R E P O R T . R E S U M E S

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AN ANALYSIS OF STATE ADOPTED TEXTBOOKS RELATIVE TO CONSERVATION EDUCATION INFORMATION.

BY- GWINN, HERBERT D.
CALIFORNIA STATE DEPT. OF EDUCATION, SACRAMENTO

PUB DATE JUN 67

EDRS PRICE MF-$0.50 HC-$2.76 67P.

DESCRIPTORS- *ANNOTATED BIBLIOGRAPHIES, *CONSERVATION EDUCATION, *RESOURCE MATERIALS, *TEXTBOOKS, *TEXTBOOK EVALUATION, BIBLIOGRAPHIES, BIOLOGY, ELEMENTARY SCHOOL SCIENCE, EARTH SCIENCE, GENERAL SCIENCE, INSTRUCTIONAL MATERIALS, PHYSICAL SCIENCES, SECONDARY SCHOOL SCIENCE,

EVALUATED WAS THE CONSERVATION CONTENT IN ELEMENTARY AND SECONDARY SCHOOL TEXTBOOKS ADOPTED BY THE STATE OF CALIFORNIA IN THE AREAS OF SCIENCE, HEALTH, HISTORY, GEOGRAPHY, AND LITERATURE. THE EVALUATION WAS PERFORMED BY AN AD HOC COMMITTEE COMPOSED OF JUNIOR COLLEGE TEACHERS, SECONDARY AND ELEMENTARY SCHOOL TEACHERS, AND A CONSULTANT. CONCLUDED WERE THAT (1) THE NEWLY ADOPTED TEXTS ARE WEAK IN THEIR OFFERINGS FOR CONSERVATION EDUCATION, (2) SOME SUPPLEMENTARY TEXTS OFFER MORE HOPE FOR BETTER LEARNINGS THAN ARE OFFERED IN THE BASIC TEXTS, (3) THE METHOD OF SELECTION OF ALL TEXTS NEEDS MORE SCRUTINY AND ANALYSIS, (4) SUCCESSFUL TEACHERS WHO ARE LEADERS IN THEIR FIELD SHOULD MAKE THE TEXTBOOK SELECTION, (5) MAN-CAUSED PROBLEMS WHICH RESULT IN ENVIRONMENTAL DETERIORATION WERE UNIVERSALLY OMITTED FROM THE TEXTS, AND (6) WITH NO DESIGNATED LEADER IN THIS FIELD AT THE STATE DEPARTMENT OF EDUCATION LEVEL (IN MOST SCHOOL DISTRICTS, AS WELL) IT IS ONLY THROUGH PROLONGED AND PERSEVERING EFFORTS OF DEDICATED HANDFULS OF EDUCATORS THAT ANY REAL CONSERVATION IS LEARNED AT ALL. APPENDIX A PROVIDES AN ANNOTATED EVALUATIVE LIST OF BASIC AND SUPPLEMENTARY TEXTS IN THE AREAS OF (1) READING AND LITERATURE, (2) SCIENCE, (3) HEALTH, (4) HISTORY, (5) GEOGRAPHY, (6) SOCIAL SCIENCES, AND (7) GOVERNMENT. ALSO, IT PROVIDES EXAMPLES OF SPECIFIC CRITICAL ANALYSES USED IN EVALUATING THE MATERIALS. (DS)

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AN ANALYSIS OF STATE ADOPTED TEXTBOOKS RELATIVE TO CONSERVATION EDUCATION INFORMATION

by

Ad Hoc Committee
on Textbooks Evaluation
to
Advisory Committee on Conservation Education

California State Department of Education
Sacramento

June, 1967

AN ANALYSIS OF STATE ADOPTED TEXTBOOKS RELATIVE TO CONSERVATION EDUCATION INFORMATION

A Report to the Advisory Committee on Conservation Education

to

the State Board of Education

By
Ad Hoc Committee on Textbooks Evaluation
to
Advisory Committee

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Sacramento, California

June, 1967

INTRODUCTORY STATEMENTS

This ad hoc textbook evaluation committee feels that a modern conservation ethic similar to the following statements by Paul Brandwein are timely and pertinent to a proper understanding of today's environmental problems.....

"Population is the greatest problem facing man. All other resource problems can be traced to man's increased needs for food, fibre, and living space. An understanding of population should be the greatest problem of science education.

Conservation is the responsibility of science. (Life, physical, and social).

Conservation is the recognition by man of his interdependence with his environment and with life everywhere, and the development of a culture which maintains that relationship through policies and practices necessary to secure the future of a sanative environment."

The primary responsibility of this committee lies in evaluating state adopted texts (in science, health, history, geography, and literature, especially) in terms of their conservation content. Nevertheless, the committee felt compelled to take a broader view.

Our collective familiarity with the total spectrum of the problem has resulted in an extension of textbook analysis on into the realm of specific recommendations for improved conservation education.

This report points out many short-comings in the textual offerings. It is only ethical that the report also include positive changes. Such changes are both remedial and enlargements of present offerings on conservation education in the public schools of California.

Ad Hoc Textbook Evaluation Committee

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AN ANALYSIS OF STATE ADOPTED TEXTS RELATIVE TO CONSERVATION EDUCATION INFORMATION

CONTENTS

FINDINGS

1. In none of the text offerings was conservation presented as discipline, as a subject, or as a way of life.

   In the science texts, the word conservation was used in only a few instances. For the most part the basic textbooks lacked any kind of definition, philosophy, insights or planned approach regarding conservation. The absence of conservation education in the adopted textbooks is strikingly obvious...as if there were no connection between separate subject fields or disciplines and an interdependency upon all natural resources.

   Seldom was more than one view of the many-faceted issues presented. Bland, glossed-over generalities were the rule...and these statements were often unsupported.

2. Supplementary textbooks such as Seashore Life on the Pacific Coast, the Time-Life Nature and Science Series, and The Continent We Live On, appear to contribute more to conservation education than did many of the basic texts. With a few exceptions, treatment of conservation information was cursory and in the form of broad generalities... The inclusion of conservation information seems purely "additive" and not explicitly put in for sake of conservation education.

3. In several texts interesting material related to conservation was presented that could be considered as the basis for a lesson in conservation. However, as noted in the Introductory Statements, only an alert, perceptive teacher knowledgeable in conservation would be likely to detect these random offerings and thus extract them for enriching the student's understandings of his environmental problems.

4. In the sciences the quality of the basic textual "Investigations" leaves much to be desired.

   a. Many so-called "Investigations" are really demonstrations of the 'recipe' variety designed to prove already know facts. To further destroy the pupil-learning process, these lock-step 'experiences' pretell what the results will be...thus removing in advance any motivation to try out the writer's experiences... after all, one has but to read on or look at the picture to see 'what happened.'

      The joys and thrills of true investigation, discovery, absorption, and analysis are thus lost to the student. Reading about someone else's experiences (which also may be second-hand) is not very challenging to normally inquisitive children. Enthusiasm for learning begins to wane.

b. Many of these "Investigations" erroneously state a conclusion or result for the reader to absorb and retain. In trying tc capsulize a concept, material is often presented with omissions, isolated half-truths, and misconceptions combined in such a way that the unsophisticated reader is likely to be mislead into hastily and sometimes erroneously formed conclusions that are ever-present.

c. On the bases of a and b above, the material presented in the texts that could possible be construed as suitable for leading into or up to conservation learnings is further complicated or beclouded by the sometimes faulty indoctrination approach.

d. Cause and effect relationships are studiously avoided in texts analysed. For exarple...

1. Water treatment is presented without any explanations of WHY the water needs treating.

2. Alterations to the landscape (suburban sprawl, sewage, competitaion for available land space, quality air and water, and the other) are presented in a positive manner under the guise of 'progress'...blandly giving the impression that there are no problems...that matters are being taken care of quite well.

3. The need for an integrated resource-use plan does not seem important to most of these writers. Man's historical use and misuse of the land, his heritage, could be the foundation for better plans in resource utilizations. These are serious omissions...omissions that cannot be justified if we are to have an enlightened citizenry capable of coming to grips with environmental problems confronting all of us today and tomorrow.

5. Several of the textbooks, particularly the science texts, contain sections dealing with how man is now able to change and control much of his environment. Developments in science and technology are emphasized. However, in nearly all the discussions, again only the positive effects are elaborated. Harmful consequences resulting from man's lack of understanding or unwise tampering with the forces of nature are conspicuously lacking. Unregulated use of pesticides in controlling insects in agricultural practices is a good example. Considerations as illustrated in Rachael Carson's Silent Spring are never brought out.

6. In discussion of man's changing environment, science texts begin to show disproportionate amounts of information on space and space travel. Noteworthy is a supplementary text on earth science with two of its five units specifically on forces in space, effects of

man in space and conditions of space fight. The same text devotes but eight pages to the earth's changing environment! Admittedly space explorations are important and fascinating but perhaps problems of the earth's changing environment brought about by air pollution, urban sprawl, shifting land utilization, water pollution and so on can be included in just as fascinating a manner. Perhaps we need to better understand our own changing environment as we proceed to adapt to a new and different environment.

It is well recognized among those sensitive to their surroundings and cognizant of the technological society's implications upon the country's environmental ecology that conservation cannot rely soley upon scientific solutions. Conservation in its total sense involves all aspects of the society. To affect an ethic of conservation in this country there must be basic attitudinal changes on the part of the general public.

The social sciences have increasingly become involved in studying the changes in the technological society. It should be a function of the social studies then, to prepare a person for a society which demands new interpretations and standards. If there are to be changes in the public's basic attitudes about conservation, then the impetus must eminate from education--particularly the social sciences.

7. In the social studies particulary it was voted that great quantities of information were attractively presented especially with photographs and pictures.

8. Where conservation of resources is mentioned, the traditional approach of conserving soil, minerals or trees so they may be of "economic" benefit in the future is presented. Rarely did any of the basic social studies texts offer an ecological approach to conservation.

9. Several social studies texts briefly mentioned conservation measures but then dropped the subject completely thus giving the feeling that conservation problems are really quite insignificant. Often the methods employed to utilize natural resources are emphasized to the point where wise use and planning are totally disregarded.

10. Emphasis was placed on the great technological strides in all aspects of our living: big buildings, big dams, big cities, vast highways; almost lacking were suggestion of problems resulting from bigness; pollution, transportation, waste uniformity and vanishing beauty.

11. One misconception almost universally expressed was the idea that the abuse of natural resources was something of the past. It is implied that abuses are being corrected and that the future will be rosy.

12. Noticeable was the poverty of materials and direction toward a broad-based conservation philosophy for grades kindergarten through three. Several acceptable books classed as supplementary were listed for grades two and three.

13. Natural resources both renewable and non-renewable, when considered, are presented mainly in terms of the benefits reaped by man...and man's continued efforts to further reap (perhaps rape is a better word) nature's resources. Little mention is made of the dangers of abuse or depletion. Recovery and restoration appear to be unmentionable or unnecessary concepts. Our youth of today appear to be sheltered from the fact that many of our natural resources are depletable or non-renewable.

14. Except for photographs and colorful illustrations the majority of the textbooks failed to stimulate an awareness of the aesthetic qualities of our natural resources.

RECOMMENDATIONS

1. That writers of school texts, consult with authorities in the subject fields...and not merely with educators...to assure accuracy, to better assure recency not obsolescence of materials, to be alerted for trends, and to be guided by the evaluations of those whose daily efforts are productively resulting in information and approaches and problems in which we all need to be educated.

