

# Conservation Films in Elementary Schools

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## Contents

	Page
FOREWORD.....	v
FILMS AS AIDS IN TEACHING CONSERVATION.....	1
Evaluating and selecting films.....	1
What standards should be followed?.....	2
Relation of film content to curriculum.....	3
Suitability to children for whom intended.....	4
Contribution to educational objectives.....	5
Technical qualities.....	6
Summary of standards.....	7
Suggestions for using films.....	8
Preparation for viewing film.....	8
Viewing the film.....	10
Follow-up activities.....	12
Discussion.....	12
Experiments.....	13
Summaries and reports.....	14
Evaluating cards.....	14
FILMS ADAPTED TO TEACHING CONSERVATION IN THE ELEMENTARY SCHOOL.....	15
Annotated list of films on conservation.....	16
Supplementary list of 12 films on conservation.....	37

## Foreword

For the past 33 years, since Theodore Roosevelt, then President of the United States, called the first conference of governors in American History to be held at the White House, the conservation of natural resources has been a national policy. The purpose of conservation education is to develop attitudes and ways of living which contribute to the conscious preservation and intelligent use of our natural resources.

The school's part in achieving this purpose is a fundamental one—for the present as well as for the future. Because our country is fortunate in being "bountifully endowed," as the President said in his address dedicating the new Interior building in 1936, we have not yet realized the full effects of the "exploitation, waste, and mismanagement" to which our national wealth has been subjected. The schools can assist materially in halting these activities and neglects through promoting changed attitudes in our boys and girls, making them not alone better conservationists but also better Americans.

This pamphlet is dedicated to the achievement of the purposes indicated. It is designed to help schools teach conservation more effectively through one of the newer teaching techniques—the use of moving pictures in classrooms throughout the country.

It suggests standards for the selection of films of educational value and gives practical suggestions for applying them as well as for using the films selected according to good classroom practices.

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## Conservation Films in Elementary Schools

### *Films as Aids in Teaching Conservation*

**T**HE MOTION PICTURE is a vivid aid in understanding how the Nation's natural and human resources have been wasted and how the remaining supply can be wisely conserved. It reveals truths not always shown by the words of a printed page, by flat pictures, slides, stereographs, experimentation, or even by observation.

For example, one may read about a gully without becoming particularly alive to its significance. Flat pictures bring life to the printed facts and clarify their meaning. Stereographs add distance and perspective to the view presented by flat pictures. A still film can show continuity of views, but a good moving picture may do much more. It not only adds continuity, but if the views are well selected, may show changes and their relationships to material forces over a period of years. It can show the gradual erosion that tends to deepen gullies, as one illustration, and events which finally lead to the dust-storms of recent memory, as another. The portrayal of movement, of the rise of waters leading to floods, or the destruction of forests by fire, are other examples of subject matter that can be presented by films more effectively, perhaps, than by other means.

Again, in numerical and graphic representation, the motion picture is useful in the placing of emphasis. Most teachers of geography find it more impressive to sketch a map as they talk than to unroll a completed, printed one. The same technique, that of presenting a situation with a map or chart developed during discussion, may be effectively transferred to the screen. Simple charts showing certain statistical information are developed in some informational films.

### *Evaluating and Selecting Films*

While an ever present obstacle to the use of films in the classroom is the cost of the initial equipment, many school systems, large and small, are now able to overcome it. The next and most immediate problem, once the decision to use films as a teaching device is made, is that of selecting films best fitted to the particular purposes to be achieved. Fortunately films adapted to teaching conservation in the elementary school are not lacking in number or in quality. They may be found among those prepared especially for children and among



those which, though prepared primarily for adults, can be adapted to children's use if proper preparation is made in advance of their presentation.

Conservation films are especially rich in stimulation and information for audiences aware of present conditions with respect to the Nation's resources, the social and economic history underlying conservation problems, and the difficulties involved in the development of a constructive remedial program. On the other hand, groups only slightly informed on the subject, who have only a meager historical, economic, or geographical background, and who have not thought seriously about the Nation's need for a positive program of conservation, are apt to observe more or less passively. Careful selection of appropriate films adapted to the particular group to which presented, and adequate preparation to insure understanding and appreciation, are essential when children make up the viewing group.

Selecting films for teaching conservation is not a matter of glancing over the course of study and preparing lists of motion pictures on topics related to it. Films should be chosen as thoughtfully as books. The way in which the selection is made will depend in large part on the type of school system concerned. In large systems, State or city, for example, there may be a director of visual instruction whose duties include the selection of films for the system. He will doubtless call to his aid committees of teachers, subject-matter specialists, and others. In small systems the superintendent, principal, and teachers will consider and agree on the best method of selection—probably committees representative of the groups concerned offer a good solution. In still smaller systems the teacher alone may be the one responsible for the selection. In all cases she should be an active participant. The fact that the study of conservation is not limited to the classroom but is more specifically an activity subject, means that the teacher who knows the environmental problems in the curriculum is the one best able to decide whether or not to use a film, as well as to select the one to be used.

Some authorities wisely advocate giving children a greater part in the selection of films than they now have. Their evaluations should be helpful to any selecting committee, and the experience of sharing in the choice is an educative activity especially valuable in the formation of the habit of viewing all motion pictures critically.

### What Standards Should Be Followed

Setting up of standards to guide in selecting motion pictures for any type of classroom use is desirable, and especially so in teaching conservation, since adaptation to local needs and situations is particularly necessary and available films cover various phases of conser-



vation. Studies have been made of standards for the selection of motion pictures for instructional purposes. An analysis of these has emphasized the following points which are believed to be particularly applicable to intelligent selection of conservation films for use in elementary schools: (1) Content in relation to the curriculum; (2) suitability to children of the grade or maturity in question; (3) contribution to the educational objectives set up for the unit of instruction in which it is used; and (4) technical elements in relation to photography, continuity, titles, and other items.

#### **Relation of Film Content to the Curriculum**

The content of the film selected should have value for the regular curriculum. Points useful in determining such value or values are theme, problems, facts, activities, and range of usefulness with respect to school grades. Considerations helpful in judging films on these points are:

(a) The theme should be limited in scope, significant, and related to the curriculum. For example, in connection with a unit on soil conservation, a theme such as "Continuous plowing of grasslands loosens soil, which is then washed away" is limited in scope and is significant. On the other hand the theme "Plowing grasslands, cutting forests, and planting the same crop year after year, disturb nature's balance," although significant, is too broad in scope to be treated thoroughly in a single film for elementary pupils. A fantasy on the growth of trees would have little or no significance for conservation education. A film concerned with problems of unemployment is an example of one not related to the curriculum in the primary grades.

(b) A film should incorporate problems which stimulate original thinking rather than one which merely entertains by the presentation of interesting facts without problems. For example, a film may portray animals in a zoo in a way which children find interesting. If, however, it suggests no reason why the animals are in captivity, raises no question as to the scientific purposes of the zoo, presents no problems for study of the natural state of the animals or their preservation in natural parks, it is of less worth than one which, although not so entertaining, challenges thought.

(c) The facts in a film should be significant, concrete, related to the theme, and sufficiently detailed to be interesting without cluttering the scenes or interfering with desirable emphasis and proper subordination. The film should contain a preponderance of facts not available in the environment; otherwise the children can learn as much at less expense through an excursion or some everyday experience.



(d) Conservation films most appropriate for elementary grades are those that include enrichment for activities in progress and stimulation for new activities.

(e) A film which can be used by several grades is more desirable than a film which is suited only to one. Some curricula<sup>1</sup> provide activities in which the entire school can participate, and films selected for these activities are more economical than those in which only one grade can engage.

### Suitability to Children for Whom Intended

A film is suitable for children if it is adapted to their age and needs, is interesting and simple, and constructive with respect to conservation problems.

(a) A conservation film should meet the immediate needs of pupils by providing information adapted to their maturity level, by demonstrating skills desired for conservation activities such as gardening or building terraces, and by affording stimulation for new activities and problems.

(b) Interest qualities aid in determining suitability. The problem for the teacher reviewer is to decide what qualities contribute toward interest among children. While there are no scientifically defined standards for judging interest, general qualities suggested in available studies<sup>2</sup> of the motion picture and of reading material help one to judge interest values. Among these qualities are movement and liveliness, variety, humor, story element, and correlation with familiar experiences. Movement and liveliness are readily recognizable. Variety is shown in action, types of shots, and content. Qualities of a good story, such as suspense, interrelation of facts, and a satisfying climax and close, add interest. They are not incorporated always in purely information films, but usually are found in documentary films designed for emotional appeal.<sup>3</sup>

(c) Simplicity should be judged according to the abilities of the pupils, by study of the approach, theme, organization, vocabulary,

<sup>1</sup> U. S. Department of the Interior, Office of Education. Conservation in the education program. By William H. Bristow and Katherine M. Cook. Washington, U. S. Government Printing Office, 1937. (Bulletin 1937, No. 4.)

U. S. Office of Education, Federal Security Agency. (Formerly U. S. Department of the Interior, Office of Education.) Teaching conservation in the elementary schools. By Effie G. Bathurst. Washington, U. S. Government Printing Office, 1940. (Bulletin 1938, No. 14.)

<sup>2</sup> Dunn, Fannie W. Interest factors in primary reading material. New York, N. Y., Teachers college, Columbia university, 1921. 70 p. (Contributions to education, No. 113.)  
Gates, Arthur I. Interest and ability in reading. New York, N. Y., The Macmillan Co., 1931. 264 p. illus.

George, William H. The cinema in school. London, Sir Isaac Pitman & Sons, Ltd., 1935. p. 24-34.

<sup>3</sup> Brunstetter, Max R. How to use the educational sound film. Chicago, The University of Chicago press, 1937. p. 47.



geographical or historical allusions, and length of showing. Examples of simple approaches are items of child interest, pupil activities, and familiar problems; examples of more difficult approaches are historical incidents and unfamiliar problems. A simple organization consists of three or four sequences only, whose relation to the theme is definite. Film showings should be adapted in time length to the age of the children concerned. For young children a film should not last more than 10 to 13 minutes.

(d) Constructiveness is an important element in suitability in a conservation film. The problems of waste of the Nation's resources are tragic, and if portrayed on the screen without suggestions for remedial measures, may be too exciting for children. Constructiveness can be judged by the extent to which the film leaves hopeful rather than harrowing implications, suggests or presents remedial measures, places responsibility accurately and clearly or not at all, and suggests ways in which children can participate in conservation activities.

#### Contributions to Educational Objectives

A film should contribute to one or more definite educational objectives. Among the objectives of conservation education are understanding of principles and facts, development of attitudes, growth of interests, and acquisition of skills.

(a) A film's value in gaining desirable understandings can be judged by the facts and principles it presents. In all its presentations it must be accurate and free from propaganda. The important facts of conservation deal with wild-plant life, wild-animal life, soil, water, minerals, and human resources. The teacher who reviews the film should be familiar with these facts. Some principles of conservation with which children should be familiar are: (1) Resources inadequate to the Nation's future needs should be conserved by reducing waste and using only what is necessary to preserve advanced standards of civilization; (2) resources so abundant that they cannot be exhausted should be used freely and substituted for limited resources whenever possible; and (3) renewable resources should not be used faster than they can be replaced.

(b) A film's contribution to the development of attitudes must be judged in relation to the probable emotional responses of the pupils. Among the attitudes toward conservation which may be cultivated are a sense of responsibility, appreciation of natural resources and their importance, and a tendency to do something to conserve them.

<sup>4</sup> Van Hise, C. R., Loomis Havemeyer, and others. Conservation of our natural resources. Rev. ed., edited by Loomis Havemeyer, and others, based on Van Hise's Conservation of natural resources in the United States. New York, N. Y., The Macmillan Co., 1937.



To judge a conservation film one should know and consider the children's environment, previous study and information, and habits of thought. From such considerations one should be able to foresee the emotional response to various types of films.

(c) The contribution of a film to the development of permanent interests can be rated by the way it stimulates children to seek information in printed material; to take field trips, visit museums, and engage in conservation activities; or to encourage interest in conservation among others.

