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ACKNOWLEDGEMENTS

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Learning Resources Officer
Rod E. McConnell
This manual is intended to provide a listing of materials (print, videotapes and film) readily available to the teacher. Due to the time factors involved, it is not intended to be an exhaustive compilation.

The materials have been "matched" with the grades and concepts as closely as time and other resources would allow. New materials will be added and some deleted via new pages which will be made available by Alberta Education.

You are encouraged to utilize materials to be found at the local level. However, please refer to "IMPORTANT GUIDELINES" in the Junior High School Science CURRICULUM GUIDE, page 12, for more information in this respect.

If you locate materials which you feel would be of benefit to others, you are encouraged to forward the information on these to Alberta Education. A form has been specially prepared for this purpose: the "Teacher's Recommendation for Inclusion" form which appears on page ?. Your assistance in helping us upgrade and update the listings will be much appreciated, not only by us but by other teachers in the field as well.

Another form which may be of use in upgrading the listing is the "Teacher's Recommendation for Deletion" form which is found on page 9. If for any reason you feel that an item should be deleted, please fill in this form and send it to the undersigned Learning Resources Officer.

You may note that the many items previously available through the Audio Visual Services Branch of Alberta Education have not been included. This is due to the fact that the Audio Visual Film Library has been decentralized throughout the province and now (as of August, 1978) resides in four Regional Film Libraries. (See page 17 for locations.)
Teachers are asked to refer to these libraries if the school in which they are teaching is serviced by one of the libraries.

This publication lists material which is available through various departments of government, private publishers and the ACCESS Media Resources Centres as well as the Extension Department of the University of Alberta. When using this listing, please ensure that requests are directed to the appropriate agency. Publications, unless noted otherwise, may be ordered from the publishers or School Book Branch if a prescribed reference. Videotapes are to be ordered from the indicated agency, usually the ACCESS MEDIA RESOURCE CENTRES. Film is to be ordered from the Department of Extension, University of Alberta. Check the separate information sections on each medium.

As this is the first effort at supplying a listing of materials directly linked with curricular concepts, the listing is necessarily sparse in certain areas. However, it is hoped that this will be rectified over time with the cooperation of all involved.

Rod E. McConnell
Learning Resources Officer (Science)
Curriculum Branch
The Curriculum Branch, in cooperation with other government agencies, has prepared a Learning Resources Kit for the junior high school science teachers.

Comprised of printed materials from the following agencies, the kit will provide many useful pieces of information. Contributing agencies are:

Agriculture Canada
Alberta Energy and Natural Resources
Alberta Environment
Environment Conservation Authority

An attempt has been made to provide the latest available information on each of the chosen areas. However, in many cases, the publications are in short supply. As a consequence, some items may not be available in kits ordered at a later date. Teachers are urged to order kits (at least one per school) at their earliest opportunity to ensure as complete a kit as possible. Teachers should also note that two publications from Alberta Energy and Natural Resources, "The Vital Two-Thirds" and "The First Harvest," both included in the kits, are complemented by videotape programs of the same name. See page E7.2 - V-2. Please request your dubs of these programs from the ACCESS Media Resources Centre.

Kits may be ordered by requesting a Learning Resources Kit for Junior High School Science from the following address:

The School Book Branch
10410 - 121 Street
Edmonton, Alberta T5N 1L2

Please note that the cost to cover handling and shipping is $2.21 ($2.60 - 15% discount). Individual teachers/schools must pay in advance. School boards may charge their orders.
ORGANIZATION OF THE LISTING

This listing has been organized to meet several objectives:
(a) ease of location of information for grade, core or elective area and concept number;
(b) ease of location of media type--print, video or film, dependent upon (a);
(c) insertion and deletion of information for periodic updating.

The information for each grade is outlined as follows:

Grade number title page

Prescribed Reference Annotations (PRA)

These pages contain brief annotations of the prescribed references for each grade plus additional textual resources and teacher references. Pages are numbered as follows: grade number - "PRA" designation - page number. E.g. 7-PRA-1.

Core concept area title page

Core concept information area

This area is arranged by concept numbers with subdivisions of print "P", video "V", NASA video "V(N)", and film "F". The specific core concept wording and number (as per the Curriculum Guide) is printed at the top of each first "Print" page--the first page of each concept section. Pages are numbered in the following manner: E.g. C7.1 - V(N)-1.  

\[
\begin{align*}
C &= \text{core concept area} \\
7 &= \text{grade} \\
1 &= \text{concept number} \\
V(N) &= \text{NASA videotapes} \\
1 &= \text{page one of } V(N)
\end{align*}
\]

The page number may be read as "core area of grade 7, concept number 1, NASA videotapes, page 1."
Local Resources Listing

A page is included on which teachers may list local resources from their libraries, media centres, or regional film library that apply to that particular concept level.

Elective concept area title page

Electives concept information area

This is organized in the same manner as the core area, except the "C" designation is changed to "E".

Local Resources Listing

A Local Resources Listing has been included at the end of each elective concept section as well.

Thus, the teacher is able to locate information by grade, core or elective, concept number and medium format just by flipping through the lower right-hand page numbers in the listing.

The information on each concept may be updated in any of the three media formats separately without affecting any other sections.
TEACHER'S RECOMMENDATION FOR INCLUSION

I wish to recommend the following material for inclusion in the Junior High School Science LEARNING RESOURCES listing:

1. PRODUCER INFORMATION

Producer's Name: ________________________________
Producer's Address: ________________________________
                                   ________________________________
                                   ________________________________
                                   ________________________________ Postal Code: __________

2. MATERIAL DESCRIPTION

Title: _________________________________________
Series Title (if any): ____________________________
Date of Production: ________________ Cost: __________
Type of Material (videotape, text, etc.): ______________
Material Format (1/2-inch, etc.): ______________
Is the material contained in a kit? Yes ______ No ______

3. MATERIAL USE

Material was used for: Grade ______ Concept Number ______
(refer to Curriculum Guide)

4. MATERIAL EFFECTIVENESS

Please indicate what aspects of the material you found to be most effective.