   So much vital and stimulating information is being produced by science and technology...and readily available to those who will seek it out. Yet, so little of this seems to find its way into school texts. The objective re-writing of this material should be the role of the educator-writer. The subject-content is in the realm of the more technically competent. Scientific and technical experts need writers who can translate into readable and meaningful language. Educators need writers who can combine factual information into teachable-learnable prose.

   For example...in conservation there already exist 11 Congressional Committees, 34 Federal Agencies, 23 National and Interstate Commissions, 26 Regional Agencies, 50 State Agencies, 11 International, and 129 National organizations dealing with some phases of conservation! Surely they must have something that could be written into school textbooks!

   Here in California we have an excellent Resource Agency wherein each Department (Water, Fish and Game, Parks and Recreation, Forestry, Mines and the other) has a Conservation Education Office. These departments should be consulted and worked more closely with by writers, by curriculum planners, by the methodologists, by audio-visual leaders, and by teachers. Frequently supplementary materials, such as the Time-Life Nature and Science Series, Audubon and Government Publications, are considerably more informative and factually accurate than are the approved school texts.

2. That teacher-training institutions assert more dynamic leadership in the field of environmental living by offering more stimulating courses for both undergraduates and teachers. As part of all teacher training, the curriculum should specifically include conservation concepts.

   To prepare students for occupations, to broaden their culture experiences without instilling an awareness and concern for what is happening to the land, water, air, and non-renewable resources seems to be ignoring the most important blending of all education...harmonious living with the natural world.

3. That <u>school districts</u> make a concerted effort to develop effective and continual inservice training programs that would...

   a. Provide teachers with adequate foundations in modern conservation aims and environmental problems.

   b. Enable teachers to effectively utilize their available texts (such as they are) for conservation education.

   c. Enable teachers to effectively utilize local conservation resources.

   d. Encourage educational leadership to emerge and then see that it is utilized wisely to broaden the bases from within.

   e. Keep educators abreast of what is being done elsewhere in these matters...thus to better analyze, modify, plan, and initiate curricula programs leading to an integrated conservation way of life.

   f. Make realistic efforts to find the funds necessary to do these jobs properly.

   g. Encourage teachers and principals to make better use of existing school grounds as outdoor laboratories for direct experience approaches to learnings.

   h. Encourage and lead the way in the educational use of natural lands for resident (weekly) outdoor science experiences for pupils.

   i. Insure current bibliographies of conservation materials to be maintained by the districts and be made readily available to the schools.

4. That legislators be both consulted and advised by those conservationists in school positions...as regards the needs of educators in order to get these tasks done better and quicker.

5. That public relations be improved and expanded from school conservationists to news media to legislators, to conservation agencies, Parent Teacher Association to the general public...and recycled. These public relation activities should be ongoing...not limited to pre-bond elections. They should be imaginative, creative, and bold in presenting the status and problems of local and regional conservation education activities.

6. That the State Department of Education employ a full-time consultant in Conservation Education. This person would coordinate with conserveration agencies and educators...providing leadership and guidance... giving direction and stability to the movement. Further, the office of the consultant should establish some means of providing school districts with a broad-based, current bibliography (see Appendix C)

CONCLUSIONS

1. The newly--adopted texts are pitifully weak in their offerings for conservation education.

2. Most teachers are not adequately prepared to teach the subject of conservation--even with a good book.

3. Some of the supplementary texts (and several of those not adopted but considered for adoption) seem to offer more hope for better learnings than are offered in the basic texts.

4. The method of better selection of all texts (with or without conservation content) needs more scrutiny and analysis! Successful teachers who are <u>leaders</u> in their fields should make the selections, and their choices should not be prejudiced or over-ridden by intermediaries.

5. Man--caused problems which result in environmental deterioration were universally omitted from the texts! The child old enough to read newspapers and watch television cannot help but lose faith in an educational system which attempts to paint for him a problemless world. Children are essentially honest until we teach them how to "white wash" and cover up the truth.

6. Finally, with no designated leader in this field at the State Department of Education level (and in most school districts, as well), it is only through prolonged and persevering efforts of dedicated handfulls of educators that any real conservation is learned at all--and in relatively few schools, at that.

For any improvements to come in conservation education, educators themselves must come to grips with these very real problems confronting them.

APPENDIX A

Part I - Annotated List

READING AND LITERATURE

Basic Textbooks

Sheldon Basic Reading Series, by William D. Sheldon and Others; Allyn and Bacon, Incorporated, 1961.

These readers contain some good sections on nature though few depict conservation philosophies. Though some stories are interesting and stimulating knowledge is warped because of unsound ecological principles.

Ginn Basic Readers, by David H. Russell and Others; Ginn and Company, 1957.

This series contain almost no conservation material. General quality seems considerably lower than the Sheldon Series. Gentleness, care and concern have been replaced by noisy, flashy, conquests. There is no harmony depicted between man and the land. Land is shown as a commodity to be subdued, rather than a value to uphold.

New Horizons Through Reading and Literature, by John E. Brewton; Laidlaw Brothers, Incorporated, 1961.

Though superior to the Ginn Series selections in the section on "Discovery Nature and Science" (the only section involving some conservation concepts) need upgrading. It is inconceivable that selections should be so impoverished in the face of the overwhelming availability of good material for these grade levels (seven through eight).

Supplementary Textbooks

Hunting Grizzly Bears, by Henry Bamman and Robert Whitehead; Benefic Press, Chicago, 1963.

An excellent account of modern wildlife research methods with grizzlies. In this "age of overkill" it is refreshing to see that preservation can hold the same kind of excitement and adventure for the young ones that destruction has. This is one of the few readers examined that is founded in fact and written to delight the senses in a concern for our wildlife heritage.

Values to Live By, by V. C. Arnspiger and Others; Steck--Baughn Company, 1967.

In terms of giving the young reader an insight into values inherent in

nature and resources, this volume is a magnificent failure. An opportunity to guide the student into an ethical framework that extends to the land that sustains him was totally lost.

High Climbers, by B. Coates; Allyn and Bacon, 1965.

Though written totally from the logger's point of view, this account does a fair job in building respect for forests and watersheds.

A Story of A Fur Seal, by R. Seecatch Montgomery; Ginn and Company, 1955.

A factual, well written account that exposes for the young reader the plight of marine mammals.

SCIENCE

Basic Textbooks

Concepts In Science Series, by Paul F. Brandwein and Others (grades one through six); Harcourt, Brace and World, 1966.

An excellent reader about science. A poor approach to learning by doing. The authors' philosophy is fine, but it is not carried out in the "Investigations."

None of these texts dealt directly with conservation. Many sections within the text could be interpreted with conservation implications but for the most part would require a conservation--subject oriented teacher. The conceptual schemes of change and interdependence among living organisms and their environment lend themselves well to conservation principles if properly utilized by the teacher.

Today's Basic Science Series, by John Gabriel Navarra and Joseph Zafforoni; Harper and Row, 1966.

- The Molecule and The Biosphere (grade seven)
- The Atom and The Earth (grade eight)

Both are standard, traditional science texts--intended to be read and memorized. The emphasis is in "putting out the facts." In The Molecule and The Biosphere, the unit on Ecology is excellent. One of the few books using modern terminology and sound approaches to conservation education. Colorful illustrations and good diagrams enhance the readability of these text.

Singer Science Series, by Helen Dolman and Others; Singer Company, Incorporated, 1966.

- Basic Life Science
- Basic Earth Science
- Basic Physical Science

A disappointing series and quite questionable for use with the "below average student" (grades seven, eight, and nine, respectively) as is recommended. Not very challenging to read about science. Illustrations are drab and reminiscent of older science texts although some of the material presented is quite "sophisticated" for the "below average student." The explanations are not simple.

Supplementary Textbooks

Century's Space, Earth and Life Science Series, by Raymond Sullivan; Century School Press, 1966. Various authors:

Looking at Nature (grade one)
Looking at the Ways of Nature (grade two)
Looking at Life on Earth (grade three)
Looking at the High Forms of Life (grade six)
Looking at the Simple Forms of Life (grade seven)
Looking at Earth and Sky (grade eight)

Each of the above is a good introductory life science picture story book. Excellent photographs and drawings dominate the entire series--unfortunately they are not in color. Text for the sixth grade offers an excellent treatment of soils describing interrelations with water and plants. How to save soil is presented in pictorial fashion. Other than this book, the rest of the series do little in regards to conservation.

Common Native Animals, by M. F. Vessel and E. J. Harrington (grade seven and eight); Chandler Publishing Company, 1967.

An excellent source and reference books--for teachers and for pupils. Varied natural and conservation activities and general information. Some conservation content.

Introducing Our Western Birds, by Matthew F. Vessel and Herbert H. Wong; Fearon Publish, 1965.

An excellent, somewhat novel but effective way of bird identifications in a visual check-list sequence. Drawings are very effective.

Conservation is not considered however until the end of the book in a section on Things to Do.

Activity (7) Visit a sanctuary or bird refuge. Why are such places needed? Activity (8) Learn about federal laws that protect birds. Why are only certain birds protected?

Seashore Life of Our Pacific Coast, by Matthew F. Vessel and Herbert H. Wong (grades four through six); Fearon Publish, 1965.

This treatment of shore life is very readable, informative and useful for Pacific Coast residents. Good conservation inferences. Some cause-and-effect considerations. One of the few texts where there is an effort

by the authors to incorporate a conservation philosophy into their writings. Closes with suggestions for "good seashore manners."

A Follett Beginning Science Book Series; Follett Publishing Company.

A Whole series of story-type booklets covering different subjects in science such as ants, birds, magnets, rocks and minerals and the other for the second and third grades. Very readable with colorful drawings. Lacking in conservation.

Wonders of Water, by Charles Lavaroni (grade four through six); Franklin Publication, 1966.

Relates basic resources of soil, water, air to each other and quite well.

Molecules in Motion, by Ben Strasser (grades four through six); Franklin Publication, 1966.

No readily apparent relationship to conservation.

Story of Our Earth, by Barbara Collins (grades four through six); Franklin Publication, 1966.

No readily apparent relationship to conservation.

Let's Explore the Ocean, by George Houghton and Byron Jordan (grades four through six); Franklin Publication.

Shows some aspects of population dynamics and adaptations to environments.

The Sea: A New Frontier, by Donald McLean (grades four through six); Franklin Publication.

Interrelates minerals, human needs, fish-animal adaptations and hibitats.

California Plant and Animal Communities, by Barbara J. Collins (grades four through Six); Franklin Publication.

Interrelates habitats with larger environments. Ends with the question "what is conservation?" The only one in the series which considers the necessity of understanding conservation.

A Sourcebook for Elementary Science, by Elizabeth Hone and Others; Harcourt, Brace and World, Incorporated, 1962.

Excellent resource book for elementary teachers providing a wide coverage of possible science activities. The appendix includes a section entitled "conservation through science and social studies." This section provides general understanding and useful activities in the teaching of conservation. List of references and bibliography is provided.

A Sourcebook for the Biological Sciences, by Evelyn Morholt; Harcourt, Brace And World, Incorporated, 1966.

Another excellent source for activities in the biological sciences.

Chapter 11 provides activities and investigations for ecology and conservation.