(d) The worth of a film for developing skills should be judged by the correctness of the demonstration. Among conservation activities requiring skills that can be shown to advantage on the screen are: Gardening; setting out trees, plucking wild flowers, protecting soil from erosion, building preserves for protecting birds and wild animals, and building and extinguishing picnic fires.

### Technical Qualities

A film should be correct technically. Among technical elements to be judged in films are continuity, photography, commentator's speech, music, and titles. Following are considerations in judging these elements:

(a) *Continuity*<sup>5</sup> can be judged by the treatment of sequences or episodes, scenes, time lapses, and climax. The sequences in a film should be necessary to the development of the theme, with minor situations subordinated. Only scenes that contribute to a sequence should be included, and they should be repeated as often as necessary to maintain the continuity. Scenes should include but few ideas, and should remain on the screen long enough to give the audience time to think critically, but not long enough to become tiresome. The climax should result as a definite solution of the situation developed.

(b) *Photography* may be judged by effectiveness and composition, important elements in the general impression one gets from a film. Among the factors which contribute to effectiveness are steadiness; lighting that gives clear, pleasing impressions of the objects on which attention is to be focused and causes no eyestrain; variety of shots with preponderance of close-ups; views taken from angles which are interesting but not too unfamiliar; variety in placement of objects on the screen, due to skillful technique in focusing the camera; and skillful photography such as slow-motion scenes, microphotography, and animated drawings. Among the characteristics of good compo-

<sup>5</sup> A characteristic of motion pictures whereby scenes and sequences are linked together for the orderly exposition of ideas or the chronological development of narration, giving a film power to present relationship of cause, chronology, location, and growth. Brunstetter, Max R. Op. cit.



sition are the placement and portrayal of objects, which should be few and well distinguished; harmonious arrangement of light and dark; conformity of lines, balance, and mood to the principles of art; and limitation of attention-attracting devices, such as arrows.

(c) The *commentator's speech* can be judged by voice, content, rate, and synchronization. It should supplement the scenes of the film without stating ideas that are obvious in the picture. The commentator should not speak too fast. Speech, music, and scenes should be correctly synchronized.

(d) *Music* should be appropriate from the children's point of view and synchronized with film and commentator's speech.

(e) In silent films *titles* are judged by pertinence, simplicity, and usefulness. They should direct attention to important ideas which might be missed without them, should be simple in wording, not too long to detract from interest in the pictures, and should carry forward the narrative or exposition by presenting facts which the pictures cannot present so well.

### Summary of Standards

Four standards or criteria are suggested in the preceding pages for evaluating conservation films with a view to their use in elementary school classes. Each is broken down into topics and these in turn into subtopics representing considerations significant in arriving at an intelligent conclusion. For convenience in applying the standards suggested a summary of points emphasized in the discussion follows. A general rating can be recorded if desired. This may be done by writing Good, Fair, Poor, or A, B, C, etc., if preferred, first after the subpoints as guides in rating the major points and finally in rating the film under each standard suggested.

1. Content in relation to the curriculum \_\_\_\_\_
  - (a) Theme or subject or points of emphasis:
    - (1) Limited in scope \_\_\_\_\_
    - (2) Significant as to subject and facts presented \_\_\_\_\_
    - (3) Related to curriculum \_\_\_\_\_
  - (b) Problems:
    - (1) Significant problems presented \_\_\_\_\_
    - (2) Local problems enriched or extended \_\_\_\_\_
    - (3) New problems and questions suggested \_\_\_\_\_
  - (c) Facts:
    - (1) Significant and related to theme \_\_\_\_\_
    - (2) Not available in environment \_\_\_\_\_
  - (d) Activities:
    - (1) Enrichment of those in progress \_\_\_\_\_
    - (2) New ones suggested \_\_\_\_\_
  - (e) Adaptations:
    - (1) One or several grades \_\_\_\_\_
    - (2) One or several units \_\_\_\_\_



2. Suitability to children of the grade or maturity level in which to be used ———
  - (a) Adaptation to children's needs: Information; demonstration of skills; stimulation ———
  - (b) Qualities of interest: Movement and liveliness; variety; surprise; human; qualities of a good story; correlation with personal experiences ———
  - (c) Simplicity: Approach; theme; organization; vocabulary; length of showing ———
  - (d) Constructiveness: Implications (hopeful or harrowing); remedial measures; responsibility placement ———
3. Contribution to educational objectives ———
  - (a) Understanding: Facts concerning specific resources; principles of conservation ———
  - (b) Attitudes: Appreciations; sense of responsibility; tendency to act ———
  - (c) Persistent interests: Reading; trips; activities ———
  - (d) Skills (examples): Gardening; tree planting; conserving soil; protecting birds and animals; building and extinguishing picnic fires ———
4. Technical qualities ———
  - (a) Continuity: Sequence; type of scenes; time lapses; climax ———
  - (b) Photography: Effectiveness; composition ———
  - (c) Commentator's speech: Voice; content; rate; synchronization ———
  - (d) Music: Appropriateness of selections; synchronization ———
  - (e) Titles: Pertinence; simplicity; usefulness ———

### Suggestions for Using Films

#### Preparation for Viewing Film

In general, both the teacher and the children, especially those of elementary-school age, need careful preparation if they are to profit from the use of films in connection with a unit on conservation. Part of the teacher's preparation consists in planning to take advantage of all the opportunities for learning which the film affords. For example, if the unit began, as it should, in a real situation, such as making or improving a garden, attracting birds, transplanting trees, or a similar activity, the film will offer suggestions for further activities. For children interested in motion pictures from the viewpoint of film art, of whom there are some in any group, the teacher should not overlook the opportunity to develop the love of art and natural beauty which a good film stimulates by the use of light and shadow, cloud effects, and pictorial expression of moods. Other opportunities offered by films are: To secure information covering a wider field than the study of the children's own environment affords; to emphasize universal facts and conditions; and to clarify and summarize



information only vaguely realized before because of children's limitations in experience.

Insofar as possible, of course, the children's rather than the teacher's purposes are the important consideration in presenting and viewing as well as in selecting films. When a child views a film for a purpose distinctly his own, the experience really registers. Individual pupils as well as different classes, the latter according to maturity levels or environments, may well have different purposes. These and other considerations suggest the need for the teacher's viewing the film in advance of its use in the classroom to insure familiarity with its possibilities; the manual, if one accompanies it, will offer suggestions; notes made during the teacher's preview will guide in planning the children's viewing. The teacher may find it helpful to analyze the content of the film by standards suggested on previous pages and make notes to guide her teaching.

Following her preview, the teacher might—

Note whether the film is suitable for enriching activities or summarizing information.

Note its contributions to various educational objectives.

List statements or note scenes that have characteristics of propaganda to be checked or questioned.

Note facts, problems, scenes, vocabulary, and historical or geographical references that will be difficult for the pupils.

List scenes which will need to be supplemented by still pictures, maps, graphs, reading, or explanation.

Note concrete experiences which will help children to make better use of the film.

Write questions for discussion.

Note musical selections and especially effective scenes or sequences to which children's attention should be called.

List activities in which the pupils can engage after they have viewed the film.

In organizing her procedure for using the film the teacher might:

Gather material for use in connection with the film: Pictures, books, maps, slides, and magazines.

Plan ways of using this material in learning situations preceding the showing of the film.

Plan activities in which the film will be helpful.

Plan questions the film will help to answer if the children ask none themselves.

Plan follow-up activities.

After reviewing the film and otherwise preparing herself for its presentation, the next step for the teacher is that of preparing the



class to get the most value from the showing. Among other possibilities the teacher may assist the class to review facts and experiences gained on excursions and in other activities of the unit. It is especially helpful, if the film portrays information similar to that in a picture previously viewed, to recall significant questions which have been reserved for the showing of the film or to suggest questions if none have been raised by the pupils. The teacher may suggest items particularly worthy of attention; may remind individual pupils of assignments to be undertaken such as giving reports on the film to classmates not present when it was viewed; may read or have the class read a review of the picture if one is available; and may show still pictures of important scenes in the film.

Study of still pictures in advance of viewing a film helps prepare pupils to observe details and is especially desirable for children for whom the scenes on the screen move too rapidly. Pictures used for this purpose should be incorporated in the unit rather than presented solely in preparation for the film. For example, in a study of the conservation of fur-bearing animals, pictures in books can be used to teach the children what the animals look like. This gives them a background and makes them sensitive to the conservation aspects of the film and to the habits of the animals portrayed.

### Viewing the Film

Viewing a film is profitable to the extent that the picture selected is appropriate for a specific purpose, the teacher's and pupils' preparation carefully made, and skillful teaching employed in connection with the observation.<sup>6</sup>

Items for special consideration are the introduction of the film; the order of showing, whether for the first time or not; the place, whether an auditorium or a classroom; the frequency of showing; assurance of adequate background for understanding; and consideration of pupils' individual needs and abilities.

The best way to introduce a film, provided the pupils have a purpose for viewing it, is just to show it. Long introductions detract from interest and weary the pupils. The first time a film is shown children should be allowed to view it without interruption. The usual method of initial showing is to present the picture with the commentator's speech from beginning to end without stopping for discussion, questions, or pupils' individual difficulties. If the commentator's

<sup>6</sup> New York State Association of Elementary School Principals. Visual aids in the schools. Committee on educational progress, visual aids division. Ithaca, N. Y., Thomas Griffiths Sons, Inc., 1935. p. 32-151. (Bulletin IV, December 1935)

Dale, Edgar, and others. Motion pictures in education. A summary. American Council on Education, Committee on Motion Pictures in Education. New York, N. Y., The H. W. Wilson Co., 1937. p. 113-242.



speech is not desired, the teacher's comments can be substituted or the film can be shown without commentary. After a film has been shown once without interruptions, subsequent showings can be interrupted as often as necessary for the children or teacher to ask questions about difficult points, for discussion of scenes of special interest, or to aid individual pupils.

The place available for showing the film helps to determine ways of studying it. It is easier to adjust sound to an auditorium than to a classroom, and in many school systems the expense of equipping a classroom is prohibitive. Equipment, however, is becoming less expensive and more adequate and teachers find the new projectors easier to adjust than the old. Therefore, when a school system is large enough and the use of films extensive enough to warrant the expense, it is advisable to have several classrooms, as well as the auditorium fitted for motion pictures. An auditorium is suitable for initial viewings of films when it is not expected that the showing will be stopped for discussion or questions. It is not appropriate for second and third showings because it is too large for discussions, and because it cannot be secured as often as necessary for sufficient study of the film.

To get the most out of a motion picture, one should be able to concentrate on a main idea and follow it throughout; to formulate the theme; to find problems; to answer questions assigned; to remember facts and to note inaccurate or questionable facts; to note objectionable use of propaganda; to apply information; and to criticize photography.

The attitude with which a pupil views a film affects learning. An attitude of study is important. Children who are accustomed to viewing films in theaters for entertainment only are at first unable to find themes or problems in classroom films or to discuss them intelligently. Desirable attitudes, however, can be developed. Using the film in a classroom as a part of the lesson, rather than in an auditorium in cooperation with other classes, aids in the development of attitudes of study.

It is important that children be taught to observe films with an attitude of criticism with respect to subject matter, photography, and story. It is helpful to make note of statements or scenes to be checked with written or verbal opinions of authorities. In films, as in reading, children should regard the statements or opinions of single authorities as tentative until found to be in agreement with other authorities.

In the showing of a film, as in the use of other materials of instruction, individual needs can be considered. For work undertaken before the initial showing children can be given special help such as being told in what scenes of the film to look for their assignments, having



difficult words explained, or historical allusions made clear. After the initial showing the teacher will know the kind of guidance various pupils need by noting the questions they ask, their comments and criticisms, and their attitudes.

### Follow-up Activities

To benefit most from educational films, pupils should apply the ideas presented and, if necessary, the teacher should help them to make practical applications such as incorporating the film into the other activities of the unit or into new activities suggested by the picture. Like the other activities of the unit, they should not be assignments made by the teachers. They are more educative when the teacher leads the children to initiate, plan, and assume the responsibility for completing them. Activities which may follow viewing the film, especially one that is incorporated into a unit are: Discussion, experiments, summaries and reports, evaluation of films, and taking part in local enterprises of conservation.