_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
5. MATERIAL INEFFECTIVENESS

Please indicate what aspects of the material you found to be particularly ineffective.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

6. TECHNIQUE

Please indicate how you used the material with your students to achieve the maximum effectiveness.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

7. MATERIAL RECOMMENDED BY

Name: _________________________________________________________

Address: _______________________________________________________

______________________________________________________________________

Postal Code: __________ Telephone: _________________________________

THANK YOU FOR YOUR TIME AND EFFORT IN HELPING US TO UPGRADE THE LEARNING RESOURCES LISTING. YOUR EFFORTS ARE MUCH APPRECIATED.

Please mail the above recommendation to:

Rod E. McConnell
Learning Resources Officer (Science)
Audio Visual Services Branch
Alberta Education
11160 - Jasper Avenue
Edmonton, Alberta  T5K 0L2

Telephone:  427 2943
I wish to recommend that the following material be deleted from the Junior High School Science LEARNING RESOURCES listing:

1. MATERIAL INFORMATION

Title: __________________________________________________________

Series (if any): ___________________________________________________

Catalogue Number: _______________________________________________

LEARNING RESOURCES Page Number: ________________________________

2. REASON FOR DELETION

Please list your reasons for wishing to have this material removed from the LEARNING RESOURCES listing.

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________

3. RECOMMENDED BY

Name: __________________________________________________________

Address: _________________________________________________________

_________________________________________________________________

_________________________________________________________________

Postal Code: __________ Telephone: _________________________________

Please mail the above recommendation to:

Rod E. McConnell
Learning Resources Officer (Science)
Audio Visual Services Branch
Alberta Education
11160 - Jasper Avenue
Edmonton, Alberta T5K 0L2

Telephone: 427 2943
USING MEDIA IN THE CLASSROOM

When the teacher is using media in the classroom, he/she should consider the following:

(1) The media should be ordered in sufficient time to obtain them from the dubbing centres, learning resources centres, etc.

(2) Once obtained, the media should be previewed by the teacher. This allows the teacher the opportunity to decide how closely the program fits the curriculum and specific objectives which the teacher plans to meet. Previewing the program also enables the teacher to plan how he/she will actually use the program in the context of his/her class. Such variables as the suitability of the program for this or that specific class and the particular stage which the class has reached can be determined by previewing. The teacher may also find specific areas of the program which he/she will want to emphasize or downplay as the program is being run. There may be areas which the teacher will want to eliminate entirely. One could say that previewing is essential prior to the use of any material in the classroom.

(3) The use of media should be tied to specific objectives. The indiscriminate use of media will serve only to confuse the learner as to the objectives to be reached in its use. How the program is to be used will depend upon the individual teacher and his strategies. The teacher should indeed develop a strategy to be used with any particular piece of media. This strategy should take the greatest advantage of what the medium has to offer and at the same time maximize its impact.

(4) Any medium will have its greatest impact only if it is presented under a set of optimum conditions. The teacher should ensure that the best possible conditions for any particular medium are utilized. (E.g., Low noise levels for the use of audiotapes and the use of low light levels and reduced glare for the use of films or videotapes.)
(5) The use of the program should be planned so that there is to be some follow-up activity to support the program.

NOTE:

For more complete information on the choice and use of media in the classroom, refer to *Communication is Learning*, a manual for teachers and students, a copy of which has been sent to all schools in the province. More copies are available on request from:

Rod E. McConnell  
Learning Resources Officer  
Curriculum Branch  
Alberta Education  
11160 - Jasper Avenue  
Edmonton, Alberta T5K 0L2  
Telephone: 427-2943

Also refer to pages 12, 13 and 14 of the *Junior High School Curriculum Guide* for guidelines on the local selection of instructional materials, controversial issues and Department of Education policy.
In August 1978 the latest edition of the CANADIAN RESOURCES LISTING, produced by Alberta Education, was shipped to the schools of Alberta.

Primarily designed for the Language Arts and Social Studies areas, the listing contains many items which may be of use to the Science teacher as well.

Please refer to the listings contained under the following headings in the index:

Agriculture .......................... 579
Conservation of Natural Resources .......................... 594
Ecology .......................... 598
Economics .......................... 599
Environment .......................... 603
Geography .......................... 615
Maps .......................... 644
Natural Resources .......................... 647
Outdoor Life .......................... 649
Pollution .......................... 656
Science .......................... 662
Teaching--Aids and Devices .......................... 668
Technology .......................... 672
Transportation .......................... 673

Note: In the event that this publication cannot be located in the school library, please contact the Social Studies or Language Arts teacher in your school.
ORDERING FILMS

Department of Extension
University of Alberta

All films listed in this section are available from the Department of Extension of the University of Alberta. This service extends throughout Alberta and includes many schools and other institutions. The films have been identified and included to enable those teachers who lack access to other sources of films, such as the Regional Film Libraries, to have a broader base of resource selection. This does not, of course, preclude the use of any film by others already serviced by the Regional Film Libraries. Film use in schools is restricted to ALBERTA ONLY.

The Department of Extension does have a service charge for the use of the films. The charge for schools is 75 percent of the rental value of the order or a minimum charge of $2.50. The school will be billed for the use of the film.

As many others may be ordering the same film, it will be necessary to order well in advance and provide a list of alternatives. The Department does carry more than one copy of popular films, but this may not be enough to fulfill the demand. Please realize the demand that this listing may make on the library and be prepared to work on a first come, first served basis.