Basic Science Education Series, by Bertha Parther and Others; Harper and Row, Publishers, Incorporated.

A complete series of science booklets for each grade level covering a multitude of topics, many of which are outdated and over-simplified. Of the approximately 70 booklets only the following listed had some conservation considerations:

Useful Plants and Animals
Water
Saving Our Wildlife
Adaptation to Environment
Water Supply and Sewage Disposal
Balance in Nature
Community Health
Soil

Geology and Earth Sciences Sourcebook, by Robert Heller (grades six through eight); Holt, Rinehart, and Winston, Incorporated, 1967.

An outstanding science reference book for teachers. This can be considered a textbook for background information. Some cause and effect considerations.

Western Butterflies, by Arthur Smith (grades four through six); Lane Book Company, 1961.

A quite informative handling of an old topic. Well written and organized. Some references to aspects of conservation. Some cause and effect considerations.

Silver Burdett Reading and Research Program; The Forest, The Sea, The Desert; Silver Burdett Company, 1964.

Series of books from a volume in the Life Nature Library. Excellent pictures as well as well-written articles on each of the areas. Good conservation ideas presented through photographs and stories.

Life Science Library (The Birds, Energy, Machines, Weather); Silver Burdett Company.

Outstanding pictures and articles informatively and provocatively written. Not much conservation per se.

Life Nature Library (The Birds, The Fishes, The Insects, The Plants, The Mammals, The Reptiles and the other); Silver Burdett Company.

Little or no conservation inferences--but excitingly written, organized and presented in word and picture.

HEALTH

Basic Textbooks

The Laidlaw Health Series, by Oliver Byrd and Others (grades one through six); Laidlaw Brothers Incorporated, 1967.

Curriculum Foundation Series, by W. W. Bauer and Others (grades seven through eight); Scott, Foresman and Company, 1967.

The role the environment plays in health and disease is widely recognized to be profoundly important. In this light, it is indeed disturbing to note the near complete absence of concepts and information about the environmental quality in health texts.

Recent world-wide recognition of the importance of environmental contamination and its effects on the health of the individual, the community and the land has exposed man's role in this chain of cause and effect. It is indeed a sad commentary that one of the few places where environmental quality is not discussed is in the required health textbooks for our youth. It is as if we are engaged in a vast cover-up or "co-game" with our youth embarrassed about our failures in environmental health and hoping they will not discover air and water pollution if we remain silent. The fact is that news media are not remaining silent. If textbooks are any indication some of the most obvious problems of our age are being ignored by the education establishment.

Supplementary Textbooks

Health and Disease, by Rene Dubos and Maya Pines; Time Incorporated, 1965.

As a health reference for the seventh and eighth grades, this volume, in our analysis has no equal. Its quality and coverage are far superior to the required texts. In addition to other environmental problems more than 20 pages are devoted to an open discussion of air and water pollution.

It is our opinion that nothing would be lost and much would be gained if this volume were to replace the adopted health series for the eighth grade.

HISTORY

Basic Textbooks

Exploring the Old World, by Stuart Hamer and Others (grade seven); Follett Publishing Company, 1964.

This text presents virtually no information on conservation and generally fails to present a comprehensive picture of how man must adopt to his environment.

The text strives to present historic to modern times for all European-North African and near Eastern nations. It tries to cover for too much information and in so doing results in a very superficial and rather arid resumé of 5000 years of history with a little geography thrown in for good measure.

The Story of Our Country, by Clarence Ver Steeg (grade five); Harper and Row, 1965.

Format very attractive. Well written account of first white men to arrive and the Indian culture they found here. The new nation over came the wilderness, developed industries, moved west to the lost frontier.

A new nation of factories had new problems--natural resources needed protection. Theodore Roosevelt helped conservation, two and one-half pages. Health is protected by improving working conditions, three pages.

City areas grew rapidly--mention of problems is very meagre. 1950-66 more american (negroes) gained rights, two pages.

Land of the Free, by John Caughey and Others; Franklin Publications, incorporated, 1967.

This outstanding history text contains several excellent nature--oriented photographs, however the text was singularly lacking in any comprehensive discussion of conservation.

Had very weak, short description of conservation during the Progressive Era.

Very Briefly mentioned automation's attendant social ramifications and the strain placed on our resources by rapidly expanding population. Has an adequate four paragraph section on the problems of urban centers.

California: A History, by Mabel Young Williams (grade four); Harr Wagner Publishing Company, 1965.

Excellent treatment of historical events, very attractive picture. Use of natural resources indicated conservation scarce.

Chapter five - Men Use and Destroy Nature's Gifts, six pages about forests and wildlife, on a whole good. Glossed over problems well.

California's Own History, by John and La Ree Caughey (grade four); Century School Book Press, 1965.

Makes history come alive, excellent illustrations. Out of 289 pages, one page, 268, indicates that as our state grows in size and importance so do our problems. "We shall have to do more to protect our natural resources." We shall have do more to guard our forests and other plant life, our sea shores and our wildlife. "Water is a continuing problem. New dams are

needed to store water and to prevent floods and to reclaim deserts for forming." (No mention of water shed protection)

"Natural beauty of our state must be protected."

Two pages were given honoring a conservationist, John Muir.

Supplementary Textbooks

This Is Our Land, by Franklin Paterson and Others (grade four); L. W. Singer Company, 1963.

Importance of trees, one page important in the ground and when they are cut. Need for conservation well expressed, one and one half-pages. "We do know that we must be careful to conserve what we have. We must not waste the gifts nature has given us. And we do know we will always need people who have ideas that will help our country and who dare to try them out."

Real People, by various Authors (grade four; Harper and Row, 1950.

25 very well done accounts of real people. No treatment of conservation of natural resources noted.

Negro American Heritage, by Paul Lawrence and Others (grades five through eight); Century School Book Press, 1965.

Conservation in its broad sense. A good life for all Americans.

Under Freedoms Banner, by Dorothy Fraser and Helen Yeager (grade five); American Book Company.

Leaders fight for freedom and unity further expansion and exploration pioneer communication transportation industry. No mention of conservation.

With growth of cities, Jacob Ries and June Adams helped make life better (conserved humans).

Stephen Mather pioneered in setting aside national forest land. Leaders in science and medicine (conservation implied), leaders in art, leaders work for peace (conservation of humans implied).

California Gold Days, by Helen Bauer (grade four); Doubleday and Company, 1954.

Somewhat general treatment of early mining days. Page 103 picture of debris left from mining - Opportunity overlooked to compare values-- gold, soil, water, and the other.

Westward the Nation, by George Shaftel and Others (grade five); Franklin Publications, 1965.

Excellent format and treatment of the push West. Good questions posed. Last chapter on Still Westward the Nation disappointing in that problems ahead were minimized.

GEOGRAPHY

Basic Textbooks

Learning About Latin America, by Robert A. Harper and Others (grade six); Silver Burdett Company, 1964.

The text offers a description of some conservation--oriented problems facing Latin America, but throughout problems have been glossed-over with gross generalities.

Learning About Latin America depicts man's adaptation to his environment, but fails to correlate the interdepency of various resources and their ultimate relationship with man.

The material is presented in an arid factual manner and does not strive to promulgate any attitude of conservation or indeed, any real feeling for the manifold problem facing Latin Americans.

This text merely perpetuates a superficial mediocre approach to the study of culture and environment and further bewilders the reader with the vast quantity of material contained therein. The book is a testimonial to quantity without quality.

A World View, by Robert A. Harper and Others (grade six); Sliver Burdett Company.

Presents the traditional approach to conservation--that of preserving natural resources because of the economic worth other than their impact upon ecology.

The book, while extolling the efforts of man to modernize and alter his environment fails to outline the problems engendered by increasing population, urban sprawl and other procreants of industrial--technological societies.

Where the book does mention health hazards due to polluted air and water, the reference is so brief to deserve little more than passing interest.

Eurasia, by Robert M. Glendenning (grade seven); Ginn and Company, 1964.

Some very good but isolated information on man's attempts to preserve his resources and how industrialization and technology has altered the environment.

The book does not present an ecological approach to conservation and fails to deal with the problems of water and air pollution, disposal of garbage, urbanization, transportation, and population stabilization.

Since this text deals partly with Western and Eastern Europe, it would seem most relevant to include discussions concerning the manifold problems of urbaning and industrializing populations.

Our United States In A World of Neighbors, by Norman Carls and Others (grade eight); Rinehart and Winston, Incorporated, 1963.

Sections on conservation are excellent. The ecological approach to conservation is not stressed, but nevertheless is introduced in the chapters on soil, water, forests and minerals. This book does a more than adequate job of presenting the problems of urban and suburban development, health and transportation.

One area generally neglected, however, was the concept of aesthetics in conservation. The book failed to discuss maintaining the beauty of our environment.

California and the West, by John W. Reith (grade four); The Fideler Company, 1965.

Format outstanding, conserving soil, by contour plowing, four paragraphs. Statement of problems to solved at the beginning of each chapter is commendable. Whole chapters are given to water resources, forests and lumbering mines and oil wells.

California: Our State Today, Ernest W. Tiegs and Others; Ginn and Company, 1965.

Nine pages about history and development of highways. No mention of problems involved.

15 pages devoted to conservation, one whole chapter most good. Especially good, How You Can Help, considering care of clothes, furniture, turning off lights, water and the other. A camping trip "make flowers and trees your friend" (Burbank). Litter guarding.

The United States and Canada, by Katheryne Thomas Whittmore (grade five); Ginn and Company, 1961.

Trying to bring back sardines to California Coast, one-fourth page, Salmon fish ladders, one-half page; scientists studying diminishing returns of fish on Atlantic Coast, one page.

Conserving forests. Lumber companies in general are using better methods, three paragraphs. Caring for southern forests in order to produce more for pulp mills and rayon manufacture. Minnesota, Wisconsin, and Michigan trying to use forests wisely, one paragraphs. Grassland depletion from

over grazing, two paragraphs. Natural beauty for playgrounds, five pages. Soil conservation, three pages.

Water conservation nine pages, mostly about dams. Wildlife, seals in Alaska, everglades in Florida, three paragraphs.

United States and Canada Geography Series, by Jerry Jennings, Marion Smith, Walter Havighurst, Theo and Sara Hills (grade five); The Fideler Company, 1965

The Northeast, by Jerry Jennings.

Conservation as such not listed in index. Development of industries and political institutions - no tie to natural resources - a century of progress - wall street industries, immigrants, three-fourth of people in cities, education, recreation art, museums - also difficult social and civic problems. Much is made of bigness - the pentagon employs 30,000 people. Problems are over simplified.

The South, by Jerry Jennings and Marion Smith.

One-half page devoted to a demonstration of soil conservation that improved pasture land - 14 pages listing natural resources.

The Midwest, by Walter Havighurst.

The effect of land features, lakes and rivers affect people. Mentions problems of cities--slums, problems of industry.

Canada, by Theo and Sara Hills.

Emphasis on Canada as a land of vast natural resources and their use for industries, could not find any mention of conservation.

Supplementary Textbooks

California: Heritage of Riches, by Ruth Wheeler (grade four); Harr Wagner Publishing Company, 1965

Presents stewardship idea and conservation as a patriotic duty. In gifts of the forest preservation of water is listed first. This concept noted in no other book.

Speaks of earlier careless with forest but sounds like everything rosy now.