*Discussion.*—Some type of discussion, generally related to the unit, should follow viewing the film. Certain situations stimulate lively discussions if the teacher makes use of them when they arise. For instance, if the film portrays facts which help to answer questions, certain pupils may review them to be sure that the class makes the application. The facts of the film may need to be compared with information gained from texts and reference books and differences discussed. If the picture presents facts which have not been found elsewhere, special attention should be called to them. If the film contains inaccuracies, these should be pointed out by teacher or pupils.

Pupils frequently have differing opinions about the problems, theme, or information presented by a film and disagreements follow. These may be resolved by discussion, and especially erroneous conceptions can be corrected. Solutions and remedies suggested by the film for conservation problems should be compared with solutions which the children have read about or with things which are being done in the community to solve similar problems. Questions which the pupils ask can be answered, and scenes which were not understood can be explained. In the discussion period the teacher has opportunity to observe difficulties of individual pupils who need special attention.

Discussion should lead to further activity; not cease with the close of the class period. In disagreements which cannot be resolved in the discussion, the children may need to view a certain part of the film again, look up facts in texts and reference books, or seek information in newspapers or magazines. Certain pupils can assume



the responsibility of reporting to the class information in newspapers or magazines to which they alone have access. If the film fails to give all the information the children need or have expected in solving problems or answering questions, it must be supplemented by other sources, which in some cases can be sought by the pupils and in others can be pointed out by the teacher.

Certain facilities for showing films promote discussion; lack of them may hinder it. Showing films in auditoriums to audiences composed of several classes is not conducive to discussion. In a classroom, however, the group of pupils is smaller and frequently engaged on the same unit, so when a question or argument arises, relatively more pupils are interested in it; the working schedule is more readily adjusted to immediate needs; and discussions of the film can take precedence over other work when desirable.

Correct teaching technique facilitates discussion. Though the teacher remains in the background when the pupils can proceed without her, she should be ready with a pertinent question if the children wander from the point. She should draw retiring pupils into the discussion. She should be quick to show again any part of the film for which the discussion reveals a need. When suggesting assignments for reports she should give exact page references and be definite in pointing out work to be done.

Teachers and pupils should discuss the application to be made of the more practical films, especially those which teach skills or present facts which can be applied in an activity of the unit. For example, suppose the pupils have viewed *Preparing for a Garden*<sup>1</sup> for the specific purpose of learning how to prepare a hotbed or a cold-frame, and how to use them. After seeing the film the class should discuss the ideas it gave them and plan how they will put these ideas into practice when they begin their work in a garden.

*Experiments.*—Environment helps to determine the types of experiments needed. City children who have observed in a film that loose soil on slopes is washed away by heavy rain can arrange soil on sloping boards, sprinkle it with a watering pot, note how fast it washes down the slope, and compare various kinds of soil and slopes with various degrees of slant. They can perform experiments to show how well various kinds of soil retain moisture. Rural children can experiment outdoors with the use of various vines, trees, or shrubs in filling gullies; test soil and water; and apply the conclusions at which they arrive.

Scenes in films may suggest cartoons to children who are of artistic bent. In connection with films about wildlife they can study Ding Darling's work, which may lead some of them to attempt original cartoons. Other children can use ideas of films for posters to be placed

<sup>1</sup> Reviewed on pp. 27-28.



in public places. Others may want to make scrapbooks, keep notebooks, or write verse or prose.

*Summaries and reports.*—There should be a definite use or purpose for summary or report if either is required. Written reports giving answers to questions are helpful to children who were absent when the film was shown, and to classes which have no chance to see the films. When pupils or classes are trying to decide what films to see, summaries or reports of films seen by other classes are helpful, particularly if facts of the film are accompanied by opinions as to their value and suggestions for their use.

Variety of form adds to pupils' interest in summaries and reports, provided the form chosen meets the purpose. A review of content, for example, is useful to a teacher or a class committee in selecting a film for a certain problem or activity. Written criticisms of films viewed by several classes afford interesting items for a school newspaper or a library bulletin board. A column for the bulletin board or school paper is interesting if it contains reviews prepared by pupils who have seen the film in advance of others. Such a column can be entitled *Films You'll Wish to See* or *The \_\_\_\_\_ School Screen*. Well-prepared oral reports on interesting films can be given for assembly programs on films observed by only a few pupils or by one class. Tests composed by groups of pupils afford a means of reviewing facts, when this is desired, for pupils who construct the tests as well as those who answer them. Usually much teacher guidance is necessary to secure questions and statements which are significant and which require a review and selection of facts for their answers.

*Evaluating cards.*—It is sometimes worth while for children to keep a file of cards on which the class has evaluated the conservation films observed. Teacher and pupils can together develop a set of questions, topics, or standards, and these can be hektographed or written on cards for the children's use. The class, or an evaluating committee, can select the best set of questions for the permanent file. Such a file can be used by other classes to help them decide what conservation films they wish to see. The pupils will be pleased if their evaluations of a rented film can be used by the director of visual instruction or the superintendent in selecting films for purchase.

Following are examples of questions and topics which pupils in upper grades can be helped to develop for such an evaluating card:

Title of film

Type of film: Documentary

Informational

Title of unit for which shown

Theme or problem of the film

In what way is the theme or problem important in conservation?

For what activities is the film useful?



With what written authority do its facts agree?

What statements seem to be objectionable propaunda? Why?

- (a) Undue appeal to emotions
- (b) Extravagant emphasis on principles which most people accept without thinking.
- (c) Placing unwarranted blame on any single group
- (d) Appeal to racial or local prejudice
- (e) Ridicule
- (f) Sarcasm
- (g) Statements not warranted by the facts

How was the film used by the class?

- (a) What questions did it answer?
- (b) For what conservation activities was it useful?
- (c) What discussion grew out of it?
- (d) What activities did it suggest?

What was the most effective scene?

How should the photography be rated?

How should the commentator's remarks be rated?

Topics such as the following can be included in an evaluating card developed and used by lower intermediate grades:

Title of film

What the film was about

Most useful part

Most interesting part

The scene we liked the best

Things the class could do after seeing the film

## Films Adapted to Teaching Conservation in the Elementary School

The accompanying list of motion pictures dealing with the conservation of natural resources and suitable for use in the elementary grades has been selected and analyzed in the U. S. Office of Education. The annotations, in addition to brief descriptions of the content of each film selected, include suggestions for their appropriate use in the classroom.

This list was prepared to assist school officials, especially teachers, interested in teaching conservation in the elementary school and in the use of films as one means of achieving that end. It should serve more than one purpose, pointing the way both to the use of newer materials of instruction and to a newer method of presenting such materials. It should fill a need since it presents a list of films definitely adapted to the particular purpose of teaching conservation; it should stimulate broadening the environmental experiences of the teacher and children; and it should suggest the further use of films as an available technique for instruction in other curricular materials as well as in conservation.



The films in the list have been selected because of their adaptation to use in the elementary-school curriculum on whatever basis organized; their value in presenting conservation materials; the leads offered by their presentation to further educational experiences in the children's environment; and to continuing interests in activities concerned with or allied to conservation education. The annotations include a brief description of the content of each film, to give the teacher an intelligent idea of its adaptation to her particular class; suggestions concerned with the educational objectives to which a film contributes; the background needed by the children who are to benefit by the presentation of the film; types of supplementary material which enhance the film's educational value; topics for discussion after viewing the picture, and follow-up activities suitable for children of the grade levels to which the film is adapted.

Following the annotated list is a supplementary list of 12 conservation films, including the source from which each can be obtained, and a brief description of its content to serve as a guide to the further use of films for teaching conservation of forests, wildlife, soil, and minerals. Together the lists offer teachers of elementary-school children a varied selection of films for teaching conservation through the use of motion pictures.

### Annotated List of Films on Conservation

**Nature's Gangsters.**—New York, N. Y., Walter O. Gutlohn, Inc. [n. d.] 1 reel, 16 mm. Sound. No teacher's guide.

*Content.*—Protecting wildlife through enforcement of game laws. The film begins with a discussion of the violation of Michigan State game laws. Game wardens control the hunting in the State, but the area for which one man is responsible is large and hoodlums sometimes break the law and kill game when the warden cannot see them.

The picture shows a group of hoodlums at a filling station where a warden is stationed. As soon as the warden goes on his business the hoodlums start to the woods. There they separate, two or three of them pushing forward on foot to a trout stream while their accomplice drives along the road keeping a lookout for the warden. They are unattractively dressed, have disagreeable countenances, and distinctly are not the type of person to enlist the sympathy of children. The class is apt to view the picture hoping that the hoodlums will be captured and the game allowed to go free.

Beautiful rainbow trout are shown in a stream and it is made clear that this is a closed season on trout. Nevertheless the gangsters spear a trout while the commentator remarks that the handsome fish should be given a chance to match its wit against a hook. The next sequence shows a group of gangsters dynamiting fish, killing them by the dozens in the stream. An inhabitant of the region, a true fisherman, comes along, discovers what has been done, and scoops up many dead fish from the stream. He goes into a barber shop and tells the story. The game warden happens to be in the chair next to the fisherman. He investigates the matter and finds the perpetrators.



There is another type of gangster, whom the commentator calls a butcher. In the picture he places salt in a tree to attract a deer, climbs the tree carrying his gun, sees a doe, and shoots it. The picture shows the animal staggering away into the woods. The butcher climbs down from his tree and goes into the woods to find the deer. Yes, it is a doe. Rapidly, lest the warden find him, the butcher cuts off a hind quarter. The next picture shows a motherless fawn hidden in shrubbery. Still another type of gangster is the fellow who sees something move, and shoots. A doe is killed and the left hind leg of her fawn shattered.

**Educational objectives.**—(1) Understandings: (a) A game warden has a large amount of land to patrol. He cannot always see when laws are broken. (b) People should help him prevent law-breaking. (c) Gangsters and butchers of game are not sportsmanlike in their attacks on innocent wild animals.

(2) Attitudes: Respect for and approval of game laws and a disapproval of those who attempt to break them.

(3) Persistent interest: Interest in continued scientific protection of wildlife, in law enforcement, and in reading about and discussing these topics.

**Adaptation.**—Grade 4 and above.

**Treatment of material.**—Interesting facts are brought together and organized in story form with surprise and plot. Children admire the warden and others who keep the law and have regard for wildlife, and despise those who break the law and kill. Photography is clear and attractive and continuity easy to follow; facts apparently are accurate; and the general effect is pleasing.

**Situation and purpose.**—This film can be used to enrich and add information to a unit on the conservation of wild animals. It is not a summarizing unit because it presents only one phase of the problem. The best initiation for the film lies in questions which the children ask regarding the enemies of wildlife against which conservationists must make a stand.

**Background desirable.**—In order to understand the film, the children should have ability to follow continuity, especially to understand the relation of the game warden to the hoodlums; and the social contribution of the fisherman who finds that trout were dynamited and tells about this crime in the barber shop. It is well if the pupils, before seeing the film, have studied the danger of extermination which threatens many forms of wildlife.

**Procedures.**—(1) Preparation: Children will need to be prepared for a few of the commentator's words such as dynamite, warden, hoodlum, and accomplice. They should be helped to understand about the work of game wardens, and the reason why they are necessary. Excursions to fishing holes or hikes in the woods are helpful.

(2) Viewing: The initial showing should be either in auditorium or classroom. Subsequent showing should be in classroom. The film is well organized and advanced pupils will find a single showing profitable. Younger pupils will need more than one showing.

(3) Supplementary material: (a) Animal books with discussions and pictures, such as *In Field and Forest*,<sup>8</sup> *Child's Story of the Animal World*,<sup>9</sup> *The Book of Zoography*.<sup>10</sup> (b) Slides and bulletins containing pictures of varieties of fish, from U. S. Department of Commerce, Bureau of Fisheries; *Fauna of the*

<sup>8</sup> Dunn, Fannie W. and Troxwell, Eleanor. *In field and forest*. Evanston, Ill., Row, Peterson Co., 1928. 288 p. (Mother nature series, book 3.)

<sup>9</sup> Huey, Edward G. *Child's story of the animal world*. New York, N. Y., Reynal & Hitchcock, 1935. 355 p. illus.

