individual. How does erosion, soil depletion, and wasted lands affect you?

## INTRODUCTION TO WORKSHOP

The integrated unit presented in Chapter IV of this paper is not intended to take the place of other plans of integrating conservation into the curriculum. Rather, it is a method that can be given consideration in a departmentalized junior high school, or in a home room situation, teaching the broad fields plan.

The unit on soils develops a strong background for further study in conservation. As a result of the conservation program in the Washington Elementary School during the school year of 1952-53, and because of the interest aroused in conservation in the school, it was decided to extend the study of conservation with a two day workshop.

With the help of students and teachers, the gymnasium was prepared for the workshop. Hundreds of pamphlets were obtained through local soil conservation and wildlife groups, and through state and Federal services. These were supplemented with encyclopedias, visual aids, lectures and demonstrations from qualified personnel of Montana State University's Forestry Department, the United States Forest Service, and the United States Soil Conservation Service.

After the objectives had been set up, the students selected the conservation field in which they were particularly interested. Committees were formed, a schedule arranged, and the work proceeded under the direct supervi-

sion of the teachers.

The results of the various committee efforts during the workshop, including evaluations and recommendations for future workshops, were compiled and edited by the students following the two day course.

#### CONSERVATION WORKSHOP

Group - Junior High School

Unit time - Entire year

Workshop time - two days

Class size - 70 students

#### Main Objectives:

- (1) to develop an understanding of the broad scope of conservation
- (2) to develop an appreciation of our forests, wildlife, mineral resources, soil and water
- (3) to show how conservation influences our present living conditions and will continue to influence them
- (4) to work together in groups to attain an understanding of solving problems
- (5) to show our rich community assets and occupations
- (6) to make the pupils feel that they are a part of the community, and that they have something to contribute

- (7) to show how the education of people in health and safety makes for a longer and more worthwhile life.

Secondary Objectives:

- (1) to use visual aids extensively and to promote a meaningful, natural, learning situation
- (2) to develop a rich usable vocabulary
- (3) to develop an understanding of the soil, water, forestry, and wildlife situation in a local community
- (4) to correlate and integrate subject matters in science, English, mathematics, art and music
- (5) to promote community interest and public relations through visitation by parents and local, state and federal organizations
- (6) to develop leadership and initiative in each pupil

CONSERVATION WORKSHOP PROGRAM

Monday, February 16, 1953

Morning Session

- 8:30 - 9:30      Open Observation Period  
Members of Workshop  
Visiting Parents, principals, professors from  
Montana State University, students from  
School of Education, School Board members,  
Superintendent of Schools
- 9:30              Workshop called to order by President of  
Eighth Grade
- 9:30 - 9:35      Flag Salute  
Presentation of flag by Boy Scouts
- 9:35 - 9:45      Group Singing  
Star Spangled Banner  
Conservation Songs, student director,  
grade 8; student accompanist, grade 7
- 9:45 - 10:00     HOW TO STUDY FOR A PROJECT  
HOW TO LISTEN TO A LECTURE  
Given by grade 8 student
- 10:00 - 10:15    Explanation of  
Conservation Pledge  
Conservation Creed

Reading of Pledge and Creed in unison

- 10:15 - 11:00 Study Hall  
Special Interest Groups  
Meet and Organize  
Research and note taking
- 11:00 - 11:35 Lecture and film, Soil Conservation
- 11:35 - 11:45 Square dancing, members of workshop
- 11:45 Dismissal for lunch

Afternoon Session

- 1:00 - 1:30 Study Hall, Special Interest Groups Meet  
Research, Plan for Panel Discussion
- 1:30 - 2:30 Conservation Arithmetic  
Graphing Forest Fire Statistics, Instructor,  
Principal
- 2:30 - 3:15 Movie, "The Chain of Life". A review of the  
problems of conservation, showing the  
chain and the links in that chain which  
bind each phase together
- 3:15 - 3:45 Photographs taken by photographers from  
Daily Missoulian.  
Free period for conversation and observation  
of exhibits and dioramas, etc.

3:45 Square Dancing  
Dismissal

TUESDAY, FEBRUARY 17, 1953

Morning Session

8:30 - 9:00 Open Observation Period

9:00 - 9:30 Opening Exercises, members of workshop,  
student leaders

9:30 - 10:00 Study Hall  
Special Interest Groups Meet

10:00 - 11:00 Demonstration of smokejumper's kit

11:00 - 11:15 Photographs taken

11:15 - 11:45 Slide films and lecture, "Conservation of  
Our Soil"

Afternoon Session

1:00 - 2:15 Meeting of Panel Members  
Organization and rehearsal of panel

2:15 - 3:00 Lecture on "The Development of Soil"

3:00 - 3:45 Culminating Program for PTA Study Group  
Flag Salute, student  
Star Spangled Banner, group singing  
Conservation Pledge, student leader  
Conservation Song by 7th and 8th grades

Reading, "A Conservation Prayer", by  
student

Song, "Smokey the Bear", by double octet

Panel, Discussion of Conservation Project  
by twenty members of workshop, student  
moderator

Coffee Hour - PTA Study Group and guests



## CONSERVATION OF OUR NATIONAL FORESTS

### Report of Study Group

The saving of our national forests in order to benefit as many people as possible in as many ways as possible for as long as possible.