Floods followed burning of brush lands in Los Angeles. No mention of cutting in the Northwest as contributing to floods.

The Continent We Live On, by Ivan T. Sanderson (grade eight); Random House, Incorporated, 1967

The Continent We Live On is one of the most outstanding texts reviewed by this committee. The text and pictures stimulate a genuine feeling for the United States and the ethic of conservation. It is a realistic, highly readable text poignantly designed for today's world.

The Continent We Live On if used in conjuction with Land of the Free, would afford an outstanding social studies program for the eighth grade.

This reviewer, a teacher of eighth grade social studies, highly recommends the adoption of Sanderson's The Continent We Live On as the basic eighth grade geography text. If such adoption is not possible, greater numbers of the text should be made available in each eighth grade social studies classroom.

The Land and Wildlife of North America, by Peter Farb and the Editors of Life (grades five through eight); Time Incorporated, 1964.

This text is most highly recommended to be placed in not only science, but also in social studies classes on both the fifth and eighth grade levels.

It presents an excellent pictorial and textual review of the North America's wildlife and land plus affording a concise enjoyable to read ecological approach to conservation.

Life in Lation America, by Edmund Lindop and Others (grade six); Ginn and Company, 1964.

The very skimpy amount of conservation information in Life in Latin America presents the traditional approach to the subject - that of saving resources for the future because of their economic value to man. The book suggests better ways to make more efficient use of resources, but fails to relate the importance of resources to each other and that some are non-renewable.

The text does not attempt to demonstrate the ecological approach to conservation and further fails to stimulate an interest in the problems facing modern Latin America.

RELATED SOCIAL SCIENCES

Supplementary Textbooks

Where in the World Do You Live, by Marjorie Pursel and Ruth Shaw Radlauer (grade two); Franklin Publications, Incorporated, 1965.

Pin points geographical location of school, maps school grounds and neighboring community - views community from vantage points, helpful to orient child to physical surroundings. Lacks any treatment of responsibility for letter or recognition of beauty or love for the land.

Food From Farm to Family. Producers, Processors and Distributors. Food from plants and animals--nothing about conservation.

Ishi, Last of His Tribe, by Theodora Kroeber (grade eight); Parnassus Press, 1964.

To neglect this kind of quality in favor of the often too generalized basic textbook approach gives evidence that we have fallen prey to the fallacy that we should cover everything.

Ishi, Last of His Tribe is one of the most poigant descriptions of man's survival in a rapidly changing environment to be reviewed by this committee. The book imparts a feeling of man's interface with the world in which he lives rarely encountered in basic textbooks or--indeed--literature in general.

Water: Riches or Ruin, by Helen Bauer (grade five); Doubleday and Company, 1963.

Excellent photographs - a little heavy on big dams, not much on water sheds.

Patriotism and stewardship emphasized, page 19. Picture "saving the land is like waving a flag full mast." "Ask yourself the question will this be a land of plenty when I am full grown? How about after that?" This plenty is ours to share now but will we always have it? Pages 20-22, good exposition and questions concerning the meaning of conservation.

Your Community and Mine, by C. W. Hunnicutt and Jean D. Grambs (grade three); The L. W. Singer Company, 1966.

Summing up trip to a dam states water conservation also includes protecting and extending water shed areas, improving industrial practice and their water usage, eliminating waste, six pages, good treatment.

At Home Around the World, by Delia Goetz (grade three); Ginn and Company, 1965.

Tree planting in Norway, the children did the work. (good conservation activity)

Intensive use of reclaimed land in the Netherlands.

No implication found of conservation needs in eight other areas mentioned.

Picture Atlas, by Kathryn Fugate (grades two and three); Franklin Publication, 1966.

Information graphically presented the pictures are outstanding. Comments about pictures are statements of facts - no questions raised about land use aesthetic values, pollution or transportation, water sheds.

Series, by Kathryn Fugate (grade three); Franklin Publication, 1966.

Exploring Your Community

Describing land forms, where does your community fit in? How people change the community and provide for their needs.

Discovering Other Communities

Historical treatment of communities and how they developed as a result of natural resouces and land forms. Page 65, "Captain Weber and other leaders of Tuleburg saw how fast their town was growing. They got together to plan ways to make the town better, not just bigger."

Many People in Many Places

Cities in various parts of the world, their beginning and conditions that made them grow and have personality.

General comment on the Series. Excellent formats and information. Planning in the total environment recognized. Recognition of natural resources and need for stewardship concept generally overlooked.

The Big City: Book of Conservation, by Catherine Urell and Others (grades two through three); 1956.

Pictures a little out-dated, but general content is very good. The children take a very definite part in exploring and in activities to find out.

GOVERNMENT

Basic Textbooks

Civics in Action, by Richard E. Gross and Others (grade eight); Harr Wagner Company, 1966.

Civics in Action presents a fairly comprehensive, if rather brief, outline of some of the major conservation problems. It makes a start in presenting an ecological approach to conservation. The text introduces the idea of maintaining environmental beauty--a concept often neglected by other government texts.

Civic in Action relates a number of pressing social problems engendered by the technological society but generally fails to discuss them in any depth.

Generally, this government text is up to date and presents a realistic outline of the issues facing modern America.

California People and Their Government, by John A. Veigh and Others (grade eight); The Century Schoolbook Press, 1966

The text introduces a variety of problems facing the people of California but fails to discuss the issues in any depth. What has been done here is a very good start in presenting the problems of water and air pollution, urban renewal, adult and juvenile crime, freeways and rapid transit, automation and employment, proverty and welfare, leisure and recreation, and federal - state cooperation, but more penetrating discussion is needed on these increasingly important subjects.

APPENDIX A

Part II - Samples of Specific Critical Analyses

EXAMPLE OF POOR CAUSE AND EFFECT RELATIONSHIPS

Concepts In Science, by Paul F. Brandwein and Others (grade six); pages 139-141

"7. The Main Concept: Controlling the Environment."

Comments:

Three pages - including pictures - devoted to the treatment of such an important subject!!

Every item in this section deserves - requires - expanded treatment, for example:

(pages 140), "Now man purifies water to kill the micro-organism as it;..."

No mention is made as to the causes of impure water - the problems of contamination caused by sewage, by leaking, by excessive surface run-off and the other. The problems facing all of us today and tomorrow do not deal with how to purify water. We know many efficient ways of doing this. Our problem is to prevent excessive contamination and thus reduce the need for purification.

Man is not "controlling his environment" when he merely "treats the water"!

Similar mishandling of this vital area of study permeates the rest of these three pages. Furthermore, the seventh and eighth grade Basic Text, Basic Earth Science, devotes but seven pages to this topic of "controlling the Environment."

Similar comments apply here - not enough causal analysis and insight into ways these problems of environmental abuses can be prevented or corrected!

EXAMPLES OF POOR EXPERIMENTATION TECHNIQUES

Concepts In Science, by Paul Brandwein and Others (page 375).

"Investigations Into Differences Between Heat and Temperature."

Comments:

The directions adequately tell the pupil what to do, then it is suggested he record his results. This is acceptable, BUT - the bottom of the page

contains a tabulation of three separate "results" of this experience and the suggestion is that the pupil check his results with those presented in the book!

The pupil should not be led into his findings but instead encouraged to objectively note his <u>own</u> observations and draw his inferences.

A filled-in answer form should never be used in an "investigation"!

There are many such cut-and-dried indoctrination drills for students in these Basic Texts.

EXAMPLES OF GLOSSED OVER STATEMENTS

<u>California: A History</u>, by Mable Young Williams.

Glossed over statement (page 257).

"The state government and the United States Government are doing all they can to keep our forests safe. Lumbermen are also helping to restore our forests. They cut trees carefully. They plant new trees to replace old ones."

<u>Health for All</u>, by W. W. Bauer and Others (grade seven); page (209).

"The part environment plays" given only two short paragraphs and covered nowhere else in the entire series.

EXAMPLES OF INACCURATE STATEMENTS

<u>California Our State Today</u>, by Ernest W. Tiegs and Others (page 210 inaccurate, page 212 questionable)

"Fortunately most of our watersheds can soak up water like a blotter. Most of these areas are covered with humus, grasses, shrubs and trees." Further, the only danger to watersheds mentioned is fire.

Questionable (page 212)

"Most lumber companies are managing their forests wisely. They are growing trees as crops, remember."

<u>This Our Land</u>, by Franklin Patterson and Others (page 126).

"The redwoods are protected by law."

EXAMPLE OF OVERSIMPLIFICATION

The Northeast, by Jerry Jennings (page 102).

"Economically the north east has a bright future. Its large population, its natural resources and its system of transportation ensure continued growth. Its great coal mines will not be exhausted for many years. Its farms will have a market for all they can produce."

APPENDIX B

SUGGESTED EXPLORATIONS INTO CONSERVATION RESEARCH

Conservation education is a very broad field. It involves various life, physical, and social sciences. The integrated role of all component parts gives meaning to our environmental studies.

In order that students acquire understanding, appreciation, concern, and a problem-solving attitude towards conservation - the student must be confronted with questions and situations that require him to think his way through the many facets of the problem. Controversy should not be avoided in this process.

The following appended material - Conservation Study (for Primary and for Intermediate Grades) is offered as suggestions to stimulate young minds to explore more widely and deeply into conservation matters.

CONSERVATION STUDY

Primary Grades

1. What are the roles and responsibilities of family members with regard to conservation? father, mother, children? in the home, on the highways, on camping trips, in parks and gardens? In what activities may children engage at school to develop desirable concepts and practice their role?

2. How is the care of pets related to the development of concepts of conservation? What can parents and teachers do to help children care for pets consistently?

3. What health and safety habits and practices will help children become better conservationists? What do children do to develop these habits? at home? at school?

4. What seasonal activities can be planned that will emphasis conservation needs and practices?

5. What legal holidays may be used appropriately to instruct with regard to conservation? Of what will the instruction consist?

6. How can concepts of conservation be related to respect for the Flag of the United States of America?

7. What services of the community to the home and family have conservation implications? What learning situations may be devised to initiate

concept development with regard to conservation of forests, wildlife, water, oil, food, soil? What topics of conservation might be suggested by the teacher to help pupils consider the conservation elements of garbage disposal, the daily newspaper, flowers and grass in the yard, gasoline for the car?

8. What duties and responsibilities of young children to self, peers and the school are related to conservation practices? Does litterbugging <u>really</u> have implications? In what respect? In any way other than aesthetic?

9. What materials, experiences and ideas about conservation may young children share with their peers? What materials and experiences can the school provide that will generate ideas about conservation?

10. What are the roles of school personnel with regard to conservation instruction, practices and materials? What is the job of the administrator? of the custodian? of the special teacher? Should the custodian plow up the garden plot or should children dig it themselves?

11. How can the teacher incorporate conservation considerations when children participate in making rules? Rules for what occasions? Can the teacher help children internalize rules which will help them become conservationists?

12. What activities of various areas of the school plant continuously draw upon natural resources? How is the school building heated? or cooled? What natural resources are used in the maintenance of busses? What fuel is used for cooking? Are the school grounds barren or planted?

13. What responsibility can children assume for the care of buildings, grounds and equipment that will develop concepts of conservation, make a real work contribution and not increase the work of the custodian?