<sup>10</sup> Ditmars, Raymond L. *Book of zoography*. New York, N. Y., J. B. Lippincott, 1934. 64 p.



*National Parks*,<sup>11</sup> and other bulletins with pictures of wild animals in the parks, U. S. Department of the Interior, National Park Service.

(4) Questions for discussion: (a) If all wild animals are protected by law, will they become nuisances, now that the country is thickly populated? (b) What game laws are there in your State? What animals are protected under them?

(5) Further activities: (a) Children who live near the woods can take an excursion to see trout in a stream and a deer or a fawn in the woods. (b) Pupils can learn which animals need conservation in their home community, gather information about these animals, and plan signs or posters to put in public places urging people to help conserve wildlife of the community. (c) The class can interview adults who are interested in the wildlife of the community and learn what can be done to conserve it. In communities where children trap skunks, muskrats, and minks and sell their pelts, the class can help to discourage the practice.

**Our Bird Citizens.**—New York, N. Y., Bray Pictures Corporation, 729 Seventh Avenue, [n. d.] 1 reel, 16 mm. Sound. Rental or purchase. No teacher's guide.

**Content.**—The theme of the film is that birds are useful, interesting, and beautiful and should be protected. The picture begins with a scene of mountains and woods, and music with suggestions of bird trills and calls. It shows a camera carried to suitable location and set up for taking pictures.

Grasshoppers and other insects appear and the commentator remarks that if all the caterpillars and other pests were allowed to live, the entire world soon would be covered with insects as high as the highest mountains. Since birds feed on insects, they save crops and protect man from starvation. An effective picture of several chickadees sitting in a row on a log is followed by a close-up of a mother chickadee feeding her young.

To show how children can protect and save birds, children are pictured in a shop building bird houses. This scene is followed by a display of completed houses. Then a father and son are shown putting up a bird house in a tree in front of waterfalls.

The film flashes to nuthatches; their characteristic movement combines a hop and a crawl. The roof of a bird house is raised revealing baby birds in a corner. Other interesting scenes of various birds in various settings follow, including hummingbirds feeding their young and woodpeckers pulling worms from holes in trees, while the commentator explains their activities.

**Educational objectives.**—(1) Understandings: (a) Birds are useful because they eat insects which would be harmful to man if left to feed upon animal and plant life. (b) Birds are interesting because of their intriguing habits and beauty. (c) Birds can be protected, and children can help protect them.

(2) Attitudes: (a) Appreciation of birds' interesting ways of living; (b) desire to protect birds.

(3) Persistent interests: (a) Tendency to read about birds; (b) interest in increasing number and variety of birds in home community, in keeping in-

<sup>11</sup> U. S. Department of the Interior, National Park Service. *Fauna of the national parks of the United States.* By George M. Wright, Joseph S. Dixon, and Ben H. Thompson. Washington, U. S. Government Printing Office, 1933. 157 p. illus. (Fauna series no. 1.)

*Fauna of the national parks of the United States.* By George M. Wright and Ben H. Thompson. Washington, U. S. Government Printing Office, 1935. 142 p. illus. (Fauna series no. 2.)



formed about laws to protect birds, and in protecting birds by building bird houses and other useful aids.

**Adaptation.**—Grade 5 and above in city or country.

**Treatment of material.**—Information is adequate, but somewhat loosely organized; general effect is interesting; photography is old. Scenes of the hummingbird are useful because the hummingbird remains on the screen long enough to give an idea of its humming, sweeping, and balancing movements around the flowers which rarely can be observed at first-hand.

**Situation and purpose.**—The film is useful to supplement or enrich a major unit on the conservation of birds, or an activity in the protection of birds. It suggests interesting things to observe about birds and stimulates study of them. The section on bird houses has suggestions for pupils interested in building bird houses.

**Background desirable.**—Sufficient information about the birds shown to add emotional stimulation and imaginative detail to viewing their activities; ability to understand the vocabulary of the commentary; some ability to recognize birds of the film without commentary.

**Procedures.**—(1) Preparation: Discussion (review) of other bird films which children have seen; use of difficult terms in the vocabulary, such as regurgitation; experiences in the protection or observation of birds; use of still pictures to become familiar with birds in the film before viewing; reading of books and other material suggested under (3).

(2) Viewing: Classroom situation where discussion, questions, or second showing can be used if needed.

(3) Supplementary material: See material suggested for *The How and Why of Bird Banding*, page 21.

(4) Questions for discussion: (a) Are the scenes such as one might find on a field trip to observe birds? (b) With what facts about birds, either observed or gathered through reading, do the scenes of the film agree? Fail to agree? (c) Do you recommend the film for other classes? For what ones and why?

(5) Further activities: (a) Building of bird sanctuaries. (b) Field trips to study birds. (c) Trip to museum to study birds of the film. (d) Sketches of bird nests observed on field trips. (e) Sketch of a mother bird feeding her young. (f) Collection of photos of birds. (g) Collection of magazine articles about bird lovers' experiences.

**The How and Why of Bird Banding.**—Washington, D. C., U. S. Department of Agriculture, Division of Motion Pictures. [n. d.] 2 reels, 16 and 35 mm. Silent. Loan or purchase.

**Content.**—The film is centered about the activities carried on in connection with banding of birds and the service of the Government to science through this means of studying migrations.

The picture opens with well-known birds, such as meadowlark and wren. The titles mention the mysteries of bird migration and interest the audience in solving these mysteries. Bird banding is carried on by the U. S. Biological Survey. On each band, which is placed on a bird's leg, are a number and the words *Notify Biological Survey, Washington, D. C.* People who are interested in birds and in learning more about them can secure written permission from the Biological Survey to band birds.

Pictures follow of the permit, a bird band, and a bird bander fastening a band on a bird's leg. A bird bander arranges traps in which to catch the birds to be banded and to keep out marauders such as cats. It is necessary



to have a different kind of trap for each type of bird. The picture shows a wire trap in which a towhee is caught, a downy woodpecker caught in a tree trap, and a hairy woodpecker in a tree-trunk trap. In a field an automatic trap catches a song-sparrow; the bird bander puts a band on it, lets it go, and sets the trap again. Birds are trapped in nesting boxes. A string is tied to the door of a box, and a watcher several feet away closes the door with a jerk of the string after the bird flies in. Feeding stations are presented as good places to catch birds to be banded because they come repeatedly to the stations for food. The birds are handled with care.

The film next presents scenes in which enemies of birds are shown which are especially dangerous where banding stations are established. At a feeding station a cat snatches a bird from a bird bath and eats it; a man sets a bird trap in a garden and the cat is caught. A blacksnake climbs a tree and crawls into a bird house; when the bander takes down the house he pulls out the snake, which has a bird in its mouth.

A robin gets a surprise when a wire trap is set down over his nest, and a watcher catches him in a net bag. Birds are trapped through their feeding habits. Several scenes show the foods that different birds like best: Bread, suet, sunflower seed, corn, millet, buckwheat, fruit, and raisins. The best bait of all is little birds; it is easy to entice a parent bird into a trap in which there are little ones.

The film digresses to present interesting activities with birds, not necessarily connected with banding. A robin's temperature is taken. The thermometer appears to be pushed down its throat. A man weighs a sparrow, putting it in a small box on scales.

A banded bird is recaptured and the bander fills out a blank and sends it to the Government. At the Government office the bird's record is placed with other records on cards and classified. Anyone who finds a banded or injured bird should report the number to the Biological Survey and the place where the bird was found.

Incidents are mentioned in the titles and illustrated by a moving line of migration on a map. The line traces the probable route of a catbird trapped and banded in New York and later found in Honduras; and shows that the arctic tern makes the longest migration. Routes of bird migration along the coasts of North and South America, Europe, and Africa are shown on the map. This information about bird migration, which enables people to protect the useful birds, was made possible through the Government's bird-banding plan.

*Educational objectives.*—(1) Understandings: (a) Bird banding enables the Government and others to know where birds go for the winter and (b) aids in the protection of useful birds. (c) Anyone can help the Government's bird-banding service by mailing to the Biological Survey the numbers found on dead or injured banded birds. (d) Cats, snakes, and squirrels are enemies of birds and are especially troublesome at bird-banding stations. (e) There are definite routes of bird migration along the coasts of North and South America, Europe, and Africa.

(2) Attitudes: (a) Desire to protect birds in any way possible. (b) Desire to aid the Government in bird-banding activities by returning bands found on dead or injured birds.

(3) Persistent interest: Inclination to observe birds, to note their habits, the dangers that beset them, to read about them, and to listen to their calls.

*Adaptation.*—Grade 6 and above in city or country.

*Treatment of material.*—Information is adequate, but loosely organized; continuity is broken, although some sections can be followed without great



difficulty; facts apparently are accurate. General effect is pleasing and interesting.

*Situation and purpose.*—An informational film useful in supplementing or enriching a major unit on the conservation of birds, or a small study on bird banding. The film answers questions about the reasons for bird banding, ways of banding different birds, and the results; tells where some birds go in autumn, or come from in spring.

*Background desirable.*—Children should be familiar with outline maps of North and South America, Europe, and Africa; should know where to locate their own home on the map of North America and with respect to migration routes of local birds; should have a desire or need for the information presented by the film. In her preliminary review of the film, the teacher should make note of the probable vocabulary difficulties of the titles for her pupils.

*Procedures.*—(1) Preparation: Review discussion of other bird films which the children have seen; use vocabulary of titles in natural situation; experience with birds or study of them, especially those which appear in the film; ability to recognize birds of film which are not named in titles; use of still pictures of birds in film to supplement scenes where close-ups are not given; bird books, phonograph records of bird calls, and other material of bird study.

(2) Viewing: Best for classroom situations in which a second showing can follow immediately of scenes in which continuity has not been clear to class.

(3) Supplementary materials: (a) U. S. Department of Agriculture Farmers' Bulletins: *Food of Some Well-known Birds of Forest, Farm and Garden*,<sup>22</sup> *Some Common Birds Useful to the Farmer*,<sup>23</sup> *Homes for Birds*.<sup>24</sup> Write for other bulletins about birds. (b) National Association of Audubon Societies. Write for list of bird leaflets with colored plates. Order by name of bird desired. (c) Picture books and identification manuals such as: *Birds*,<sup>25</sup> *The ABC of Attracting Birds*,<sup>26</sup> and *Traveling With Birds*.<sup>27</sup> (d) Slides, filmstrips, and stereographs. (For list of dealers, see revised U. S. Department of the Interior, Office of Education Pamphlet No. 80).

(4) Questions for discussion: (a) What are the birds' worst enemies in the home community? (b) Where do birds of the home community migrate in winter? (c) What birds from other sections come to the local community to spend the winter? (d) What are the habits of local birds with respect to migration?

(5) Further activities: (a) Building feeding stations or shelters for winter birds. (b) Field trips to study and identify birds. (c) Trips to museums. (d) Construction of map to show where the birds of a community go for the winter.

<sup>22</sup> U. S. Department of Agriculture. Food of some well-known birds of forest, farm, and garden. Washington, U. S. Government Printing Office, 1929. 34 p. illus. (Farmers' bulletin no. 506.)

<sup>23</sup> ——— Some common birds useful to the farmer. Washington, U. S. Government Printing Office, 1926. 29 p. illus. (Farmers' bulletin no. 630.)

<sup>24</sup> ——— Homes for birds. Washington, U. S. Government Printing Office, 1930. 21 p. (Farmers' bulletin no. 1456.)

<sup>25</sup> King, Julius. Birds. Cleveland, Ohio, The Harter Publishing Co., 1934. 3 v. illus.

<sup>26</sup> Peterson, Alvin M. The ABC of attracting birds. New York, N. Y., The Bruce Publishing Co., 1937. 146 p. illus.

<sup>27</sup> Boulton, Rudyard. Traveling with birds. Chicago, Ill., M. A. Donohue & Co., 1933. 64 p. illus.



**Why Save the Elk.**—Washington, D. C., U. S. Department of Agriculture, Biological Survey. 1934. 1 reel, 16 and 35 mm. Silent. Nominal service fee and transportation cost.

*Content.*—The picture opens with scenes of high mountaintops, forests, meadows, and woods through which elk are seen moving, partly hidden by foliage, and continues with scenes of higher mountains, a lake, snow, and herds of elk on the snow. Several close-ups of individual elk are shown.