The Department provides its own catalogue which it sells at a cost of $5.00. This includes materials dealing with a large number of subject headings. The school would do well to have a copy of this catalogue on hand. The catalogue is frequently updated with supplements.
When ordering films, please include the following information:
--the name of the school requesting the film(s)
--the correct address of the school and telephone number
--the title of the film and its catalogue number
--the date you are requesting it for (and alternative dates, if possible)
--alternative films that may still meet your objectives.

Orders may be sent to:

University of Alberta Extension
Educational Media Division
Room 132, Corbett Hall
82 Avenue and 112 Street
Edmonton, Alberta    T6G 2G4

Booking Clerks:  432-5039  Bookkeeper:  432-5051
432-5040
432-4934

PLEASE ENSURE THAT THE FILMS YOU HAVE RECEIVED ARE RETURNED PROMPTLY AS OTHERS MAY BE WAITING FOR THEM.

NOTE:

The Department of Extension carries the complete line of NASA films which are available from the ACCESS Media Resources Centers. If you find that the film is necessary instead of the videotape for some reason, please do not hesitate to contact the Department of Extension for booking.
USING THE FILM ANNOTATIONS

Please refer to the following sample annotation to obtain the information necessary when choosing and ordering film from the Department of Extension, University of Alberta.

SAMPLE:

<table>
<thead>
<tr>
<th>title</th>
<th>1. ANIMAL CLASSIFICATION</th>
<th>A1703</th>
<th>Dept. of Ext. catalogue no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>description of content</td>
<td>Introduction to animal taxonomy. The horse is used as a case study for describing the Linnean system of classification. Includes statements on the purposes of taxonomy and the reason for using Latin terminology. Summation done in reverse order, from species to kingdom, by hand painting that uses a free system for analogy.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>film length</td>
<td>11 min.</td>
<td>color</td>
<td>sound</td>
</tr>
<tr>
<td>grade level</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTE:
The descriptions given in the annotation are meant to be descriptions only! Teachers should still preview materials prior to their use. Refer to "Using Media in the Classroom," page 11.

Please note the following symbols and their grade level designations:

e - elementary
ue - upper elementary
jr - junior high
sr - senior high
g - general
a - adult
c - college
REGIONAL FILM LIBRARIES

Since 1975, the Audio Visual Services Branch of Alberta Education has been involved in the decentralization of its film library. As of August 1978, the following Regional Film Libraries have been set up. The Audio Visual Services Branch now provides limited service to only a few remaining schools. To locate films at a local level, please contact your local media person or, if your school is served by one of the following film libraries, you may wish to contact them for more information.

These Regional Film Libraries may have catalogues listing the films they have available to the areas they serve. Unless you are one of the schools served by the Audio Visual Services Branch, please contact the Regional Film Library or local Instructional Media Centre that is servicing your school.

Regional Film Libraries are currently operating in the following centres:

Serving Zone 1:

Instructional Media Centre
Peace River School Division No. 10
P.O. Box 2157
Peace River, Alberta T0H 2X0

Mr. Gerry Harrington
IMC Coordinator

Serving Zone 2 and 3:

Instructional Materials Centre
Sherwood Park RCSSD No. 105
2017 Brentwood Boulevard
Sherwood Park, Alberta T8A 0X2

Mr. Dan Malone
IMC Coordinator

Serving Zone 5:

Calgary Public Library
Central Library Building
616 Macleod Trail S.E.
Calgary, Alberta T2G 2M2

Mrs. Gail Yeoman
Coordinator
Serving Zone 6:

Provincial Building  
200 - Fifth Avenue South  
Bag Service 3014  
Lethbridge, Alberta T1J 4C7  

Mrs. Anne McGougan  
Coordinator

NOTE:

Prior to contacting any of the above offices, please ensure:  
(a) that the office does indeed serve your school; (b) that your school has received a catalogue of films available from the library; (c) what films are available in your subject area in the catalogue; (d) what the conditions of service are. (Contact the media person in your school or local Instructional Media Centre for information on the local system.)
FILMS: A MINI-GUIDE

(1) Order films sufficiently well in advance to allow for preview time and time to reorder if necessary.

(2) Preview the film prior to its use in the classroom.

(3) Decide if the film has any relevance to the objectives you have to meet.

(4) Decide the best possible way in which the film may be utilized.

(5) Decide what introduction the film will need and prepare the class for the film.

(6) Decide whether only parts of the film have any bearing on the objectives or whether the whole film is useful. Perhaps only parts of the film need be shown to meet the desired objectives.

(7) Decide on what follow-up activities, if any, are needed in order to maximize the film's impact.

(8) Note the effectiveness of this particular film. Decide whether or not the film is worth using again, or how the film may be better utilized the next time. (Use the "Notes" section with the annotations for further reference.)
CARE OF THE FILM

(1) Ensure that only competent people operate the film projector.

(2) Always handle the film by the edges or the leader or tail, never by the images on the film itself. Otherwise, oils and dirt from the hands will adhere to the film, causing damage.

(3) Ensure that the leading edge of the film is cut straight across. It should not be ragged or torn, as this may create threading complications.

(4) Check the film periodically as it is being shown to ensure that it is running through properly and is being wound properly.

(5) Do not "cinch" the film to tighten it up on the reel. If any dust is present between the coils, scratches will appear on the film.

(6) Do not rewind the film upon completion (unless it is to be used again) as this facilitates the checking of the film when it is returned to the library.

(7) Keep the film in the protective can in which it comes.

(8) Store the film in an upright position in a cool room of average humidity.
CARE OF THE PROJECTOR

(1) Ensure that the projector is run only by qualified people.