14. What equipment for work indoors will stimulate questioning or aid in describing conservation factors and ideas? What children's activities will help the teacher evaluate the pupils' knowledge and understanding of conservation factors? What would you depict if you were asked to paint a picture of conservation?

15. Does equipment for work outdoors include a garden plot and tools? a wild area? cages for small animals in appropriate location for their care?

16. What rainy day games can be invented that will help to develop concepts about conservation? Are interesting picture and story books on conservation and related topics freely available to children?

17. What special days have significance for conservation interests and school activities? When and what is Arbor Day? What "special days" could appropriately be celebrated to emphasize conservation? Theodore Roosevelt's birthday?

18. What conservation project can the teacher and children plan and develop that will provide opportunity for the teacher to sit on the side-lines from time to time and observe the cooperation, responsibility, dependability, manners and friendliness exhibited by individual children? Would a project concerned with the growth of living things provide such opportunities?

19. What necessary food do we eat daily or frequently? What conservation concerns are related to food? Which of these concerns can be part of the school activity of children?

20. What conservation topics and concepts can be developed as children study facilities in the neighborhood? Does the zoo have animals protected from extinction? Does the farm visited exhibit conservation practices with regard to soil erosion, fertilizer use, wooded areas, and pesticide control? Upon what natural resources are bakery products principally dependent? What conservation practices are implied by the array of goods at stores other than those concerned with food sources? Where do synthetic materials come from? What evidences of conservation topics may be observed and studied at the beach? in tidepools? Is the conservation aspect of streets and highways principally concerned with inoffensive routing? Why are billboards of concern to conservationists? Is natural highway scenery related to resource use? Why are parks provided for people's enjoyment? Who does the post office assist in the conservation effort? What can the local firemen describe or what apparatus may be viewed that will help children develop attitudes toward fire prevention? What natural resources are used in huge quantities at rocket launching areas, heliports and airports?

21. In what way do boats, trains, busses, airplanes and automobiles promote conservation interests and practices? Is the movement of people, for work or recreation, significant in conservation? In what school activities can young children engage to help them think about the significance of the movement of people and the modes of transportation?

22. What conservation information is available by telephone, radio, television and newspapers? Are these means of communication themselves consumers of natural resources?

23. What kinds of jobs are "conservation" jobs? Are people who work at jobs in the city, for example, garage mechanics, merry-go-round operators, office secretaries, longshoremen and others, involved in the need for conservation practices? How are their jobs influenced by conservation?

24. What science interests concerned with living things in the environment are most closely associated with development of concepts of conservation? Are desirable attitudes being developed along with the facts of science? Is study of plants and animals related to the immediate environment and its conservation concerns?

25. Is opportunity provided for children to tell about current conservation topics of national and worldwide significance which they may have seen on television? What leading questions could teachers ask to promote such activity? Are current conservation events and concerns in the school, neighborhood and community observed, discussed and studied?

26. What conservation symbols could be used on a picture map? What might be incorporated on a "conservation" map of the neighborhood? of the school and grounds?

27. Who are some of the famous people of the past who made significant contributions to conservation? Are books about these people available so teachers may read or tell the story of their lives to children?

28. In what conservation activities may children engage at different seasons of the year? What seasonal conservation topics may be studied? How can the growth and development of living things, conservation-wise, be studied with regard to seasonal change?

29. How can the Pledge of Allegiance to the Flag be taught to develop pride in nation and concern for wise use of natural resources? What would the teacher say to pupils? In what activities would children engage? What instructional materials will help pupils move from consideration of the flag as an object to its symbolization?

30. Are learning situations planned, incorporating conservation study, in which children listen to gain information or follow directions? planning and making a nature trail? planning for a garden? Are conservation ideas and experiences generated by opportunity to engage in conservation practices? Are pictures in the file which will help children talk about conservation? How can the teacher help children use pictures to learn about conservation? Where may such pictures be obtained? Are conservation stories used to provide opportunity for children to recognize the beginning and end of stories? Are books available that contain pictures usable in conservation study as reference material?

31. What are the interrelationships between living and non-living things that create needs for conservation practices? How are wood, rock, sand and glass developed by nature? utilized by man?

32. How does the use of simple tools create conservation needs? How can

children demonstrate the use of these tools? What pictures and books will assist in children's concept development with regard to the conservation cause-and-effect of the use of tools by man?

33. What sounds could be called "conservation" sounds? Is consideration given to the sounds of nature - wind in the trees, bird calls, running water, crunch of leaves, - to develop attitudes of appreciation and awareness of aesthetic qualities of the natural environment? Do children have opportunity to be in the out-of-doors in environments where these sounds may be heard?

34. How do the families of children differ with regard to conservation interests and practices? Could conservation be suggested to a parent during a parent-teacher conference as a topic for family table talk? Could a teacher suggest development of family interest in conservation as a way of helping children in school?

35. In what way may homes differ with respect to conservation? What would the teacher and children do to interest the pupils in conservation practices at home? What are these practices?

36. Where and how can families have fun together that is enhanced by conservation of natural resources? Where does the money come from to pay for the work necessary to conserve the places? What rules and regulations are necessary in some places? Is the work only manual labor?

37. What new ideas and inventions related to conservation have brought about changes in homes? What conservation implications are there with regard to television, frozen foods, cake mixes, TV dinners, automatic washing machines, detergents, swimming pools?

38. What conservation practices help families in a neighborhood get along well together? How could friends and relatives living in the community or in other parts of the state, in other states, or in other parts of the world supply information about conservation? What kinds of inquiry might be directed to persons in various places?

39. What kind of conservation activities might teachers suggest to children and parents that would promote cooperation among family members?

40. What leading questions having to do with conservation might a teacher ask to help children discuss the dependence of the family's well-being on the health and safety of each member? Does conservation study incorporate attention to human well-being? What leading questions with regard to the care given family possessions are concerned with conservation? How can each family member have regard for the welfare of all, conservation-wise? What kind of activity or actions would be appropriate?

41. What activities could a student body sponsor that would promote conservation education and practices? What would young children do? What would a "conservation committee" in grade one do? How are conservation and safety related in interest? in activity?

42. In what conservation projects might a school engage to serve the community effectively?

43. What conservation projects will provide opportunity for pupils to plan, study and engage in cooperative activities? How will the teacher give guidance but at the same time set a climate for children to contribute ideas and suggestions? What work standards are needed for each project? What clean-up jobs are associated with each project? How does the teacher arrange for each child to participate in various kinds of jobs in the project?

44. What community workers provide goods and services to the school? How will cooperation with these workers promote conservation concept development?

45. How is the work of trash collectors and firemen related to conservation, other than collecting rubbish and putting out fires?

46. What are ways in which schools and libraries contribute to conservation? What is the responsibility of the librarian with regard to conservation? Do parks and recreational facilities offer only leisure and play facilities? What conservation materials and practices do parks and recreational facilities provide?

47. What agencies provide children with conservation materials, programs and activities? Should Cub Scouts also belong to an Audubon Club? How can a teacher make use of agencies to promote conservation interest and knowledge among children?

48. What kinds of neighorhoods are there in an urban community? What kind of interaction may these neighborhoods engage in, in the interests of conservation? What are "rural areas"? What are their cooperative conservation interests? What do neighborhoods and areas <u>do</u> when they engage in conservation?

49. What conservation interests and activities are brought about by the interdependence of local services and the work of people? in other parts of the country? in other parts of the world?

50. What conservation concerns could be better understood by children by the use of maps and globes? What special kinds of maps may contribute to this understanding?

51. What are the conservation concerns with regard to fields, roads, beaches, deserts, river beds, mountains, valleys, rocks? What materials and avenues of instruction will help children to develop

concepts about the conservation needs and practices in relation to these geographic features? What field trips, books, pictures, films will contribute to the learning? In what project activities might individual children engage?

52. How will a knowledge of plants and animals that are close at hand contribute to conservation understanding and action? How do children find out about the growth of plant and animal life? What are the conservation concerns related to such study?

53. What effect does weather and climate have on conservation? On conservation of what? What resources involved with weather and climate are conservation concerns? How is community life affected?

54. What conservation or resource use topics would help young children gain concepts of time, distance and location? In what activities could children engage? What kinds of records of growth and change could be kept?

55. What evidences of changing land are near-by? What changes with regard to farm land? to building towns and cities? What factors determine whether or not the change is improvement? Who determines this? Where are the closest parks, zoos and lakes? What use can children make of these facilities?

56. What conservation factors should be considered in the building of streets, highways and underpasses? What instruction will assist concept development in this regard? In what activities will the children engage? Will the instruction consist principally of talking? Are large-size pictures available? What problem situation could children study? How can children develop concepts about the importance of reservoirs in California? in other places? Of what will the instruction consist? How will the teacher determine what the children learn? By what means may children express their ideas about recreational facilities and the conservation involved?

57. How does the satisfaction of the basic needs of home, food, and clothing account for a large measure of resource use? of need for conservation practices? What kind of resource use diagrams could children make to depict the dependency upon natural resources? What activities would help children develop concepts with regard to resource use to satisfy these basic needs? What equipment and materials will be used for the activities? What materials make the greatest drain upon natural resources? What determines the use of one resource or another for food, clothing and shelter?

58. What books contain stories about the development of the country, with conservation implications? Have the conservation problems continued to the present day? Were early settlers concerned with conservation? What natural resources were important to them? How have our demands on natural resources changed?

59. In what ways may the President of the United States be concerned with conservation? Is this a matter for study by young children? Through what means or activity?

60. What conservation study will help children recognize the passage of time? What activities in the study will need short periods of time? What activities will need longer periods? How will children differentiate periods of time? How will the teacher determine children's concept development with regard to time as involved in the conservation study?

61. How does the teacher provide opportunity for children to hear and see pictures about conservation happenings of local, national,and international significance? What local agencies, clubs, or government personnel may supply information?

62. How do children become aware of the effects of current conservation happenings on the local community? Are new parks being established? Are bicycle trails being planned? Are automobiles and motorcycles allowed on the park roads?

63. Does learning the National Anthem have implications for conservation learnings? Do other songs? What songs? Are children's records available which have conservation themes?

64. What conservation rules may be applicable while traveling to and from school?

65. Should conservation rules and regulations apply to private and public property alike?

66. What kinds of conservation situations require emergency alarms? Who responds to the alarms? What kinds of jobs may be required in emergency situations?

67. How can the teacher help children become aware of personal conservation experiences? What kind of conservation activities will need to be reported on, from time to time? How can attention to conservation needs and practices help children to keep details in sequence? May development of this skill help children to look for cause and effect relationships? Are conservation words placed in a word box? Is a sufficient quantity of reference material immediately available to pupils to aid them in learning to use various references to locate information about conservation? Are conservation reading materials available to meet the needs of pupils of varying reading skills? Are occasions planned for which a pupil needs to organize and record information about conservation? To what groups may pupils make presentations of conservation skills and knowledge?

68. What food production is a vital part of the community? What are the related conservation needs and practices?

69. What relationship do the natural resources, soil, climate and water have to the food supply of the community? Is this a direct relationship? Do the people eat what is produced locally in quantity?

70. In what ways have people modified the natural environment for the production of food? What conservation practices are necessary in the procurement of water? What regulations? What practices are engaged in locally? In other places? How can children practice soil enrichment? What home-school cooperation might be stimulated by soil enrichment study?