Before the white man came, elk grazed over the entire continent. Several beautiful scenes show three Indian horsemen chasing a herd of elk. When the white man came he cultivated the grazing lands and the elk were exterminated in most of the States. But now the elk have found refuge in national parks.

Beautiful pictures follow of elk at a river in the woods, deep in the snow. In the summer herds are scattered over highlands. In secluded spots speckled young elk appear. The mothers and their young feed in small herds in mountain meadows during the summer. The males remain higher on the mountains, where they shed their antlers; pictures are shown of them, some with growing antlers.

In the winter when the males are forced into the lowlands for food the herds are brought together again and wander through the lowlands in search of food, but find that civilization has left little for elk. So they are fed in Government refuges, such as Jackson Hole, Wyo. The elk is a timid animal, but hunger makes it brave, and in the picture some of the elk follow closely the wagon from which hay is scattered. In severe winters aids from the Government are inadequate to preserve all the elk and some die. The picture closes with beautiful scenes of elk.

*Educational objectives.*—(1) Understandings: (a) Herds of elk once roamed the entire country. (b) With the exception of a few herds in the national parks, the elk have disappeared. (c) More food is needed to preserve the herds that remain.

(2) Attitudes: (a) Desire to have the elk protected. (b) Appreciation of the beauty which elk add to the wildlife of a park.

(3) Persistent interest: Tendency to read about elk.

*Adaptation.*—Grade 5 and above, city and country, especially children who have opportunity to observe elk in park or zoo.

*Treatment of material.*—Photography is good technically; scenes are beautiful and well selected.

*Situation and purpose.*—Useful for supplementary information for studies of national parks or wild animals.

*Background desirable.*—Children should understand that America had abundant natural resources in early days; should be able to follow continuity.

*Procedures.*—(1) Preparation: Discussion of elk seen in park or zoo; discussion of the decrease in wild animal life in general.

(2) Viewing: Classroom or auditorium.

(3) Supplementary materials: Still pictures of elk.

(4) Questions for discussion: (a) To whom do the elk belong? (b) How should the Nation save its elk? (c) Of what recreational value are the elk?

(5) Further activities: (a) Excursions to parks or elk refuges (opportunities limited). (b) Preparing posters for public places, encouraging people who expect to travel to parks to see elk. (c) A section for conservation scrapbook with reasons why the elk should be conserved.



**Michigan Beaver.**—New York, N. Y., Walter O. Gutlohn, Inc. 1 reel, 16 mm. Sound. Rental or purchase. No teacher's guide.

**Content.**—Emphasis is on the work of the beaver and ways of preventing it from doing harm. Beavers are located easily by beaver houses in ponds. These houses, or lodges, are built with the top above the surface of the water and a large portion below. A picture of a beaver house covered with snow appears on the screen. No disturbers can find access to its entrance because the beaver enters from under water through a tunnel which is sometimes half a mile long.

The beaver goes to work at dusk and works all night. Sometimes the trees it cuts become lodged among the trees close by and the beaver is unable to cut them into smaller logs, which it can handle easily. Usually the beaver cuts a supply of logs before moving them to the dam and sometimes makes canals in which the water helps to move them along.

There are a number of beavers in this film, both old and young. Beaver kits are attractive, chubby animals with fluffy fur. Even the kits are woodcutters and work on tender wood and small trees. The beaver likes to be clean and although much of its life is spent in the water, takes time to wash itself.

The film shows how a cameraman takes pictures of a beaver working. He first sets up a blind of branches for his camera with a clear view of the dam where the beaver is expected to work. Then he makes a break in the dam to lure the beaver, which keeps a close lookout for holes that might let the water through and wash out the rest of the dam. The cameraman does not have to wait long for the beaver to discover the break. Attractive scenes are shown of the beaver swimming toward the break, beginning at once to repair it, and making many trips carrying sticks. When the beaver places a stick and goes away for another the cameraman moves his camera closer and close-ups can be taken because the beaver is so concerned about the break in the dam it fails to notice the camera. Wood is not the only material the beaver uses; when it has placed a few sticks where it thinks they belong, it banks mud up against them.

Sometimes a beaver dam causes flood or damages crops or trees. When this is the case men trap the beaver and move it to some stream where the dam will not be destructive. The picture shows a beaver caught in a trap. It is not afraid. A man puts a strap around the beaver's tail and lifts it to a cage. When the beavers are removed the dam is blown up with a great splash. A new colony is started on another stream with the beavers that were trapped at the old dam. The men carry the cages to the water's edge and release the beavers.

**Educational objectives.**—(1) Understandings: (a) Beavers' dams sometimes cause water to spread and destroy crops. (b) Such floods are desirable to hold water, but are nuisances if crops are destroyed. (c) Beavers can be trapped and moved to land where their dams are useful in retarding the run-off from headwaters of streams, and do no damage to crops.

(2) Attitudes: The film should increase the children's appreciation of beavers as interesting wild animals and as possible means of retarding run-off of water and helping to prevent floods.

(3) Persistent interest: The film should lead to interest in beavers. The children can watch for articles in magazines, study beavers as a source of valuable fur, and learn more about their habits.

**Adaptation.**—Grades 4 to 8.

**Treatment of material.**—General information is adequate, interestingly organized, and facts are accurate; conservation value is not apparent in the film, but



can be enhanced by the teacher; vocabulary is simple; photography is clear and attractive. The continuity is good; the scenes move rather swiftly in places. The material is interesting.

*Situation and purpose.*—Children usually are interested in wild animals and this film shows activities of beavers which children are not likely to see otherwise. It can be used to give additional factual material, or to answer questions about the beaver or ways of retaining floodwaters in the upper parts of watersheds.

*Background desirable.*—The children need enough observation of small streams to understand that a beaver dam can flood land and destroy crops—an undesirable circumstance—and retard run-off, which is desirable.

*Procedures.*—(1) Preparation: Discussion of activity or other use to be made of the film.

(2) Viewing: Classroom or auditorium situation; second showing or immediate discussion is not necessary, especially with advanced pupils.

(3) Supplementary materials: *Sajo and the Beaver People*<sup>18</sup> and *Flat Tail*.<sup>19</sup>

(4) Questions for discussion: (a) Do beavers do more harm than good? (b) What are the reasons for conserving them? (c) Should wild beavers be trapped for fur? To what extent?

(5) Further activities: (a) Excursion to see a beaver dam. (b) Collection of pictures about beavers. (c) Original stories about beaver kittens. (d) Posters about the value of beavers and reasons for protecting them.

**Unburned Woodlands.**—Washington, D. C., U. S. Department of Agriculture, Division of Motion Pictures. 1931. 1 reel, 16 and 35 mm. Silent. Transportation charges or purchase.

*Content.*—The theme of the film is that unburned woodlands afford lumber, pleasure, and beauty. The story begins with pictures of burned woodlands that benefit no one because fire destroys the forest, the forest litter, and the seed that it contains. With forest litter burned, water runs off fast, causing floods in lower valleys. Pictures of floods are shown and related to absence of woods and litter.

In contrast to the burned woodlands and the damage done by fire, a number of scenes show unburned woodlands and the types of work and enjoyment they provide. Men are shown cutting trees from a wood that has never been burned. The logs have no scars in them.

The scene changes again to the burned woodland, showing that fire destroys fish food and kills fish and game. A picture of a quail sitting on eggs is shown. She leaves the nest, and the fire burns nest, grass, and shrubs around it. These scenes are especially clear and the picture moves slowly enough for the children to understand.

A burned woodland is no place for recreation. A car drives slowly through a section of burned woodland, its occupants apparently looking for a place to stop for luncheon. There is no place to eat. The car passes into an unburned woodland, along a road lined with attractive trees and plants. At a convenient entrance the car is parked and young people prepare a campfire by a stream.

More pictures of woods are shown with titles to the effect that if fire is kept out of forests, nature will restock them after cutting.

<sup>18</sup> *Grey Owl. Sajo and the beaver people.* New York, N. Y., Charles Scribner's Sons, 1936. 187 p. illus.

<sup>19</sup> *Gall, A. and Crew, F. H.* New York, N. Y., Oxford University Press, 1935. 126 p. illus.



**Educational objectives.**—(1) Understandings: (a) Fire destroys lumber, forest litter, the seed that litter contains, plants and wild animals. (b) Burned forests seldom can be replaced by nature. (c) If fire is kept out of forests, nature will restock them. (d) Unburned woodlands afford beauty, shade, and cool water for picnickers. (e) Picnic fires can cause damage if not carefully extinguished.

(2) Attitudes: (a) Habit of being careful to extinguish campfires. (b) Greater appreciation of woodlands.

(3) Interest: (a) Desire to learn how to build and extinguish picnic fires, to read about conservation of forests, and to learn more about trees.

**Adaptation.**—Grades 5 to 8, especially in communities where children have opportunity to use woodlands for picnics or hikes.

**Treatment of material.**—Information is well organized; continuity is clear; facts are accurate; general effect of photography is attractive; titles are interesting and understandable.

**Situation and purpose.**—Useful to enrich or supplement a unit on the uses and conservation of forests or on the conservation of wildlife. Not a summarizing film. Some skill is shown with respect to extinguishing a forest fire.

**Background desirable.**—Ability to follow continuity is especially desirable because there is no story to add to the unity of the scenes presented.

**Procedure.**—(1) Preparation: (a) The best preparation for the film is a large amount of work already completed on a forest, soil, or wildlife unit, in which the children have learned what forest litter is and how it protects the soil; for what things forests are especially valuable; and how forests or woodlands protect wild animal and plant life. (b) Use of still pictures, especially with children who have had little or no experience with woods and wildlife.

(2) Viewing: Best for classroom situations where a second showing can follow in which the teacher calls attention to facts needed by the class; shows again parts about which the pupils have questions; supplements them with still pictures; or refers the children to books for more information.

(3) Supplementary materials: (a) Slides showing the national park services;<sup>20</sup> film strips such as, *Forest Conservation*, *National Forest Playgrounds*, and *Work of the Forest Service*;<sup>21</sup> slides with accompanying syllabus, such as *Protective Influences of the Forest*, *Depletion of Forest Resources*, *Waste in the Use of Wood*, and *Wise Use and Protection of Forest Resources*;<sup>22</sup> (b) bulletins, such as *What Forests Give* and *Taming Our Forests*;<sup>23</sup> (c) and non-governmental materials, such as *The Forestry Primer*<sup>24</sup> and *The Story of American Conservation*.<sup>25</sup>

**Wool, From Fleece to Fabric.**—Washington, D. C., U. S. Department of the Interior, Division of Motion Pictures, for Farm Credit Administration. 1936. 3 reels, 16 and 36 mm. Sound. Loan or purchase.

**Content.**—The story of wool production begins with views of flocks of sheep on western ranches. The film is designed to portray the benefits to growers,

<sup>20</sup> U. S. Department of the Interior, National Park Service. Washington, D. C.

<sup>21</sup> U. S. Department of Agriculture, Forest Service. Washington, D. C.

<sup>22</sup> ——— Extension Service. Washington, D. C.

<sup>23</sup> ——— Forest Service. *What forests give*. By Martha B. Bruere. Washington, U. S. Government Printing Office, 1938. 79 p.

<sup>24</sup> ——— *Taming our forests*. By Martha B. Bruere. Washington, U. S. Government Printing Office, 1938. 87 p.

<sup>25</sup> Pack, Charles L. *The forestry primer*. Washington, D. C., American Tree Association, 1936. 32 p. illus.

<sup>26</sup> Butler, Ovid. *American conservation in picture and in story*. Washington, D. C., The American Forestry Association, 1935. 144 p. illus.



consumers, and manufacturers derived from cooperative organizations of wool producers, but has conservation implications and information useful as background study for soil conservation.

Pictures thousands of sheep feeding on western hills (grasslands west of the one hundredth meridian are good pasture lands for sheep) followed by close-ups of individual sheep, groups of sheep, and pictures of ewes and lambs.