(2) Have regular check-ups on the machine to ensure that it is cleaned, lubricated and running properly.

(3) Learn the simple checks which ensure that the film is running properly, that the picture is focused, the image size is right for the viewers, and the film is being properly wound on the take-up reel.

(4) Lenses have to be cleaned periodically. This should be done only by people familiar with the technique. (Proper technique is usually found on packages of lens-cleaning tissue. Kleenex-type tissues should not be used as they will increase the chances of scratching the lens.

(5) The "gate" of the projector will have to be cleaned occasionally. If it is dirty, one will see lint appear on the screen with the picture. Learn how to clean this area—a simple procedure requiring little time but improving picture quality.

(6) Once the film is finished, the projector should be run for several minutes to allow the bulb to cool down. This prolongs the life of the bulb tremendously.

(7) Spare bulbs should be available with the projector at all times. The teacher or one of the students should be familiar with the procedure to replace the bulb in the event that there is a burn out.

(8) Cover the projector and store in a clean area when the projector is not in use.

(9) Avoid bumping the projector. This will help protect delicate optical and mechanical components.
ORDERING VIDEOTAPES
ACCESS Media Resources Centres

All videotapes listed, including National Aeronautics and Space Administration (NASA) videotapes, are to be ordered from ACCESS Media Resources Centres.

When ordering videotapes from the ACCESS Media Resources Centres, please observe the following conditions to ensure ease of processing to obtain the fastest service possible.

(1) Please do not send damaged tape, tapes of insufficient length, empty reels or tapes which were allowed to be stored uncovered. Tapes of insufficient length and, of course, empty reels that are accidentally mailed will result in incomplete orders. Please double check before mailing.

(2) Ensure that tapes do not get damaged in the mail by wrapping them carefully in strong cartons. Never use paperfill bags, as these rip easily, contaminating the tapes with dust.

(3) Please rewind the tape to the beginning of the program before mailing to the dubbing center.

(4) Please avoid "rush" orders. At the present time, the turn-around time from the dubbing centre is approximately four weeks. Orders must be in writing only, as telephone orders frequently result in errors and re-dubs. Please mail your order, tapes and purchase order under one cover, if possible, thus eliminating confusion and delay. A sales tax exempt number, along with the purchase order, is necessary when ordering new tape.
(5) Have only one program dubbed to one tape whenever possible. This not only facilitates dubbing, but also eliminates the time one has to expend when searching for the next program.

VIDEOTAPE PURCHASE FROM ACCESS

The following formats of videotape may be purchased from ACCESS Media Resources Centres:

1/2-inch cartridge: 30 min. $22.00
1/2-inch open reel: 30 min. (VR2) $9.00
            60 min. (VR3) $14.00
3/4-inch cassette: 30 min. (VC1) $13.00
            60 min. (VC2) $18.00

NOTE:
As ACCESS purchases videotape in bulk, specific brands of videotape cannot be supplied to the purchaser. Prices will vary according to the current market. (Prices listed above are those effective April 1978 and are current as of the date of this publication.)

All purchases must contain:
--a purchase order
--a purchase order number
--a statement of federal tax exemption

NOTE:
Please ensure that you are ordering videotape of the correct format for the machines on which you plan to use the tapes.
VIDEOTAPE FORMATS THAT MAY BE ORDERED

As schools throughout the province have purchased VTR's which operate on different formats, the ACCESS Media Resources Centres provide dubbing on the following formats:

1/2-inch cartridge  --Panasonic format
                  --Phillips format

1/2-inch open reel  --Sony CV series format (non-EIAJ)
                     --Sony AV series format (EIAJ)
                     --Panasonic format (EIAJ)

(Note: All EIAJ format machines are compatible, regardless of the manufacturer's brand name.)

1-inch open reel   --Sony 320 format
                    --Ampex format
                    --IVC format

2-inch open reel   --Sony PV-120 format

ACCESS Media Resources Centre Locations

Calgary: ACCESS Media Resource Centre
1611 - 29 Street N.W.
Calgary, Alberta T2N 4J8

Telephone: 283-8241

Edmonton: ACCESS Media Resource Centre
16930 - 114 Avenue
Edmonton, Alberta T5M 3S2

Telephone: 451-3160
USING THE VIDEOTAPE ANNOTATIONS

Please refer to the following sample annotation to obtain the information necessary when choosing and ordering videotapes from ACCESS.

SAMPLE:

<table>
<thead>
<tr>
<th>title</th>
<th>1. ECOLOGY, YOU AND YOUR ENVIRONMENT: BROWN INCIDENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>access no.</td>
<td>132203 ACCESS no. (use when ordering)</td>
</tr>
<tr>
<td>description</td>
<td>A humorous sketch involving Farmer Brown, a worm and a reporter is used to illustrate the dangers of land misuse and to show that soil is the most critical substance in our environment.</td>
</tr>
<tr>
<td>series title</td>
<td>Series: Ecology, You and Your Environment</td>
</tr>
<tr>
<td>program length</td>
<td>20 min. color sound uejrsr</td>
</tr>
<tr>
<td>grade level</td>
<td></td>
</tr>
</tbody>
</table>

NOTE:
The descriptions given in the annotations are meant to be descriptions only! Teachers should still preview materials prior to their use. Refer to "Using Media in the Classroom," page 11.

Please note the following symbols and their grade level designations:

e - elementary
ue - upper elementary
jr - junior high
sr - senior high
g - general
a - adult
c - college
VIDEOTAPE: A MINI-GUIDE

(1) Order video programs sufficiently well in advance to allow for preview time and time to reorder if necessary.

(2) Preview the tape prior to its use in the classroom.

(3) Decide if the program has any relevance to the objectives you have to meet.

(4) Decide the best possible way in which the program may be utilized.