71. What conservation needs and practices are similar for dairy farms, truck farms, poultry farms, grain farms, fruit farms, stock ranches and what conservation needs and practices are unique to each farm?

72. What natural resources are used in quantity in the processing of dairy and meat products, fruits and vegetables, bread and other grain products?

73. Are the natural resources involved in the production of clothing the same as those involved in the production of food? What might be included in a diagram of natural resources and clothing production? What conservation needs or practices would be studied?

74. Is the color of clothing related to conservation of natural resources? What are "natural" dyes; from what are they obtained? From what are synthetic dyes obtained?

75. What natural resources are important to the production of clothing in various parts of the world? What conservation practices or lack of them, in the production of clothing, have created resource problems? What relation does synthetic clothing material have to natural resources?

76. What clothing changes through past periods have had conservation implications? What pictures and stories about these changes are avialable? Where may they be obtained?

77. What products for clothing are produced locally? and elsewhere? Upon what natural resources are the products principally dependent?

78. In the making of raw products into material for clothing, what raw products are used, where are they obtained? What conservation needs and practices are involved in this production?

79. In making the manufactured product into articles of clothing, what processes are involved that draw upon natural resources? By what means are the natural resources provided? Are conservation practices needed? Where may information be obtained about clothing manufacture in other parts of the nation and world?

80. What customs and climates have created various practices with regard to conservation? Conservation of what? What natural resources are involved? What activities necessitate various kinds of clothing? Are different materials used? What materials? Derived from what sources?

81. How does exchange of goods and services among communities influence the need for cooperative conservation? What conservation is involved? Which group is responsible for doing something about conservation - the producer or the consumer? How can the person who eats the food do something about soil conservation? What should the farmer do?

82. When people secure numerous services by combining their energy and money are the conservation needs increased or decreased? What kinds of services require what kind of conservation practice? Which groups are concerned with conservation practices? Who decides? Are there rules and regulations? Who make them?

83. What equipment, tools, materials and machines used to provide services may create conservation needs? or may remedy conservation problems? Does road machinery help or hinder conservation? Should recreation areas be opened up by roads and facilities? What goods and services are exchanged between northern and southern California? What natural resources are involved and what conservation practices are employed? What part does equipment, tools, materials and machines play in this exchange? Are these items themselves consumers of natural resources?

84. What raw materials are used extensively in equipment for transportation and communication? What manufacturing is involved that requires use of natural resources or conservation measures? What newly developed methods of conservation are being used to avoid water pollution by factory wastes? Where can information be obtained with regard to new conservation practices?

85. Does the need for conservation practices grow as communities grow? In what respect? What service would serve as an example of such related conservation need? What pictures, filmstrips or films would assist in description of such an example?

86. In what ways is conservation served by a combination of community resources? Why was conservation necessary? Can use of resources and desirable conservation be practiced in combination? With what resources? How?

87. What conservation practices would be involved in the production of catsup from tomatoes?

88. What conservation practices with regard to topography would influence the export of catsup from the Central Valley? What conservation practice involving the weather would influence the tomatoes? What is the distinction between insecticides and pesticides?

89. What major industries have conservation problems? What kinds of problems? What conservation practices are employed? What conservation practices are engaged in voluntarily? What are imposed by government regulation?

90. Do all states have border patrol inspections of plant material? What other kinds of raw materials and goods are inspected in California? in other states? What inspection of raw materials and goods is required by the Federal Government?

91. What activities would help children know more about the communication media that carry conservation information? Would children's collection of conservation items from various sources make an interesting display? bulletin board? including children's written paragraphs about television shows or commercials depicting conservation practices? What publications may a school subscribe to that would furnish children with ideas and information with regard to conservation? With whom could children exchange written information about conservation? What might be some leading topics or sentences to assist children in writing about conservation? What out-of-doors experiences would be suitable conservation composition topics?

92. How could special attention be given to conservation developments in the nation and the world? What children's publications would contain current information? What books, periodicals, pictures and fugitive materials would be useful?

93. What happens when people apply or fail to apply conservation practices to topography, soil condition, climate and weather, abundance or scarcity of water and certain customs of people? Would a comparative chart help clarify conservation needs and practices? What resources and materials would children need to prepare such a chart or make a report on cause and effect of conservation or lack of it?

94. What conservation practices concerned with animal and plant food supply assist living things other than people? Is this also good conservation for human beings? In what respect?

95. What changes in the natural environment, brought about by people, are beneficial to the environment? to other people?

96. What materials are used in the construction of buildings that constitute major use of natural resources? What are some substitutes for raw materials? where are the substitutes derived from?

97. What new facilities for procuring water are being developed? What are conservation problems with regard to the use for irrigation? for the home? What conservation factors are involved in a pure water supply for communities? In addition to water supply, what are

water conservation problems of industries engaged in manufacturing various products? What new power and power plants pose major conservation problems? What problems were encountered at Oak Ridge, Tennessee?

98. What measures are being tried to combat smog?

99. What are some of the achievements of the past with regard to conservation that have helped in making our country a great nation? What are areas in which conservation is inadequate?

100. In what kind of activity could children engage to display their understanding of the effect of conservation on people in more distant places? What kind of conservation concern would lend itself to such consideration?

101. How can the teacher help children become increasingly aware of the importance of knowing what conservation measures are being carried on in the world? What resources will help the teacher keep current? What agencies, bibliographies, associations and government departments would be of assistance to both teachers and pupils?

102. Where are the local headquarters of conservation agencies and personnel? What relationship do these agencies have to local and state government and laws?

103. For what kind of conservation work can children volunteer? What kind of school conservation project would offer opportunity? community project?

104. How may the life cycle of plants and animals be influenced by conservation practices? What life cycles might be studied by pupils, in relation to conservation?

105. What movement of people in ancient times would serve as an example of lack of conservation understanding and practice? What stories, pictures, films and filmstrips would help children develop concepts with regard to the relationship of the movement of people and conservation? What are the titles of children's books?

106. What movement of people today is greatly influenced by conservation practices? in the United States? in other parts of the world?

107. What present needs for goods and services create need for conservation? what needs? what goods and services? what depletion of natural resources? What conservation measures are being used and what more may be needed?

108. What customs, skills, ways of working, religious beliefs or political beliefs may people bring to a community that hinder or help conservation? What are some historical examples of these kinds of contributions?

109. What natural resources are first in need of conservation practices following the movement of people into a community? What kinds of cummunities? What examples may be found in the local area? What kind of investigation could be carried on by pupils?

110. What modification of the environment has come about in the local area? in other parts of the state? in distant places? Where may information and pictures be obtained? Would socio-drama provide opportunity for the teacher to evaluate children's concepts in this regard? What are examples of environment modification which are generally acceptable to conservationists? generally deplored by conservationists? Upon what bases are modifications justifiable? How does the teacher help pupils think about such situations?

111. In what ways do flood control, soil conservation, health departments, sanitation and city planning enter into the lives of pupils? What are conservation needs to be considered with relation to each topic? What dramatization might children engage in, as a culminating activity, that would assist in concept development and evaluation of attitudes and understanding?

112. What conservation practices are tax-supported? What agencies expend the money? What private groups are organized for conservation? Where are lists of such groups available? What children's organizations stress conservation information and practices? How may a school sponsor the membership of children in such organizations?

113. What public utilities draw heavily upon natural resources? What is the position of local public utilities with regard to conservation? In what conservation measures do the utilities companies engage?

114. In what activities may children engage at school to exercise responsibilities and rights of conservationists? Would preparation of language or art material to take home be "exercising a responsibility"? To what groups could pupils present programs or materials sponsoring specific conservation activities or needs? Is this an appropriate educational activity for pupils?

115. Is most change in the natural environment good or bad? Who decides? What problem solving situation would provide opportunity for children to think through the conservation concerns of a specific circumstance or event? a new housing project? a freeway location? curtailment of lawn irrigation? What instructional planning is necessary for such problem solving activity? What group and individual projects might be incorporated in the study?

116. If conservation needs are not given attention by civic government, what recourse do citizens have? How could this recourse be incorporated in children's study of conservation in activity meaningful to children?

117. What are recent changes in economic demands that have conservation implications? food supply? housing materials? popularity of various kinds of recreation?

118. Were the founders of the community or city concerned with conservation? Do accounts of early city or community activities give any clues? Had the founders arrived from places which lacked conservation practices?

119. Did the first industries established draw heavily upon natural resources? How long did major industries persist? Did industries change because of depletion of natural resources? Where might information of this type be found? What local groups, agencies or societies could supply historical information? What books for children are available on industries, that would assist concept development with regard to wise use of natural resources?

120. What natural resources were not available to new settlers in sufficient supply? What measures were undertaken to obtain the necessary resources?

121. Do natural resources ever become landmarks? Why do they get this recognition and preservation?

122. What has happened to plants, animals and other resources from the days of early settlement to now?

123. What demands upon natural resources have changed from early days to the present? Why have these changes come about? Have the changes made living easier or more pleasant? In what respects? How could children try out some earlier practices to make comparisons of early life with life today? In what activities would the children engage?

124. What conservation practices are needed in larger measure in the local area? Is the water supply sufficient? Are new industries located in the area using measures to maintain or improve the water supply? Is smog increasing? Are problems of water pollution brought about by industries? Are recreation facilities considered in relationship to other conservation measures, such as building of dams? Are recreation facilities <u>easily</u> accessible? or are all natural areas eliminated? Are there natural areas where pupils can study ecology? What outdoor facilities are available to the school? parks? beaches? forests? outdoor education camps? vacant lots?

125. What conservation needs or practices are related to sigalerts, radar, disaster warning, civilian defense, smog alerts, storm warnings and weather forecasts? Who gives the warnings? What do people do when they heed the warning?

126. What can pupils do to assist in communication of conservation needs and practices? to other school groups? to parents?

127. What specialists are needed to assist in communication with regard to conservation? Who draws Smokey Bear pictures for television? What conservation specialists are available to talk about conservation? to school pupils? to other groups? What conservation films are available? Who makes the films?

128. What natural resources are necessary for the production of electricity and other power sources? What kinds of activity will help children find out about the relationship of science and invention to the improvement of living? science projects? books? books about inventions and inventors? Do electric appliances create greater or lesser demand upon natural resources. What natural resources are involved?

129. What particular plants and animals are important to the local community? Are conservation measures practiced for their maintenance and well-being? Where can the conservation practices be observed? Can children assist in the conservation practices?

130. What natural resources in the local area, forests, water, farm lands, minerals, could best be studied by firsthand experiences and observations? What will the children do other than look at the forests, hillsides and the like? What problem solving activities would promote study and understanding of conservation?

131. What evidences of lack of conservation practices in the local area may be studied or observed? What books, pictures, dioramas and models, will provide information with regard to lack of conservation practices in various places and times?

132. What natural resources are generally associated with a mountain community, a desert community, a tropical island community, a community of frigid climate, a large urban community? What varying methods of utilization of natural resources are found in these communities? What cause and effect relationships may children discover with regard to natural resources and various kinds of utilization?

133. What reading material, films or television viewing with regard to conservation practices and natural resources in the contrasting community are available?

134. What use of natural resources are evident in the creative and spiritual aspects of life in the contrasting community?

135. How has abundance or scarcity of natural resources been met by conservation practices?

136. What customs and beliefs incorporate attention to natural resources? Do such customs and beliefs exist in our society? in what respect? Are they largely found in folklore or are they interwoven with our present-day living? What examples may be found in other parts of the world or in other times? What children's books are available containing stories of other customs and beliefs?