Modern ways of shearing sheep are pictured. Usually machines and electricity are used, but now and then sheep are sheared by hand. In this way a slightly thicker coat of wool can be left on the sheep, enabling it to adjust more easily to sudden changes of temperature and weather. Pictures of the shearing are unusually attractive. The sheep appear not to be troubled by the process. The shearer is careful not to break the fleece because broken fleeces are difficult to tie into bundles for shipment. Many of the shearing plants are portable; instead of taking the sheep to be sheared, men take the shearing plant to the sheep.

Scenes in the film show that packing of wool is important. Fleeces are laid on a flat surface, folded into a neat bundle, and tied with paper string, not twine. The bundles are then packed in a huge bag and trampled. The seam of the bag has been sewed outside so that it can be ripped apart in the factory. Frequently owners meet and bag their wool together. The bags are always marked with the owner's brand and some brands on wool are as well known in the market, as sheep brands are on the ranches.

The picture next shows markets for wool, of which Boston is the largest, and scenes of the loading of wool on trains and ships. The service of the producers' cooperative is to take charge of shipment for the growers. Every bag that is sent to market is weighed and marked. Accuracy is important. Steamships carry the produce from the West Coast through the Panama Canal to the East Coast of the United States, and pictures of large ships are shown. A map of the United States indicates the location of the smaller wool producers scattered in various parts of the country, as compared with the centralized location of the larger ones in the West.

*Educational objectives.*—(1) Understandings: (a) Sheep require little food, except grass and water. (b) On the western ranges are thousands of sheep which require many acres of grassland. (c) In New England a large amount of wool is manufactured. (d) Other wool-manufacturing regions are in the Middle West and in the Northwest, with a few smaller factories scattered over the rest of the country. (e) Western ranges supply most of the wool for the Nation's factories.

(2) Attitudes: The picture should help to develop appreciation of the Western Plains when used for enterprises adapted to a region with grass, and but little rainfall.

(3) Persistent interests: Tendency to read and think about problems of sheep raising, improvement of breeds, adapting industries to the natural characteristics of a region, and the value of cooperatives to consumers, producers, and manufacturers.

*Adaptation.*—Grade 4 and above in connection with appropriate units.

*Treatment of material.*—The material is well organized, the continuity is easy to follow, the pictures are clear and artistically photographed, and the commentary and music are well synchronized with the scenes. The commentary is suitable for grades 7 and 8, but the pictures carry the story sufficiently well for use by lower grades.

*Situation and purpose.*—This film affords a background for helping children understand the possibilities of the Western Plains. It is best used as a supple-



ment to a unit, to enrich children's experiences for understanding the problem. It portrays one aspect of the problem of conservation of Western Plains. It is a stimulating picture and might be used to initiate a study of the grasslands. It can be used also in connection with units of study of various kinds of farming, conservation of soil in grasslands, uses of soil, raising of sheep, and production of wool.

*Background desirable.*—Ability to follow continuity and understand relationships of important facts. Difficult words in the commentary are fairly well explained by the pictures.

*Procedures.*—(1) Preparation: Questions regarding conservation of grasslands are helpful. Through map study in connection with the major unit, the children will be prepared to understand where sheep are raised and where the wool is manufactured.

(2) Viewing: Either classroom or auditorium situation. Needs more than one showing to help the class to answer questions which have been raised in discussion.

(3) Questions for discussion: (a) Why is it necessary to take precautions against destruction of grass on which sheep graze? (b) How do sheep endanger soil? (c) Why does the picture show such large flocks of sheep in the West and smaller flocks in the Midwestern and Eastern States? (d) How do sheep get water in a region where there is little rainfall?

(4) Further activities: (a) If the children are developing a unit on soil erosion and conservation, they can include the problem of the western grasslands, discuss the raising of sheep as a possible means of restoring the land to grass, and the dangers to soil which accompany sheep raising. (b) In lower grades, children will enjoy making things out of wool. Perhaps from a producer they can secure a small piece of raw wool, wash and bleach it, card it, and spin and weave a piece of cloth. Picture maps of sheep production and wool manufacture are useful.

*Preparing for a Garden, Part I.*—Iowa City, University of Iowa, Department of Visual Instruction. DeVry School Film. 1927. 1 reel, 16 mm. Safety. Sound. Loan or purchase.

*Content.*—The basic plan of the film is to demonstrate the techniques and procedures in gardening.

The film opens with a discussion of the steps in making a garden in the classroom. Next a father and children are shown at work in a garden, the teacher comes to visit them, and they talk about gardening. Part of the trash taken from the plot is to be burned. The commentator states that the reason for burning material that cannot soon decay is to destroy insects and their eggs. For example, the harmful mealy bug passes the winter among old roots. Other harmful insects are found in dead bark, including aphid, a common garden pest. All vegetation which will decay should be saved.

Children gather leaves for a compost pile, add manure to furnish heat for rotting, cover the pile with a blanket of earth to hold the heat, and sprinkle with water to promote fermentation.

Manure should be put into the ground in the fall or early in the spring to give it a chance to decay. If placed in soil too near the growing season, it becomes hot around the roots of the new plants and burns them. Commercial fertilizer is also used. The picture shows father and son walking through a garden with a cover crop and the commentator remarks that a cover crop plowed under is a fertilizer anyone can grow.)



*Educational objectives.*—(1) Understandings: (a) No material removed from a garden should be burned unless it will not decay. (b) Burning undecayable materials kills certain insect pests and their eggs. (c) Decayable material such as leaves can be heaped on a compost pile and their decay hastened by the application of manure, dirt, and water. (d) Fertilizer placed in the ground in the fall or early spring does not injure young plants.

(2) *Attitudes:* (a) Successful gardening requires skill and knowledge. (b) Gardening is pleasant and profitable.

(3) *Persistent interest:* (a) Reading about gardening. (b) Engaging in gardening activities.

*Adaptation.*—Grade 4 and above, where children have opportunity to work in a garden.

*Treatment of material.*—Information is well organized; continuity is clear; skills are correctly demonstrated; facts are accurate. Garments are old-fashioned. Photography is not recent and, therefore, is less attractive with respect to perspective, lighting, steadiness, and balance than are more recent films. The ideas are useful. Good until newer garden films are produced.

*Situation and purpose.*—The film is designed to teach gardening. Unless children are interested in making gardens they will have no use for the film. It can be used to give information for units on gardening or soil, but it is not designed to help pupils review information on several topics.

*Background desirable.*—In order to use the film with most profit, children should be prepared for the vocabulary of the commentator; should know enough about gardening to note important points in the film and to discuss and apply the information.

*Procedures.*—(1) Preparation: Some experience in planting a garden and in doing the things presented in the film form a background for viewing it with understanding. Excursions to gardens to observe compost piles and soil preparation, and neighbors at work are helpful supplementary activities.

(2) Viewing: The film is best used in a classroom situation where second showing can follow if necessary in which the teacher can stop the machine to answer questions or point out information or skills needed by her class. Should be shown as often as necessary for children to use the facts presented.

(3) *Supplementary materials:* (a) *When Mother Lets Us Garden.*<sup>22</sup> (b) *Gardening.*<sup>23</sup> (c) *Harper's Book for Young Gardeners.*<sup>24</sup>

(4) Questions for discussion: (a) Why is fertilization necessary for gardens? (b) How can washing of soil be prevented in gardens? (c) What other types of conservation can be applied to gardening?

(5) Further activities: (a) School or home gardening. (b) Original stories and articles for school newspaper. (c) Window gardens. (d) Plant exchange. (e) Compost pile for school or home gardens.

**Preparing for a Garden, Part II.**—Iowa City, University of Iowa, Department of Visual Instruction. DeVry School Film. 1 reel, 16 mm. Safety. Silent. 1927. Loan.

*Content.*—The theme of the picture is the preparation and use of hotbeds and coldframes.

<sup>22</sup> Duncan, Frances. *When mother lets us garden.* New York, N. Y., Moffat, Yard, 1900. 111 p.

<sup>23</sup> Stout, Arlow B. *Gardening.* Yonkers-on-Hudson, N. Y., World Book Co., 1922. 354 p.

<sup>24</sup> Verrill, Alpheus H. *Harper's book for young gardeners.* New York, N. Y., Harper Bros., 1914. 389 p.



The first scene shows an experiment in which water is poured into glasses, one containing packed soil and the other containing loose soil, showing that water sinks more rapidly into loose soil than into packed soil.

At a school a lesson on spading a garden is given and following this, the film shows a boy and his father putting the lesson into practice at home. The father shows how to start the spade cornerwise into the ground and how to dig against the open trench, thus keeping the trench always open and lifting only unspaded soil. The film then shows how less skillful spading results in lifting the same soil more than once; how to throw the earth on the edge of the trench to break lumps; and the process of subsoiling.

Preparation for and construction of hotbeds is shown, as well as making a coldframe. The purpose of the coldframe is chiefly to harden plants, but there are other ways to protect plants from the cold, and the film shows how boxes are placed above plants for this purpose.

*Educational objectives.*—(1) Understandings: (a) The purpose of a hotbed is to provide a warm place to give plants a start when the weather is still too cool for growth. (b) The purpose of the coldframes is to harden plants which have been started in a hotbed before setting them out in the garden. (c) It is possible to save time and effort in gardening by improving one's way of spading, breaking up clods, loosening subsoil, etc..

(2) Attitudes: Appreciation of the care and skill required in good gardening.

(3) Persistent interests: Tendency to observe gardens elsewhere to gain ideas for one's own garden; to read about gardening and garden plants, and to care for the plants one starts.

*Adaptation.*—Grade 4 and above, city and country, for children who have opportunity to work in a garden either at home or in school.

*Treatment of material.*—Garments worn by characters in pictures are old-fashioned. The photography is old and, therefore, less effective with respect to perspective, use of light and dark, and placement of camera than more recent films. The ideas are useful, however, and the film interesting, and when needed for the facts can be used until something better appears on the market.

*Situation and purpose.*—A film for the teaching of skills, useful in supplementing a unit or activity on gardening. The best initiation for the film is gardening experience, which causes the children to feel the need of the facts and skills shown in the film.

*Background desirable.*—Each section is valuable in itself, but some experience with gardens is necessary for appreciation of the film and understanding of the purpose of the activities presented.

*Procedures.*—(1) Preparation: Discussion of the children's experiences in gardening; formulating of problems expected to be solved by the film; discussion of terms in titles which children may not understand.

(2) Viewing: Classroom situation is necessary where the film can be discussed immediately after first showing, then shown again and stopped at points about which children have had questions.

(3) Supplementary materials: See *Preparing for a Garden, Part I*, page 28.

(4) Questions for discussion: (a) Why is the method of spading which is shown in the film better than just spading? (b) How does a garden profit by hotbeds and cold frames? (c) To what extent does this depend on the individual needs of the gardener?

(5) Further activities: Children can plan and develop a wild-flower garden for their school ground, or flower and vegetable gardens in school or at home.



**Muddy Waters.**—Washington, D. C., U. S. Department of Agriculture, Division of Motion Pictures. 1937. 1 reel, 16 mm. Sound. Loan or purchase. No teacher's guide.

**Content.**—A story of land erosion in the Southwest with suggestions for remedial measures.

In the Southwest the white man found game and plenty of grass. There were few rivers when he came; on their banks were Indian pueblos; and in the rivers were rock or brush dams to hold the water. The Indians had employed irrigation, using water from snow-fed mountain streams. The white man also irrigated, but instead of brush dams built concrete reservoirs to hold the water to irrigate great regions of valley land, and raised vegetables, grain, and fruit. For the grasslands on the slopes he brought herds of stock and produced beef, mutton, and wool.

He broke the soil; cut the forests; and upset nature's balance. With the soil uncovered there was no protection against wind; against floods in spring when water came down the mountains. Muddier and muddier ran the rivers in the spring; drier and drier became the channels in the summer. Gullies formed; reservoirs filled with silt; mud replaced water. The water dried and was lifted by the winds.

The restoration of this land requires trees which retain the water in the mountains; grass on slopes to hold the soil and slow up the water as it comes down the mountains in the spring. Grass is valuable. It will feed cattle and sheep and these can be raised instead of crops which deplete the soil.

**Educational objectives.**—(1) Understandings: (a) In the beginning this country had a wealth of forests, grass, minerals, and rich soil. (b) People used these ignorantly and wastefully. (c) The Government is now helping people to undo some of the harm caused and to protect the resources which are left. (d) A new balance must be found to replace that which has been disturbed.