(5) Decide what introduction the program will need and prepare the class for the program.

(6) Decide whether only parts of the tape have any bearing on the objectives or whether the whole tape is useful. Perhaps only parts need be shown to meet the desired objectives.

(7) Decide on what follow-up activities, if any, are needed in order to maximize the program's impact.

(8) Note the effectiveness of this particular program. Decide whether or not the tape is worth using again, or how the program may be better utilized the next time. (Use the "Notes" section with the annotations for further reference.)
CARE OF THE VIDEOTAPE

(1) Dispose of damaged tapes. These tend to damage the "heads" of the VTR and may lead to expensive repairs. Splicing damaged videotape is not recommended.

(2) Ensure that the tapes are placed on the VTR's in the correct manner. (Videotapes are recorded on one side only and are recorded the full width of the tape. Thus you may not record two programs on the same strip of tape. Two or more programs may be recorded consecutively, however.)

(3) Always rewind tapes after they have been used. This will result in less confusion and saves time as well.

(4) Keep tapes in their packages when the tapes are not being used. Store them in a cool place of average humidity, away from sources of magnetism. Magnetic influence tends to destroy the quality of the image and the sound track.

(5) Label tapes in a legible manner to provide ease of access and reduce confusion.

(6) Store tapes standing on edge to prevent warping.
CARE OF THE VIDEOTAPE RECORDER:

(1) Ensure that the videotape recorders are operated by qualified personnel only. What may appear as a minor mistake may result in costly repairs. If you are not sufficiently knowledgeable about the VTR, consult your school media person or contact the local Instructional Media Centre or the distributor.

(2) Have the VTR serviced regularly by professionals. This may prevent the machine from being out of service for long periods of time and ensures the quality of the image and sound. Learn the simple maintenance techniques such as cleaning the "heads." These will help prolong the life of the parts and reduce "down time."

(3) Learn the proper techniques for connecting the machines (VTR and television) to ensure proper connections are made and to be able to run checks when problems arise.

(4) If several tapes are used on the same machine, the tracking and skew controls may have to be adjusted in order to obtain the best quality of picture. These two controls may make a great difference in the ultimate quality.

(5) Always keep VTR's covered. These machines are especially susceptible to dust, which causes increased wear of the "heads" (the mechanical parts which "read" the tape).

(6) Refrain from jarring the VTR or the television.
The following facilities have been listed as they provide excellent educational opportunities for the science student. Though not intended to be exhaustive, this listing indicates some of the exceptional facilities found in or near Alberta's two main centres. Throughout the province, there may be many others which are well suited to the science student's needs, and provision has been made for the teacher to list these on page 36.

Please contact the centres listed at the address or telephone number indicated prior to planning a field trip to ensure that all the necessary arrangements have been made prior to your arrival. In most cases, the teacher is advised to contact these agencies well in advance of a planned outing.

Teachers are also encouraged to refer to the section titled "Suggestions Regarding a Field Studies Program," page 18, of the Curriculum Guide for Junior High School Science (1978).

If you feel that there are other facilities of note which should be included in this listing, please feel free to contact the undersigned Learning Resources Officer. No doubt there are other teachers who would benefit from this additional information and would be pleased to obtain it.

Please contact:

Mr. Rod E. McConnell
Learning Resources Officer (Science)
Audio Visual Services Branch
2nd Floor, West Wing
Devonian Building
11160 - Jasper Avenue
Edmonton, Alberta T5K 0L2

Telephone: 427-2943
calgary

A. Calgary Centennial Planetarium

The planetarium features school oriented programs on the universe as well as an observation deck on which telescopes are used. As well, the Pleides Theatre is used for various concerts, films, lectures, etc. The planetarium also hosts an aero-space museum and various astronomy-related resources and equipment useful to teachers and students. For more information contact:

Calgary Centennial Planetarium
701 - 11th Street, S.W.
Calgary, Alberta T2P 2C4
Telephone: 264-4060

B. The Calgary Zoo

This facility boasts a large collection of animals and birds as well as a dinosaur exhibit using life-size models. This complex is highly recommended for the science student. For more information contact:

The Calgary Zoo
St. George’s Island
Memorial Drive East
Calgary, Alberta
Telephone: 265-9310

C. Devonian Gardens

An indoor 1 hectare park provides a setting for tropical plants, a children's playground and skating during winter. For more information contact:

The Devonian Gardens
4th Floor, Toronto Dominion Square
2nd Street & 8th Avenue S.W.
Calgary, Alberta
Telephone: 266-7493
D. Fish Creek Park

Designed to be maintained as a conservation area, this park features local prairie wildlife and an interpretive centre.

Fish Creek Park
Macleod Trail & Canyon Meadow Drive
Calgary, Alberta
Telephone: 278-0111

E. The Fish Hatchery

Aquaria and tanks allow the visitor the opportunity to view the many varieties of trout and other types of fish of Alberta prior to their distribution to lakes and streams.