137. What ways of teaching other members of the community about conservation needs and practices may be employed by children? What kinds of materials may be sent home or would be desirable to send home with the children? Do children have opportunity to tell parent-teacher groups about conservation projects or books needed?

138. How may a teacher help children talk about contrasting community values and ways of life? What are some leading questions or activities? What conservation values could be stated as general principles?

139. What conservation needs and practices may be revealed by examination of unique developments in arts and crafts, products, and ideas of the contrasting community? What art process would be most apt to serve as a medium for expression of conservation interests? What conservation interests would touch people's lives most significantly and be preserved in art or craft form?

140. What "conservation" appreciation for a different way of life may grow out of a study of a contrasting community? What principles of conservation, for example, the need of all plants and animals for water, may be reinforced by the study?

141. What possible changes, as more isolated communities are brought into interchange with other communities, have immediate effect upon natural resources? Upon what natural resources? What practices of conservation need to be instituted? What will be the results of inattention to the conservation of natural resources? on the communities involved? on the people? What books for children relate community and personal lives of people with natural resources and conservation practices or the lack of them?

142. What kind of erosion is associated with the geographical terms; ocean, mountain, desert, river valley, harbor, hill, lake, basin, bluff? What conservation practices make these geographical features most useful to man?

143. What evaluative tools such as tests, check lists and reports, and methods such as observation, demonstration, oral review and project work will help the teacher find out about children's ideas with regard to the importance of conservation? What behavioral practices would reveal these ideas?

144. By what means, other than using pictures, may children in various communities study live plants and animals? Are field trips possible? Is a Junior Museum available? Can resource people help? Should children collect wild animals? Should animals be kept at school for a period of time?

145. What kind of community study or observation of the natural environment would reveal children's awareness of the need for conservation?

146. What initiative and refcrendum measures having direct or indirect conservation concern have appeared on the ballot? Why is it important that citizens be informed with regard to conservation needs other than to vote intelligently?

CONSERVATION STUDY

Intermediate Grades (four through six)

1. What features of California topography and climate contribute to the need for extensive conservation practices? What questions might pupils ask a teacher as they examine a topographical map? What questions related to water supply? water sheds? soil? temperature variation? mountain barriers?

2. What are the areas of land and the harbors and waterways of California that people have used and changed? where might old maps be obtained to use with new maps for comparison of these changes? What other kind of resource material might be found? What waterways study would contribute most significantly to conservation understandings?

3. What activity would help children develop understanding of the importance of water to every phase of living and working? Would this be largely a science study? What jobs and industries rely heavily upon the use of water?

4. What are some major resources for teachers in planning curriculum for conservation education? What problem solving situations may be arranged to help children gain insight into the problems and practices of conservation? What conservation problems are most closely related to the local area? water? forest? soil? wildlife? other?

5. What resource materials would be useful to pupils making a study of the use of natural resources by industries in California? From what publications or agencies might facts and figures be obtained to prepare a chart comparing the use of natural resources by industry?

6. What lc . industry may be studied and how may the conservation needs and practices of the industry be determined?

7. How does the interrelationship of industries and development of industries in other parts of the world accelerate the depletion of natural resources?

8. In the growth of agriculture and industry in California what natural factors have been most seriously disturbed?

9. What improvement in agricultural and industrial conservation practices have come about in California? By what means might pupils report this information?

10. What differences between past and present farming and manufacturing have created conservation needs? What practices have helped to alleviate the drain upon natural resources?

11. What activity would help children develop concepts with regard to the impact of population growth upon natural resources? Would the activity be in language arts? reading? writing? in mathematics? counting? proportion?

12. If technology uses natural resources at a rapid rate why do scientists, engineers and inventors continue to study still further technological advancement?

13. What conservation concerns and practices in California have gained national and international recognition?

14. In what respects are conservation practices in California important to the rest of the nation and the world? Are the conservation practices important only with respect to the exchange of goods?

15. What opportunities in conservation education are available in California? How can pupils participate in the educational opportunities? through guidance by teachers and parents? by reading? by opportunity for outdoor experiences?

16. What arts and crafts developed in California would help children develop attutudes with regard to conservation needs and practices? What paintings by California artists relate to the land, the water, the forests? Where may such pictures (prints) be obtained? In what arts and crafts may pupils engage that would help them express appreciation and understanding of California's natural resources?

17. What conservation imprints did various groups of people leave in the development of California? Were forests more wide-spread in earlier days? Did early settlers make extinct or nearly-extinct any wildlife species?

18. What contributions to conservation practices did different groups of people make? What books on California history provide information with regard to such contributions? what children's books? films?

19. What leaders in California history were concerned with conservation of natural resources?

20. What government agencies and laws were established for the purpose of regulating the use of natural resources and conservation practices?

21. What communities in California were developed on their present sites largely because of the abundance of natural resources? What natural resources played an important part in the development of the area in which the school is located?

22. What did early explorers think about the natural resources of California? In what books or documents may such information be found? Might the State Librarian help to locate such material? How does the local library get material from the State Library? Could children obtain material from the State Library? What historical societies are active in the local area?

23. How can maps and globes be used to promote concept development with regard to conservation needs and practices? what maps? In what ways would large wall maps, pupil-constructed outline maps, printed outline maps and maps in textbooks be useful to promote conservation-related knowledge? What should be studied specifically as pupils use maps? topography? rainfall? population? products? What conservation considerations are worldwide and could be indicated on a globe?

24. What aspects of life in the missions were related to conservation needs and practices? Did the making of adobe bricks create a conservation need? What natural Resources were utilized in quantity at the missions?

25. What aspects of life on the ranchos created conservation problems?

26. What major conservation needs did the Gold Rush create? How were the needs dealt with? by private enterprise? by government regulation? What children's books on the Gold Rush would assist in the development of conservation concepts? films?

27. What principal natural features of California should be studied for children to develop concepts with regard to the interrelatedness of nature?

28. What principal man-made features of California contribute to wise resource use? What additional man-made features are planned for the future. What children's books contain information with regard to future plans.

29. What occupations stem from the need for conservation with regard to land use? What local government agencies are engaged in this work? What personnel from these agencies would contribute to conservation education by personal appearance or by supplying materials and information?

30. What activities of people involve the use of natural resources? How could children explore this question? What questions, diagrams, pictures, books, and films would assist them? What topics could be suggested for small-group study? What culminating activity would help children develop concepts with regard to the close relationship of the activities and natural resources?

31. What materials would children need to prepare a comparative map, chart or diagram of the topography, climate and natural resources of the Western states? what resource material for facts? what mathematics for scale measurement? what art and craft skills? What natural resources should be indicated?

32. What are the principal conservation problems in California with regard to water and power? What are the major purposes of such study? of study of growth of cities? of food production? How may the teacher ascertain what the children have learned? What test questions would provide useful evaluation responses? What planned situations would require observable behavior?

33. In what respects are conservation needs and practices in the Pacific area similar or different from needs and practices in California?

34. How does the topography and climate of a selected African or Oriental community affect the conservation needs and practices? Are the conservation needs and practices similar or different from California? What conjecture may be made by comparative map study?

35. What ways of living in the African or Oriental country have heen influenced by abundance or lack of natural resources? what resources in particular?

36. Have people in the African or Oriental country changed their patterns of living because of conservation needs and practices? What local resources might supply information in this regard? Are persons of the culture being studied living in the local community?

37. Have agriculture and industry been altered in the country being studied? What relationship did the change have to natural resources and conservation?

38. Does the country being studied have recreational facilities different from California? What natural resources provide similar recreation facilities? Does the country being studied have governmental agencies concerned with conservation?

39. What modes of transportation in the country being studied draw heavily upon natural resources? Does the construction of vehicles require use of natural resources? what resources? Does the operation of vehicles require use of natural resources? or importation or manufacture of fuel?

40. Do children in the country being studied engage in conservation study? How could pupils obtain information in this regard? Might a sociodrama help children develop concepts with regard to conservation in relation to living conditions in the country being studied?

41. What questions might a teacher ask pupils to stimulate discussion of the feelings, attitudes and ideas with regard to conservation needs and practices by the people of the country being studied? What similarities and differences with the feelings, attitudes and ideas of people in California might be described?

42. What activity may he plan for children that will allow the teacher to evaluate the appreciation of children for the natural resources and conservation practices of the country being studied?

43. Does the country being studied have conservation practices or regulations that would be useful to California? Has California contributed conservation ideas to the other country?

44. What are the principal conservation concerns of Western states? What natural resources and possible related conservation needs are associated with desert regions, mountain regions, coastal regions and valley regions? Could topography, climate and natural resources by studied principally by use of maps? Where may such maps be obtained?

45. Is the character of the people of a country affected by the abundance or lack of natural resources? What questions might a teacher ask children to help them think about the relationship of character and natural resources? What books would help children obtain information in this regard? Are facts available or desciption of stereotype?

46. Are the State Bird, State Flower, State Animal, State Fish, and State Tree abundant or scarce? What conservation measures protect plants and animals in California?

47. Are conservation measures written into law or are they promulgated by private organizations?

48. What private organizations emphasize conservation needs and practices? what children's organizations? How may the school promote children's interest in such organizations?

49. Are up to date, knowledgeable books on many aspects of conservation available to pupils? on forests, water, minerals, soil, wildlife - on cities and rural regions - on needs and practices - on historical, present and future planning? What reference books, encyclopedias and magazines are useful for conservation study?

50. Is sufficient time devoted to science instruction that will help children develop concepts with regard to the interrelationship of science and conservation? How may a teacher ascertain pupils' understanding of the water cycle? of the importance of water to California and other western states?

51. In what ways has the movement of families from every part of the nation and from other lands been influenced by abundance or lack of natural resources? by practice or lack of practice of conservation?

52. What questions might the teacher ask pupils to help them discuss how people may feel about living in the West? Would conservation needs and practices enter into the discussion? Might the impact of conservation needs be greater upon some people than upon others?

53. What customs and ideas with regard to conservation have people brought with them to the local community? What activity would children engage in to find out about such customs and ideas?

54. What has been the effect of migration on natural resources and conservation practices in California?

55. What activities and resource materials would help children develop concepts of conservation with regard to land as part of man's heritage?

56. What responsibilities does claiming of new lands entail? What responsibilities are related to conservation?

57. Does search for gold, riches and adventure work for or against conservation of natural resources? What are some historical examples?

58. What role does conservation play in the dreams of a better way of life? as part of America's heritage? In what ways does the desire for land and wealth, religious freedom, political freedom, new ways of living and new homes create conservation needs? What are some conservation practices that have been developed in relation to these desires?

59. What practices constitute use and misuse of natural resources? with regard to supplying the basic needs of food, clothing and shelter? as people moved from east to west? in the United States today?

60. What demands upon natural resources were made by early discoverers and explorers?

61. What conservation practices were engaged in by early settlers? What books and films contain this information? How did conservation needs and practices differ in various places of early settlement? How do they compare with needs and practices of today in the same areas?

62. What specific natural resources were used by the early settlers to provide for their basic needs? In what respects did they change their kinds of food, clothing and shelter in adaptation to a new environment? to a different supply of natural resources?