In our study of forest conservation we discovered that there are many problems yet unsolved. These can be solved by the citizens (both young and old) of the United States through education in the conservation of our forests. A successful program can be carried on with the educational helps offered by the United States Forest Service.

During our conservation project many students studied the causes and effects of fire, insects, diseases and harmful practices of man on our nation's forests.

The following is a list of the problems selected and studied by the members of the seventh grade workshop:

Trees Native to Montana - the conditions under which they make the best growth.

Forest Fires - the primary causes of fires in our western states; the newer methods of fighting fires.

Work of the United States Forest Service - the work that is being done toward solving problems in our present day conservation program; the training needed to become a Forest Service worker; and how you go about acquiring a Forest Service job.

Why Animals Need the Forests - there is a relationship between the growth of wildlife and proper forest management which provides a natural habitat for all living creatures.

Care of our Forests - there must be cooperation between specialists and our general adult population so that our forest areas may be maintained properly.

The following is a list of the problems studied by the members of the eighth grade workshop:

Diseases of our Western Forests - the cause and treatment for the various diseases.

Reforestation - the work being done on tree farms, nurseries, and by private clubs toward the planting of lands suitable for reforestation.

Kinds of Trees - types and uses of the various trees.

We have studied these problems but found no ready answers to some of them. In the future we will continue to realize the necessity of finding and concentrating on these unknown answers.

## CONSERVATION OF HUMAN RESOURCES

### Report of Study Group

I. CONSERVATION OF HUMAN RESOURCES - The education, health, and safety of humans to lengthen life.

II. EDUCATION OF HUMAN RESOURCES THROUGH HEALTH AND SAFETY

#### Health Education of Human Resources

Education lengthens life through medicine and sanitation, and has helped to advance better living conditions, while it also prevents crime and delinquency. Education in health is carried out in the church, home and schools.

1. Public health and sanitation have improved during the last century through SCIENTIFIC inventions such as easier, safer and less painful methods of medical and dental surgery and ways of disposing of waste.

2. Education gives better knowledge of medicine, and causes more people to want to specialize in dental and medical work, which mostly did away with home remedies and "quack" doctors.

3. Ideas on sanitation, nutrition, and preparation of food are not only taught, but also prepare for future life in the business and social world.

#### Safety Education of Human Resources

Without safety our life span would be shortened. The length of a person's life is based on safety.

1. The safety patrol, which is an organization of the

students, should be obeyed at all times.

2. Home safety should be practiced to prevent accidents. Some things that could occur are fire, because of playing with matches, and broken bones because of play things left lying around.

3. Pedestrians and motorists should obey laws of the highways, cities, and towns.

4. Safety of public buildings should be stressed.

These few rules can be carried out if common sense and careful precautions are practiced in safety work.

In conclusion, our interest group wishes to make the following statement:

We found the subject, Conservation of Human Resources, both educational and profitable because we have learned ways to lengthen our life span. Also, we learned that to be a good citizen, a person must be a healthy one, and further that a healthy citizen is a happy and efficient one in his work as a citizen of our country. Conservation of Human Resources is furthering the strength of this country, America.

RECOMMENDATIONS AND EVALUATIONS BY STUDENTS  
FOR FUTURE CONSERVATION WORKSHOPS

We feel that the conservation project held in the Washington School on February 16-17, 1953, proved very successful. This is definitely a very democratic way for pupils to express themselves. Most of the students consider this much more beneficial than straight book work.

Also, we wish to make recommendations for future workshops. The following are the conclusions we have reached after studying how to better such a program:

1. More panels and debates for student participation.
2. The workshop should be given a longer period of time, perhaps two weeks.
3. An adult instructor or adviser for each interest group would be advisable.
4. More experiments should be performed, both by instructors and students.
5. More reference books for use in workshop should be available.
6. There should be more time for outsiders to observe the work being done by pupils. Adults would enjoy the exhibits, displays and demonstrations.
7. More speeches should be given by the pupils.

## CHAPTER V

### CONCLUSION

Chapter I of this paper is intended to give the reader some idea of the magnitude of the problem of conservation. The chapter will give the reader some idea of the purpose of this paper.

Chapter II deals with the primary natural resources, outlining the more important topic and subtopics which may be studied in any unit on conservation.

Chapter III outlines the various methods which may be used in teaching conservation with several of the modern types of curriculum. The correlated unit and the workshop methods are mentioned as types or methods which may be used in teaching conservation education material.

In Chapter IV the correlated unit and the workshop method are presented in detail. A suggested bibliography is presented for the workshop as well as the unit on soils.

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