The Fish Hatchery
1440 - 17th A. Street, S.E.
Calgary, Alberta T2G 4T9
Telephone: 261-6561

F. Glenbow-Alberta Institute

A number of historical and art displays is complemented by an excellent minerology collection. For more information contact:

Glenbow-Alberta Institute
9th Avenue and 1st Street, S.E.
Calgary, Alberta
Telephone: 264-8300

G. Inglewood Bird Sanctuary

The banks and islands of the Bow River provide a setting for waterfowl, some of which are enclosed in pens. For more information contact:

Inglewood Bird Sanctuary
9th Avenue and 23 Street, S.E.
Calgary, Alberta
Telephone: 269-6688
H. **Reader Rock Gardens**

These outdoor gardens feature native plants from Europe, Asia, the Orient, and the South Pacific. For more information contact:

Reader Rock Gardens  
26th Avenue & 2nd Street, S.E.  
Calgary, Alberta

I. **Sulphur Plants**

Please contact local oil companies for more information on field trips to facilities.
A. ALBERTA GOVERNMENT

The Provincial Museum of Alberta

A wealth of resources awaits the science teacher and student at the museum. Special guided tours for classes may be arranged to complement a particular curricular subject if so desired. For bookings and more information, contact:

Attention: Margaret McInall
The Provincial Museum of Alberta
12845 - 102 Avenue
Edmonton, Alberta T5N 0M6
Telephone: 452-2150, Ext. 247

The Mobile Planetarium (Provincial Museum of Alberta)

A mobile planetarium (produced by Alberta Culture) is presently touring the province. The planetarium is designed to be set up in schools and provide educational programs to classes of students. Please contact:

Attention: Mr. John Musgrave
Provincial Museum of Alberta
12845 - 102 Avenue
Edmonton, Alberta T5N 0M6
Telephone: 452-2150, Ext. 291

B. CITY OF EDMONTON

The Muttart Conservatory

Of interest to biology-botany students, the four pyramids of the conservatory provide excellent displays of plants belonging to the tropical, arid and temperate zones as well as a special show house. Teachers may arrange for guided tours by contacting:
The Muttart Conservatory
c/o Edmonton Parks and Recreation
10th Floor, CN Tower
Edmonton, Alberta T5J 0K1
Telephone: 428-3664

The Queen Elizabeth Planetarium

This planetarium provides audio visual shows designed for specific grade levels on a variety of astronomical topics. The planetarium also carries a selection of astronomical instruments as well as print and non-print materials for those interested in astronomy. Teachers who plan to have classes attend planetarium shows may obtain information learning packages relative to the show and book specific times by contacting:

The Queen Elizabeth Planetarium
c/o Edmonton Parks and Recreation
10th Floor, CN Tower
Edmonton, Alberta T5J 0K1
Telephone: 455-0119

The Valley Zoo

Open from May to October, the Valley Zoo hosts a variety of animals and birds. Teachers may obtain more information by contacting:

Attention: Mr. G. Vandepolder
The Valley Zoo
c/o Edmonton Parks and Recreation
10th Floor, CN Tower
Edmonton, Alberta T5J 0K1
Telephone: 483-5511

C. THE UNIVERSITY OF ALBERTA

Department of Physics Observatory

The U of A observatory, situated atop the Physics Building on the campus, is open late September to April yearly. Depending upon the weather, observations and/or audio visual programs are presented. Various astronomical phenomena may be viewed as they come into favorable positions in the night sky. For more information and bookings, contact:
Office of Community Relations
Room 423, Athabasca Hall
University of Alberta
Edmonton, Alberta T6G 2E8

Telephone: 432-4201

or

Dr. Doug Hube: 432-5410
Dr. Austin Gulliver: 432-3987
FIELD TRIP LISTING

List below any institution/area to which field trips are deemed worthwhile.

<table>
<thead>
<tr>
<th>NAME</th>
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Learning Resources

Evaluation

Your reaction to this listing is appreciated. Please remove the form, fill it in, and mail it at your convenience.

Please indicate your answers to the following questions by circling one of the numbers listed.

1. The format of this listing is:
   (Poor) 1 2 3 4 5 (Excellent)

   Comments: ____________________________________________

2. I feel that this listing is:
   (Very difficult to use) 1 2 3 4 5 (Easy to use)

   Comments: ____________________________________________

3. I find the page numbering system:
   (Confusing) 1 2 3 4 5 (Easy to follow)

   Comments: ____________________________________________

4. I find the following area of the listing to be of little assistance:

   _______________________________________________________

5. I find the following area of the listing to be of great assistance:

   _______________________________________________________

6. I would like to see the following areas added to the listing:

   _______________________________________________________

7. I would like to see the following areas removed from the listing:

   _______________________________________________________

   Signature: ________________________________
   Date: ________________________________
Rod E. McConnell
Learning Resources Officer
Curriculum Branch
2nd Floor, West Wing
Devonian Building
11160 - Jasper Avenue
Edmonton, Alberta T5K 0L2
The following annotated bibliography of publications related to safety in the science laboratory and/or classroom is provided for your information.


8. A Guide to Safety in the Science Laboratory. Tallahassee, Florida: State Department of Education, (Bulletin) 1969. 93 pages. The notes on poison control centres and on the hazards of coral snakes and night blooming jasmine may seem rather limited in usefulness to Albertans! However, there is much that is worthwhile and the document very readable.
A well written article on negligence as it applies to science teachers in the laboratory. The article refers to American jurisprudence. There are difference between American and Canadian law, though certain aspects of Common Law are the same.

Practical advice on a difficult problem.

Detailed help in planning safe physics experiences. Keyed to the new Alberta program.

This little paperback (Schools Council of Great Britain) is a superb distillation of the best advice on use of living organisms in schools.

A colour coded flip chart with general advice for the Elementary Science Teacher. Somewhat specific to the American scene, but very useful.

Some of the references are rather local in nature and the pamphlet tends to be rather dry in tone, but it is a very useful reference for the school laboratory.

Colour filmstrip with cassette and teacher's guide. Shows pictures of labs having multiple hazards and the same lab cleaned up. Very effective review tool with Junior High students. British environment and tape commentary may cause a laugh or two.

Colour filmstrip, cassette tape and teacher's guide. Developed by teachers and professionally produced. This material works well with students. Junior High. (Order on school letterhead).
Up-to-date general advice on Safety programs and procedures. 
Somewhat specific to the American scene, but accurate and readable.