63. What evidences of the influence of early thought and action on the present day are concerned with conservation needs and practices? Where may descriptions be found of early thought and action that were beneficial to present day living? detrimental to present day living? What children's books, fiction or non-fiction, would assist concept de elopment with regard to the need for wise use of natural resources at the present time to provide for the needs of people in the future? what films and pictures? Where may these materials be obtained?

64. What are the historical and present day conservation needs and practices of agriculture and industry in the United States? with regard to soil, water, pollution, insecticides and pesticides, wildlife, forests, minerals? Which of these conservation topics would be most appropriate for study by intermediate grade pupils?

65. What science and invention have had direct effect upon conservation needs and practices? What activity would help children consider the beneficial or detrimental effects of science and invention on the lives of people? What sources would be helpful in making a list of scientific discoveries and recent inventions? What questions might a teacher ask to help children formulate criteria for assessment of beneficial or detrimental effects?

66. What aspects of the geography, history and development of Alaska, Hawaii, and possessions of the United States require study of natural resources and conservation needs and practices?

67. What governmental conservation projects are planned for California in the near future? for other sections of the United States? What programs and projects are planned specifically for conservation of human resources? what are concerned specifically with land, water, wildlife, air? What project for pupils would involve the use of daily newspapers, current publications and pamphlet material to find answers to such questions?

68. What conservation practices modifying the environment in the local area would obtain a better life for people of the community? parks? housing? smog elimination? bicycle trails? outdoor education facilities?

69. How might a teacher help pupils express their ideas and feelings with regard to conservation? What school work, including science and art, might be avenues of expression? What out-of-school activities do pupils engage in that develop concepts with regard to conservation needs and practices?

70. What conservation activities are carried on by other nations? What cooperative international efforts have helped to alleviate conservation needs?

71. Why do some people appear not to be concerned with conservation needs and practices? How might a teacher help pupils discuss the need for informed and enlightened citizenry?

72. What happenings in the world today have conservation implications? How do these happenings affect the well-being of the United States?

73. What free enterprise is allowed or fostered by conservation practices?

74. What conservation topics might a teacher propose for children's discussion of individual freedom within the rights of others?

75. What natural resources are abundant in Canada? where large cities have grown? where population is sparse?

76. What general plan for curriculum organization would incorporate attention to the conservation implications with regard to the geographic features, natural resources, agriculture, trade and industry and industrial growth of Canada?

77. In what conservation practices do Canada and the United States cooperate? Are the conservation needs similar? By what kind of arrangement do the two nations cooperate with regard to conservation? exchange of services on the border? financial? scientific research? treaty?

78. What natural resources of Canada might be studied firsthand on a trip over the Alcan Highway?

79. Is the St. Lawrence Seaway a "conservation" facility? In what respects? In what activity could children engage to determine the importance of conservation implications, if there are any?

80. Is the development of power at Niagara Falls an international endeavor? Who paid for it? Who profits from it? What effect did it have upon the lives of people in Canada? in the United States?

81. What physical features of Canada and the United States might account for similar or different natural resources? conservation needs and practices?

82. What criteria would need to be established for a game the purpose of which is to describe the natural resources of Canada by study of topographical, rainfall and population maps?

83. If Canada, particularly the western part, is considered "new land" what regulation of conservation practices might it be wise for the Canadian government to establish? Might this question be the foundation for dramatic interpretation? How would a teacher motivate children to dramatize the situations involved?

84. Who have been leaders in conservation practices in Canada? Are conservation groups, such as the Animal Welfare Institute, Audubon Society, Boy Scouts, Girl Scouts, Campfire Girls, Anti-Smog Citizens Group and clean water advocates organized in Canada?

85. What natural resources characterized the location of the thirteen colonies of the United States?

86. If a "conservation" site of endeavor were to be honored by placing of a monument or presentation of a plaque, how might a teacher motivate children to write a suitable inscription?

87. What conservation needs or practices have been prominent in attempts of the United States to maintain or establish world peace? What controversies with regard to natural resources has the United States had with other countries?

88. In what ways may the authority of the people, separation of powers, checks and balances, and judicial review affect conservation needs and practices? Have people been influential in bringing about conservation practices? In what historical instances? How do people accomplish legislative action with regard to conservation? Do the assembly and senate disagree frequently on legislation for conservation? Are conservation bills before the legislature now?

89. What governmental departments of Canada work on conservation needs and practices?

90. What kinds of conservation problems might be the concern of student government? In what conservation activity might student government members engage?

91. What guidance might a teacher give pupils preparing to participate in a panel discussion on a controversial conservation topic?

92. Are dictionaries, encyclopedias, trade books on conservation and related topics, and current papers and magazines, useful to both slow and rapid readers, available in quantity?

93. What contribution to conservation study might be contributed by specialists in subject fields? science supervisor? health education director? professor of outdoor education?

94. What aspects of conservation study would be especially suitable to help pupils develop information sequentially? for the pupil to think through cause and effect relationships? flood and silted land? forest devastation and erosion? overgrazing and migration of people?

95. Is conservation information garnered on a field trip used as content for organization of facts in outline?

96. What activity of pupils would help the teacher assess their recognition of the interdependence of living things?

97. What contributions of science and technology have contributed significantly to improvement of conservation practices?

98. What machines are useful in conservation practices? How do people engage in similar conservation practices if they do not have machines?

99. What background information and understanding will pupils need to discuss the relationship of energy and conservation?

100. Where may directions for building a solar stove be found?

101. What effect does shortened global travel time have on conservation needs practices? Does it help people make better use of natural resources? or does it create conservation needs?

102. In what ways does instantaneous communication among people around the world alleviate or create conservation needs and practices? in what ways may rapid communication allow better use of natural resources? by facilitating transportation? by earlier notification of natural disasters? weather information?

103. What earlier advantages of location and natural barriers, which helped to preserve natural resources, have been modified by aviation?

104. What use of natural resources has been increased by the effects of air transportation and communication on trade, customs, ideas, defense, economic status, industry, cultural exchange? Which countries have been most radically affected?

105. Have modern means of transportation and communication affected conservation practices, to the improvement of the well-being of people throughout the world?

106. What international responsibilities have been created by increased conservation needs and practices?

107. What new international rules and regulations affecting natural resources and conservation have been made by mutual agreements, study and research?

108. What work of the United Nations has been concerned with use of natural resources and conservation practices.

109. Has more detailed study of the earth as a planet resulted in increased knowledge with regard to use of natural resources? or pointed up needed conservation practices?

110. What effect does the earth's tilt, rotation and movement have on natural resources and conservation in various parts of the world? Is the effect other than seasonal change?

111. What influence do prevailing winds and ocean currents have upon natural resources and conservation needs and practices in countries of the world?

112. What project would help pupils understand the conservation needs and practices brought about by changes in weather and variations in climate?

113. What earlier concepts with regard to conservation needs and practices in the western hemisphere have been modified since times of early settlement?

114. What communities of nations have developed conservation practices to make better use of natural resources? what practices? what natural resources? for what purpose?

115. What conservation practices have helped people in other American countries improve their way of life?

116. What scarcity of abundance of natural resources has influenced various patterns of life in other American countries?

117. What conservation practices have fostered growth and progress in other American countries?

118. What questions might a teacher ask to help pupils discuss the importance of development of and wise use of natural resources in other American countries?

119. What significant similarities and dissimilarities among Latin-American countries underlie significant conservation needs and practices? Are these similarities and dissimilarities only topographical patterns or are political and cultural patterns involved?

120. In what instances is the growing importance of Latin-American countries traceable to improved use of natural resources?

121. What past and present relationships of Latin-American countries with our state and nation are related to wise use of natural resources and conservation practices? From what source is information available with regard to the California-Chile project?

122. In what ways may the desire of Latin-American countries for independence be linked to the scarcity or abundance of natural resources? Does independence of a country tend toward wiser use of natural resources? What factors may be involved? desire for better health? better nutrition? more products to trade? improvement of housing?

123. What mutual aid among Latin-American countries has improved the use of natural resources and conservation practices?

124. Have technological advances led to improved conservation practices or depletion of natural resources? Did the building of Brasilia necessitate conservation practices? What use is made of the abundant water supply in some sections of Latin-America?

125. In what ways are North and South America linked together with regard to the use of natural resources and conservation practices? What became of the rubber plantations when synthetic automobile tires became available? What natural resources of South America complement the natural resources of North America?

126. What prevailing land use practices in a selected country of South America would be improved by conservation practices? What conservation practices? contour plowing? use of fertilizer? crop rotation? What evaluative means may a teacher use to find out pupils' understanding of the influence of topography and climate on natural resources?

127. What attitudes and beliefs of the people of the selected country influence wise use of natural resources and conservation practices? What books for children give background information in this regard? What questions might a teacher ask to help children write about or discuss the potential for the future wise use of natural resources and conservation practices in the selected country?

128. What projects would help pupils increase their understanding of the development of and wise use of natural resources and raw materials? Are local examples of development and wise use of natural resources available for comparison with a selected South American country?

129. What map and globe study coupled with science knowledge with regard to the needs of plant and animal life will help pupils learn more about the influence of topography and climate on natural resources?

130. What early exploration and colonization of the Americas was inhibited or promoted by natural resources? What books, films and other resources are available for pupils' use?

131. What are some significant events of countries of the Americas which are linked to scarcity or abundance of natural resources? What questions might a teacher ask to help pupils consider the relationship of historical events to natural resources.

132. What evidences of conservation practices have been revealed in the historical sites of the Toltecs, Aztecs, Mayas and Incas? What children's books are available on these ancient civilizations?

133. Do ideologies of other countries give attention to the wise use of natural resources and conservation needs and practices? How may a

teacher help children discuss this question? discuss the importance of consideration of natural resources?

134. Does the Bill of Rights have any section that implies wise use of natural resources or conservation needs or practices?

135. What increased world responsibilities on the part of the United States are related to the scarcity or abundance of natural resources in other countries or in the United States? Are some of these responsibilities related to membership in the United Nations?

136. What mutual agreements between countries for trade and defense have been arranged primarily to expedite procurement of materials provided by natural resources not available in one country or the other? What needs of industry are involved? what basic needs of people?

137. What specialized agencies of the United Nations provide advice and assistance on conservation practices?

138. What student government activity, providing participation for all pupils, may be in the area of conservation practices in the local community? What local agencies might cooperate in conservation projects?

139. How may a teacher help pupils prepare a list of criteria for consideration of the conservation practices typical of independent and informed citizens? with regard to school citizenship? community citizenship?

140. What controversial conservation problems might be discussed pro and con by pupils? What skills and knowledge of conservation would be helpful to a panel leader of such discussion?

141. What natural resources are used in development of forms of energy for peaceful use? How may atomic energy be used in the production of electricity? How may a teacher interest pupils in the development forms of energy? What topics might be useful for small-group or individual study?

142. What children's books on outstanding scientists and conservationists are available?

APPENDIX C

Recommended Bibliography

In such a diverse area as is being considered here, learning does not proceed through the use and digestion of a textbook. There is no single conservation textbook adequate for the sound preparation of teachers. In this light, we have compiled a bibliography to show a sampling of the kinds of background and reference materials necessary for enlightened understanding of the mutual interrelationships between man and his environment. Man is too numerous, specialized and dependent to survive in ignorance. He needs both knowledge and a philosophy to establish and sustain a harmonious relationship with the land on which his survival depends.

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