(2) Attitudes: (a) Respect for soil. (b) Desire to protect soil. (c) Appreciation of the significance of the natural balance and the danger of its being disturbed through modern civilization.

(3) Persistent interests: Inclination to observe or read about conditions of soil, measures of conservation, and balance of nature.

**Adaptation.**—Grades 6 to 8.

**Treatment of material.**—Information is well organized; continuity is clear; and facts are accurate. General effect of photography is attractive. Commentary is pleasing.

**Situation and purpose.**—Most useful where facts are needed to answer questions; good to supplement units on the saving of soil, irrigation, or farming.

**Background desirable.**—Ability to follow continuity; experience with the vocabulary of the commentator; previous observations of the power of running water to carry silt; observation of vegetables growing, farming, and familiarity with trees or forests, grasslands, and fields, so that scenes briefly shown in the picture can be imagined in detail.

**Procedures.**—(1) Preparation: Review of similar films which the children have seen; study, activity, or reading in which vocabulary of the commentator is used; use of still pictures with children who have had no experience with farming, forests, and grasslands such as those shown in the film.

(2) Viewing: Best for classroom situation where second showing can follow in which teacher calls attention to facts needed by the class or the children look for material to answer questions previously raised. Some teachers will wish to turn off commentary and use their own explanations.



(3) Supplementary materials: (a) Pictures of the Southwest in geographies and children's encyclopedias. (b) History of the Southwest in the story of the westward movement. (c) Units on farming with materials such as *Our Farmers* and *Conservation in Building America Series*; <sup>20</sup> *What Is Soil Erosion?* and *Soil Conservation Districts for Erosion Control*; <sup>21</sup> and *Save the Soil*.<sup>22</sup>

(4) Questions for discussion: (a) Why did the Indians not upset the natural balance when they irrigated the land and raised crops? (b) Could the balance be maintained if the land were reserved for flocks and herds? (c) How can the use of the land be regulated so that a new balance can be achieved? (d) What can be done to offset the inclination of farmers to produce more open crops than is good for the land?

(5) Further activities: (a) Posters, friezes, and miniature scenes made in further development of the unit. (b) Original stories, songs, or dances suggested by the theme of the film or by scenes in it.

**The Water Cycle**—Rochester, N. Y., Eastman Teaching Films, Inc. 1938. 1 reel 16 mm. Silent. Loan or purchase. Teacher's guide.

**Content.**—The water cycle consists of stages in movement of water: (1) Evaporation from ocean, rivers, lakes, and all other surfaces; (2) cooling and subsequent condensation of water in clouds; (3) precipitation in rainfall, snow, or sleet; and (4) run-off and collection of water again in ocean, ponds, and rivers.

The film is shown in units: Clouds, rain, snow, and ice; ground water; surface water. (Transpiration, or the process by which plants give moisture into the air, is not included.) Rising of water in clouds of vapor is pictured more effectively than can be shown through experiments. Clouds of various kinds accumulate: Cumulus, cirrus, mackerel sky, and nimbus, or storm clouds. Nimbus clouds result in rain. Rain is shown in the forest, and in a city street. Sleet, snowfall, and glaciers are pictured; people are seen wading in snow and wearing snowshoes. Underground water has an important part in the story; it feeds springs, supplies wells, and affords moisture for plants. Surface water flows along in rivers, appears at the end of melting glaciers, and spreads out in lower river valleys in floods. Evaporation takes place all along the way.

**Educational objectives.**—(1) Understandings: (a) Water is not destroyed, but passes through a cycle from rain to earth and from earth to air and back again continuously. (b) Water passes into clouds from all exposed surfaces. (c) When the air cools, clouds lose their moisture, which falls as rain.

(2) Attitudes: (a) Recognition of the value to humanity of surface and underground water and the importance of the continuous movement of the water cycle. (b) Respect for the organization of the universe. (c) Concern for the proper use of water.

(3) Persistent interest: Tendency to observe clouds and their formation, to note amount of rainfall and run-off, to observe understandingly the rise or fall of water in wells, creeks, rivers, and ponds, and to read and talk about the uses and conservation of water.

<sup>20</sup> Society for Curriculum Study, Inc. *Building America* series. *Our farmers*. Vol. 3, no. 2, Nov. 1937.

——— *Conservation*. Vol. 2, no. 7, April 1937.

<sup>21</sup> U. S. Department of Agriculture. *What is soil erosion*. Washington, U. S. Government Printing Office, 1938. 85 p. (Pictorial pamphlet.)

——— *Soil conservation districts for erosion control*. Washington, U. S. Government Printing Office, 1937. 19 p. (Pictorial pamphlet.)

<sup>22</sup> *Save the soil*. Ithaca, N. Y., Cornell University, New York State college of agriculture, 1936. 31 p. illus. (Cornell rural school leaflet, vol. 29, no. 4, March 1936.)



*Adaptation.*—Grade 5 and above in city or country.

*Treatment of material.*—The organization is effective, continuity is clear, and sufficient scenes are used to make the film understandable. Difficult words in commentary are made understandable by the pictures.

*Situation and purpose.*—This film is best used to supplement or aid in developing large units, such as the conservation of water, the conservation of soil, causes and control of floods, protection of trees and forests, and conservation of grasslands; and is most appropriate after a rain in which attention has been called to clouds, amount of precipitation, run-off in rills and brooks, and the rise of brooks and ground water. It can also be used incidentally whenever specific information about the water cycle is needed.

*Background desirable.*—Children will benefit most from this film if they are able to understand the continuity. Each scene, however, is valuable in itself to pupils who have had appropriate experiences.

*Procedures.*—(1) Preparation: If the film is shown to answer questions about the source of rain or the destination of rapidly running water, little preparation for viewing is necessary other than suggesting that the children look for answers to their questions. Experience in observing various kinds of clouds and various types of water storage, such as ponds, rivers, or the ocean, is necessary to understand the first part of the film. Observing a well and pumping water from it is helpful in understanding the film's presentation of ground water.

(2) Viewing: The first showing can be either in an auditorium or a classroom situation. Discussion should follow the showing, preferably in the children's classroom. Second showings will be necessary and should be in the classroom.

(3) Supplementary materials: Study of still pictures of clouds in connection with the unit affords a background for the film.

(4) Questions for discussion: (a) How is the water cycle related to the production of crops? (b) What has the water cycle to do with floods? (c) How do forests affect the water cycle or the distribution of water? (d) How do grasslands affect the water cycle? (e) Has the distribution of water any relation to conservation of soil? (f) Can man control the distribution of water?

(5) Further activities: (a) If the children have been working on a unit on the conservation of soil, the film may suggest to them the making of a film about the water cycle in their own community. Their film can include a shower they have experienced, pictures of the various water surfaces for evaporation in their community, and pictures of springs or wells as evidences of underground water. (b) Children who are planting or caring for gardens can explain the water cycle in terms of their own attempts to conserve water for their garden.

*The River.*—Washington, D. C., U. S. Department of Agriculture Division of Motion Pictures. 1938. 3 reels, 16 and 35 mm. Sound. Loan. Teacher's guide.

*Content.*—The theme is: *What the Mississippi has meant to the Nation and what it has cost.*

A map of the Mississippi watershed is developed by animated drawings. The history of life in the Mississippi Valley is shown from the time of the settlement of the prairie to the present. The film shows lumbering operations in the northern part of the valley, great waste in the cutting and manufacturing of lumber, the resultant clearing of the land and exposing the soil to wind and



rain. It portrays how the sod was broken and corn and other crops were planted year after year on the prairies, resulting in loss of soil and rapid run-off after rains. In the southern part of the valley cotton was raised. Year after year it took rich plant food from the soil, leaving the land in the lower valley exhausted. Erosion increased. Each year the water flowed more rapidly off the hills in the upper part of the watershed, carrying with it tons of silt. Most of this silt was dropped in lower portions of the valley, filling channels and causing the water to spread in floods. The fact that water was not retained on the hills in upper parts of the valley caused water to come rushing higher and higher in the lower regions, washing away houses, factories, and places of business that were built too near the river. Each year the people tried to build the banks of the river higher. The picture shows them working with scrapers drawn by mules, slowly raising the height of the banks. Pictures are given of sharecroppers and families on worn-out farms. The film closes with suggestions for remedial measures—scenes of regional planning, T. V. A. development, and other constructive efforts to undo the work of the river.

Problems raised and partly answered by the film are the following: (1) What had the cutting of the forests to do with the river? (2) How was cotton culture in early days a part of the story of the river? (3) Was sharecropping a cause or a result of the devastation of the valley? (4) Is the building of dikes a reliable measure for controlling the river? (5) Can the valley be restored to its early fruitfulness? (6) What measures of conservation have been taken?

*Educational objectives.*—(1) Understandings: (a) From one-fourth to three-fourths of the soil of the Mississippi Valley has been irrecoverably washed away in a century. (b) Cutting of forests and plowing of grasslands are largely responsible for the loss. (c) Failure to control the little waters in the upper part of the watershed causes depredation in the lower part. (d) Thin and exhausted soil means poor farms and poverty among the farmers. (e) Proper measures of conservation will preserve the soil that is left and bring back the prosperity of the people.

(2) Appreciations and attitudes: (a) Disapproval of careless or extravagant cutting of forests. (b) Appreciation of trees. (c) Recognition of the value of grass in conserving soil and of close crops and cover crops. (d) Desire to have the soil conserved by proper land use. (e) Appreciation of the Nation's responsibilities toward preserving the natural resources, helping those who suffer from floods, and saving for future generations their God-given heritage.

(3) Persistent interest: Seeing the film may cause the children to be interested in watching for news items about forests or use of the soil and about National or State activities in controlling floods both at their source and at the mouths of rivers.

*Adaptation.*—The film can be used in upper elementary grades if the children are properly prepared for it and is best adapted to eighth-grade and high-school pupils.

*Treatment of material.*—The material is well organized, the continuity is clear, the pictures are clear and artistically photographed, and the commentary and music are well synchronized with the scenes.

*Situation and purpose.*—The film can be shown effectively when the children have expressed an interest in the control of the small streams in their neighborhood. Undue erosion or unexpected rise of a river in the neighborhood is an experience which will help the children to understand the film. Good situations in which to use the film are units such as conservation of soil.



protection of trees and forests, rotation of crops, and cotton, wheat, and corn farming.

The film has most promise for summarizing a study of the conservation of soil. It brings together in an effective way the tragic results of plowing grasslands and cutting away forest cover. It is an example of the far-reaching results of failure to control the small waters in the higher part of a watershed, the creeks, brooks, and various small streams at the sources of larger rivers. It also can be used to give the children additional information in a study of the conservation of soil before a summary is needed.

*Background desirable.*—Techniques most needed to understand this film are the ability to follow continuity, to sense a problem and keep it in mind, and familiarity with the conservation experiences presented in the film. Children who have carried on several activities in conserving soil understand what soil is and how it is held in place by grass roots, forests, and the like, will probably have sufficient background for understanding *The River*.

*Procedures.*—(1) Preparation: Observe forest litter and understand that it is composed of leaves, small sticks, tiny animals, and the like, mixed with soil; see the action of water dripping through forest litter; compare the absorption of water in forest litter with its more rapid run-off on uncovered soil; observe that grass absorbs rainfall instead of letting it run away rapidly; take a trip to a brook to observe that where there is a steep fall the water goes swiftly and has more power; notice that tiny pebbles are carried along with the water; throw sticks in the stream and notice that the water can carry them even though some are quite large and heavy; put a hand in the water that falls off a rack or a ridge and feel its power.

Review the map of the Mississippi Valley and note the relative immensity of the region. Learn the names of the more important tributaries of the river. Instead of preparing the children by specific map study, the teacher can incorporate a map study in a unit on the conservation of soil in which the Nation's soil problems, present and past, have been studied. In such a study the children will learn not only the location of the river and its tributaries, but the location of forests, prairies, and cornlands, grasslands, and cotton regions, with respect to the main watershed.