A report of the working group on radiation surveillance to the federal-provincial sub-committee on environmental health. Advice on the use of low powered lasers in the classroom approved by the Environmental Health Sub-Committee.

The section on properties (general information, hazard analysis, countermeasures) is alphabetically arranged. This excellent reference, or Steere's book, or both, ought to be available in each school board office.

Serves as a format for local development of a safety bulletin.

Serves as a format for local development of a safety bulletin.

22. Sibley, Christine E. "Negligence in the Science Laboratory" 
An accurate and readable summary of the position of the science teacher in the laboratory, relative to negligence.

One of the best known and best primary references for Chemistry laboratory safety. Includes exhaustive material of most kinds of chemical hazards, and a superb list of specific chemical hazards. This reference, or Sax's book, or both, ought to be available in each school board office.
Prescribed References


This text is aimed at developing both a basic understanding of the concepts of life science and the processes of scientific investigation. The laboratory investigations form an integral part of the topics that are studied. The student investigations are clearly outlined and easy to follow.

The text follows the program quite closely and the teacher's guide includes many good ideas and useful techniques and additional resources. The text has been screened by the Metric Commission and uses SI units.


This text follows the course outline very closely and includes many sections that are useful to students such as periodic review sections and the laboratory activities. A deliberate effort has been made to emphasize environmental concerns. The emphasis on the acquisition of knowledge make this text most suitable for average and above average students.

Additional Textual Resources

These are materials that are available in the market place but, for one reason or another, have not been recommended as prescribed references.


The E.R.C. program has an exceptionally stimulating approach to the teaching of environmental studies. The text is well printed and, although non-SI, it has a lot to recommend it as a secondary resource.


For the less motivated student relatively weak in verbal, mathematical or scientific skills. The concepts developed are more appropriate for the grade 10 program but may be of some use to teachers as an "idea" book. Non-SI and American in orientation.

An authoritative approach to the presentation of the concepts related to introductory biology. For the above average student who needs challenges and a greater depth of explanation.


A highly activity-centered approach to teaching science, calling for a lot of teacher-student interaction with materials and organisms. A source of many fine student activities.


A colorful, well-written program that emphasizes the interrelationships among living things. The student experiments are simple and are an integral part of the program. It offers an alternative organizational plan that teachers might find useful.


A book that incorporates many student activities in the development of the life science program. It poses a series of questions that a student should answer in exploring the topics covered by the program. It is non-SI but is part of a program that is approved in many parts of Canada.


A series of nine paperbacks designed for grades 4-7 that focuses on teaching science in the out-of-doors. An excellent resource for teachers. (Canadian but non-SI.)


Color photographs and descriptions of some 270 species of flowering plants of the northern great plains of North America. A most useful guide to wildflowers in the prairie region of Alberta.
Teacher References


Biology Keys, School Book Branch, Alberta Education.
  Key to Alberta Amphibia
  Key to the Aquatic Mollusks
  Key to the Bryophytes
  Key to the Families of Alberta Fishes
  Key to the Mammals of Alberta
  Key to the Principal Groups of Alberta Insects
  Key to the Tree-Dwelling Lichens


C7.1 All sets of objects including living things may be classified into groups having common characteristics.

Prescribed References for Grade 7


INTRODUCING INSECTS

Outlines the distinguishing features of insects and differentiates them from other forms of animal life as well as the difference between anthropods and true insects.

Producer: National Film Board, 1960/June 1979
17 min.  b/w  sound  jrsr
<table>
<thead>
<tr>
<th>ANNOTATION</th>
<th>NOTES</th>
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<tbody>
<tr>
<td>ANIMAL CLASSIFICATION A1703</td>
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<tr>
<td>Introduction to animal taxonomy. The horse is used as a case study for describing the Linnean system of classification. Includes statements on the purposes of taxonomy and the reason for using Latin terminology. Summation done in reverse order, from species to kingdom, by hand painting that uses a free system for analogy.</td>
<td></td>
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<tr>
<td>Producer: C-B Films, 1962</td>
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<tr>
<td>11 min. color sound ejrsr $2.50</td>
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<tr>
<td>ANIMALS OF THE ICE AGE B2723</td>
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<tr>
<td>Shows how scientists from a museum dig up bones and determine to what animals they belonged by comparing them with other bones of both contemporary and prehistoric animals. Other animals of prehistoric times are shown: urus, cave-dwelling bear, mammoth. Methods of study and identification are discussed.</td>
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<tr>
<td>Producer: Northern Films, 1961</td>
<td></td>
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<tr>
<td>15 min. b/w sound jra $2.50</td>
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<tr>
<td>BACTERIA B1965</td>
<td></td>
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<tr>
<td>Demonstrates the basic characteristics of bacteria: structure, feeding, and reproduction. Shows how bacteria are classified and describes their ecological importance as the first link in certain food chains and as a cause of decomposition. Photomicrography is used to show cell division and conjugation.</td>
<td></td>
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<tr>
<td>Producer: EBF, 1962</td>
<td></td>
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<tr>
<td>19 min. color sound jrsrca $3.90</td>
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</table>
DUCKS, OF COURSE

That one duck is not necessarily the same as another is made clear in this film in an attempt to protect the dwindling species. The star of the film is a hunter who is obviously light on duck lore but heavy on the trigger. By the time everything has been made clear, he and everyone know a good deal more about duck identification.

Producer: NFB, 1966
16 min. color sound g $3.40

INTRODUCING INSECTS

A veritable Who's Who of the insect world. Ushers you into a wonderland of nature for an absorbing study of creatures more colorful and quite as complex as much larger forms of animals. The film considers such questions as: What really is an insect? Do insects differ from other animals?