(2) Viewing: The children can be asked to note in the first scenes the suggestions or hints of plot, or tragedy, to come and to observe constructive ways of preventing the ruin suggested in the early scenes of the picture. A second showing is advisable to help the children to understand methods of fighting floods at the mouth of the river; to understand that there are two distinct methods of controlling erosion, control of headwaters by proper land use and control of floods at the mouth of the river; and to appreciate the contribution of social-service agencies during floods.

(3) Supplementary materials: Supplementary visual materials are especially desirable in preparing the children to view the film and in clearing up difficulties which the children meet as they view it. (a) The following publications of the U. S. Department of Agriculture have helpful still pictures: *Ten Billion Little Dams*; *Topsoil, Its Preservation*; *Our Soil, Its Wastage and Preservation*; and *Soil, the Nation's Basic Heritage*. (b) Still pictures useful for background studies of various types of farming are published in *Conservation and Farming, Building America Series*, Society for Curriculum Study, Inc., 425 West One hundred and twenty-third Street, New York, N. Y. (c) Other films to supplement the film are: *Muddy Waters*; *Forests and Men*; *O. C. O. Fights Erosion*; *Timber-R-R*; and *Forests and Streams*, U. S. Department of Agricul-



ture Division of Motion Pictures, Extension Service; and *Reclamation in the Arid West*, U. S. Department of the Interior, Division of Motion Pictures.

(4) Questions for discussion: (a) Does the local neighborhood have any of the conservation problems suggested by the film? (b) What is being done to solve them?

(5) Further activities: (a) Draw a map of the watershed of which the local neighborhood is a part. (b) Fill a small gully near the school. (c) Observe the results of planting shrubs or vines in the gully or of building dams of brush. Decide whether or not a larger part of the rainfall in the region has been retained by the effort. (d) Observe other activities in the neighborhood closely related to the story of the film, such as studies of contour plowing, strip farming, terracing, and grassed waterways. Study local forest conservation. The main purpose of such related studies is to have the children realize the importance of control of rainfall and small springs and streams in the upper part of watersheds.

**The Story of Coal.**—New York, N. Y., Bray Pictures Corporation, 729 Seventh Avenue, [n. d.] 1 reel, 16 mm. Sound. No teacher's guide.

**Content.**—The theme of the film is the formation of coal. Although not produced as a conservation film, it can be used for the purpose if followed with appropriate discussion.

Centuries ago much of the earth was covered with swampy forests. Trees grew and sank in the bog. Many pictures are shown slowly enough for children to get an idea of the type of vegetation which made coal. Finally the swamps were covered by the seas and the submerged vegetation formed peat. In the picture animated diagrams are used to show the layers of peat and partly transformed vegetation. For ages silt and sand were deposited over the peat, and the peat eventually changed into lignite and then became bituminous coal. The silt and sand above the coal turned into rock. Again many scenes are shown slowly, so that children can easily understand the picture. The weight of the rock above the peat slowly changed it to coal and narrow strips of coal appear one layer above another.

Change took place and the earth's surface moved in great convulsions, folding the layers of coal one upon the other. The presence of heat and the continued pressure changed bituminous coal into anthracite. Much of the anthracite at first covered mountains as well as valleys, but then came the glaciers, which cut off the mountaintops and destroyed the coal there. The picture shows a valley in the anthracite region. Finally men found the coal and began to dig it. In a valley in the picture is a coal-mining town, with the entrance of a mine shown both at a distance and close up. The observer sees a small car sink down the chute into the mine.

A map is used to indicate the location of four areas in the United States. Hard-coal areas are pointed out by an index, and then soft-coal areas. Deep mining means more labor and expense than the shallower mining. The interior of the mines is shown with the miners at work. Scenes show the placing of dynamite, the man who placed it going away, and the consequent explosion which loosens coal so that it can be removed easily from the mine. Coal cars full of coal sometimes travel several miles underground before they reach the surface. The picture takes the observer some distance with the car and then pictures the coal hoisted to the entrance of the mine and dumped into a hopper. A crusher breaks the pieces which are too large to handle easily. Much waste must be removed from anthracite. One of the scenes is a valley nearly covered with waste.



**Educational objectives.**—(1) Understandings: (a) Coal was formed centuries ago when the earth's climate was warmer and damper than now. (b) The climate produced great trees and dense vegetation. (c) After many years the vegetation was submerged and through great, slow changes, pressure, and heat, became coal. (d) The conditions which produced coal cannot exist again in the stage of creation which we know. (e) Some day the supplies of coal will become exhausted, and no more coal will form.

(2) Attitudes: (a) Desire to refrain from wasting coal and to keep others from wasting it. (b) Tendency to regard coal as a resource which the Nation as a whole should plan to conserve.

(3) Persistent interests: (a) Interest in the work of coal mining. (b) Interest in the people who mine and the way they live.

**Adaptation.**—Grade 4 and above. Most suitable if a unit on coal is in progress or has been previously studied.

**Treatment of material.**—Organization and continuity are clear; there are sufficient close-ups and effective photography; presentation is slow enough for children to understand; and facts apparently are accurate.

**Situation and purpose.**—Appropriate for supplementing or enriching a unit on the conservation of coal or a unit on mining, minerals, or fuel.

**Background desirable.**—Ability to follow continuity and to use the facts observed to help answer questions; familiarity with commentary.

**Procedures.**—(1) Preparation: In the regular development of the unit on coal, before the film is presented, the children should have some experience with coal, such as gathering pieces, breaking them apart, seeing them burned in a stove or furnace, etc.; should compare hard coal with soft coal and study the values and uses of each; should be sufficiently familiar with the map of the United States to understand the locations mentioned in the film; should study the story of the formation of coal in books.

(2) Viewing: Children look for answers to questions; formulate questions about points which are not clear; and formulate problems suggested by the film such as: Is coal being formed anywhere today? How can coal be conserved?

(3) Supplementary materials: (a) *Coal and iron*,<sup>20</sup> picture-teaching unit material. (b) Pictures included in section on coal in a children's encyclopedia. (c) *The Story Book of Coal*.<sup>21</sup> (d) *Getting Acquainted With the Minerals*.<sup>22</sup>

(4) Questions for discussion: (a) Is coal wasted in the children's community? (b) What substitutes would the Nation have for coal, should all the coal be consumed? (c) In what ways, if any, can the Nation conserve part of the coal now used? (d) How does coal compare with other fuels in amount of supply?

(5) Further activities: (a) Scenes in the first part of the film can be used to give the children ideas for original posters and drawings about the formation of coal. (b) Children who live near a mine can visit the mine, observe the machinery at its entrance, and see how much coal is wasted. (c) Children can gather samples of coal for an exhibit and write labels, folders, or posters concerning the conservation of coal to accompany their samples.

<sup>20</sup> Compton's pictured encyclopedia. Coal and iron. Chicago, Ill., E. P. Compton & Co., 1936.

<sup>21</sup> Petersham, Maude and Petersham, Miska. The story book of coal. Philadelphia, Pa., John C. Winston, 1935. 32 p.

<sup>22</sup> English, George. Getting acquainted with the minerals. Rochester, N. Y., Mineralogical Publishing Co., 1934. 324 p. illus.



## Supplementary List of 12 Films on Conservation

**Home on the Range.**—Washington, D. C. U. S. Department of the Interior, Division of Motion Pictures. [n. d.] 1 reel, 16 mm. Sound. Loan.

The Government plans for control of erosion in the public domain; cooperation of the landowners with Government officials; activities in control of erosion, such as flood control, protection of grass, construction of driveways, and the seeding of overgrazed areas.

**Sinews from the Soil.**—Washington, D. C. U. S. Department of the Interior, Division of Motion Pictures. 1935. 10 min. 16 mm. Silent. Loan.

Important industries, places of recreation, and scenery in Minnesota; iron mining, park activities, and C. C. C. work. Topics briefly treated.

**Old Lands—New Use (South Carolina).**—Washington, D. C. U. S. Department of the Interior, Division of Motion Pictures. 1935. 11 min. 16 mm. Sound. Loan.

Designed to show how lands which have become barren through wrong use, and submarginal lands, can be devoted to parks. Emphasizes replanting of trees, use of parks for recreation, and work of C.C.C.

**Reclamation in the Arid West.**—Washington, D. C. U. S. Department of the Interior, Division of Motion Pictures. 1937. 10 min. 16 mm. Sound. Loan.

Important understandings are: Land west of the 100th meridian is relatively arid; the importance of irrigation in reclaiming arid land; usefulness of snows high in mountains; and work of Government in irrigation.

**Reforestation.**—Rochester, N. Y., Eastman Teaching Films, Inc. 1928. 15 min. 16 mm. Silent. Loan. Teacher's guide.

Portrays sections of a film lesson on forest cutting, a tree nursery, and a school project in which pupils plant seedlings in treeless areas.

**Harvesting Uncle Sam's Timber.**—Washington, D. C. U. S. Department of Agriculture, Forest Service. 1928. 2 reels, 16 mm. Silent. Loan.

Shows that forests are a source of national wealth and that although millions of dollars worth of forests are cut each year the forests are not destroyed. The chief governmental regulations deal with sale of forest units and with the cutting of mature trees according to a plan which provides for second, third, and fourth crops of lumber. Forest lands which have been completely swept by fire may remain unproductive indefinitely.

**Forest (Fire or Game).**—Washington, D. C. U. S. Department of Agriculture, Motion Picture Division. 1931. 1 reel, 16 and 35 mm. Silent. Loan.

Shows that forests protect wildlife, such as deer, fish, quail, turkey, moose, and bear; that fires destroy forests and the food of animals that live in forests as well as the animals. Brings out ways in which forest fires are caused by carelessness, and shows that regions which are understocked with game can be supplied from other regions with young animals such as deer, or with fish.

**Flowers.**—Rochester, N. Y. Eastman Teaching Films, Inc. [n. d.] 1 reel, 16 mm. Silent. Teacher's guide.

The film shows a number of common flowers growing in natural situations; blood-root, trillium, azalea, iris, tidy tips, California poppy, and lily. Animated photography. The hepatica has leaves which are liver-shaped, and the blossoms grow on long, heavy stalks. Slow movement portrays their growth and flowers and leaves move in the breeze as they grow. Other flowers are displayed in the same manner and a number of scenes are shown for each flower. The picture should be useful in helping children to identify flowers when they have opportunity to see them in the woods.



**Michigan Moose.**—New York. Walter O. Gutlohn, Inc. Michigan Department of Conservation, Lansing, Mich. 1930. 15 min. 16 mm. Sound. Loan.

Shows that moose live in forests or woodlands. In order to have moose it is necessary to protect woods and forests. Because there is not enough food for large herds of moose in the forests, an effort has been made to corral herds of moose and feed them during the winter. Moose are sometimes trapped and moved to areas where there are none.

**Michigan Fur-Bearers.**—New York. Walter O. Gutlohn, Inc. Michigan Department of Conservation, Lansing, Mich. 1934. 15 min. 16 mm. Sound. Loan or purchase.

A number of scenes of different animals such as an opossum with its young, porcupine, muskrats, rabbits, Michigan wolverine, skunk, otter, badger, raccoon, fox, bobcat, bear cubs, white-tailed deer, and moose.

**Michigan White-Tails.**—New York. Walter O. Gutlohn, Inc. 1937. 1 reel, 16 mm. Sound. Loan.

A film portraying deer in Michigan. Shows that deer live in woodlands and that in order to have deer it is necessary to protect woods and forests. Deer feed on cedar trees. With the present area of forest in Michigan it is possible to preserve a limited number of deer. To keep the deer from being destroyed completely, hunters are allowed to kill only the deer that have antlers. Some effort is made to protect the deer from starvation by trapping them in woods where they have eaten the cedar and removing them to fresh woodlands.

**War in the Trees.**—New York. Walter O. Gutlohn, Inc. [n. d.] 1 reel, 16 mm. Sound. Purchase or loan.

Forests are an important natural resource. Millions of dollars worth of trees, however, are destroyed by the woodwasp. Because of his intelligence and scientific ability man has discovered a unique way of fighting the woodwasp, and that is through a natural enemy, the *Rhyssa*, a parasite developed in laboratories. Every year the *Rhyssa* saves Great Britain millions of dollars worth of lumber. The life cycle of the *Rhyssa* is pictured.