Producer: NFB, 1960
17 min. color sound g $2.50
LOCAL RESOURCE LISTING

PLEASE LIST BELOW LOCAL RESOURCES APPLICABLE TO THIS CURRICULUM CONCEPT SECTION

<table>
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<tr>
<th>TITLE</th>
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Prescribed References for Grade 7


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<thead>
<tr>
<th>ANNOTATION</th>
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<tr>
<td><strong>LIVING BIOLOGY: DIFFUSION AND OSMOSIS</strong> 124102</td>
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<tr>
<td>Uses models with live and time-lapse photography to demonstrate osmosis in a living plant. (AVSB)</td>
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<tr>
<td>Producer: Alberta School Broadcasts, 1965/Unlimited</td>
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<tr>
<td>Series: Living Biology</td>
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<td>30 min. b/w sound jrsr</td>
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<tr>
<td><strong>SCIENCE OF THE SEA</strong> 126601</td>
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<tr>
<td>Studies the activities and equipment of the marine scientist. Explains water cycle and food cycles of the ocean, and the factors affecting density, salinity. (AVSB)</td>
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<tr>
<td>Producer: Martin Bovey Films, 1972?</td>
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<tr>
<td>18 min. b/w sound jrsr</td>
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</table>
**ANOTATION**

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<th>Film Title</th>
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<tbody>
<tr>
<td>BACTERIA</td>
<td>B1965</td>
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</table>

Demonstrates the basic characteristics of bacteria: structure, feeding, and reproduction. Shows how bacteria are classified and describes their ecological importance as the first link in certain food chains and as a cause of decomposition. Photomicrography is used to show cell division and conjugation.

Producer: EBF, 1962  
19 min.  color sound  jrsrca  $3.90

<table>
<thead>
<tr>
<th>Film Title</th>
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<tbody>
<tr>
<td>THE FIRST MANY-CELLED ANIMALS: THE SPONGES</td>
<td>B1973</td>
</tr>
</tbody>
</table>

Demonstrates that the sponge represents one development of multicellularity in animals and shows some of the adaptations of the body plan of this primitive animal. Live photography, animation, photomicrography, and laboratory experimentation show life processes and adaptation of sponges to their environment.

Producer: EBF, 1962  
17 min.  color sound  jrsrca  $3.40

<table>
<thead>
<tr>
<th>Film Title</th>
<th>Code</th>
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<tr>
<td>GROWTH OF PLANTS</td>
<td>B2366</td>
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</table>

Illustrates the dynamics of plant process, especially as it affects woody plants, and shows how cell division, elongation, and differentiation contribute to stem and root growth. The film explains how materials are dispersed throughout the plant and demonstrates the effects of various stimuli, such as hormones, gravity and light on plant growth.

Producer: EBF, 1962  
21 min.  color sound  jrsrca  $5.10
MITOSIS

Illustrates the fundamental process of cell division in plant and animal life and discusses the importance of the mitotic process to the growth and maintenance of an organism. Photomicrography shows the process of cell division actually taking place in a living cell. The effects of chemicals and radiation on dividing cells are demonstrated.

Producer: EBF, 1960
24 min. color sound jrsr $5.80

THE PENETRATING EYE

Shows several examples of the three-dimensional photomicrography possible through the use of the scanning electron microscope. Compares results to those obtained with conventional light and electron microscopes, explaining the workings of each type.

Producer: Wexler, 1970
21 min. color sound g $2.50
LOCAL RESOURCE LISTING

PLEASE LIST BELOW LOCAL RESOURCES APPLICABLE TO THIS CURRICULUM CONCEPT SECTION

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</table>
LIVING THINGS REQUIRE ENERGY TO CARRY ON CERTAIN FUNDAMENTAL PROCESSES IN ORDER TO SUSTAIN LIFE

Prescribed References for Grade 7


ECOLOGY, YOU AND YOUR ENVIRONMENT: VENI VIDI VICI

Deals with the preservation of all life forms which share our environment and illustrates the concept of a food chain.

Producer: Ontario Educational Communications Authority, 1972?/Sept. 1978
Series: Ecology, You and Your Environment
20 min. color sound

ENVIRONMENTAL SCIENCE: OUR DEPENDENCE ON PLANTS

The many ways in which man depends upon vegetation for food, clothing, shelter and a multitude of other products are the topics of this program.

Producer: Ontario Educational Communications Authority, 1968/March 1980
Series: Environmental Science
20 min. color sound

ENVIRONMENTAL SCIENCE: SERVANTS OF MAN

The relationships between men and domesticated animals are examined. The question of feeding palatable food to pets when many are starving is also discussed.

Producer: Ontario Educational Communications Authority, 1968/March 1980
Series: Environmental Science
20 min. color sound
HOW GREEN PLANTS MAKE FOOD: PHOTOSYNTHESIS

Through animation, microphotography and live demonstrations, the process of photosynthesis is explored. Emphasizes the importance of green plants as food and examines recent research in this vital field of scientific study.

13 min. color sound

THE LIFE CYCLE OF A PLANT

Plant growth is traced from seed to mature plant to new seed: germination, pollination, seed development and fertilization. (AVSB)

Producer: Universal, 1970/August 1980
11 min. b/w sound jrsr

LIFE ZONES OF THE CENTRAL ROCKIES

Provides a basis for studying the ecology of the four life zones found in ascending a mountain-side in the Central Rockies. (AVSB)

Producer: Educational Film Distributors, 1977/1978
21 min. color sound jrsr

LIVING BIOLOGY: DIFFUSION AND OSMOSIS

Uses models with live and time-lapse photography to demonstrate osmosis in a living plant. (AVSB)

Producer: Alberta School Broadcasts, 1965/Unlimited
Series: Living Biology
30 min. b/w sound jrsr

PHOTOSYNTHESIS

The role and relationship of pigments, gas exchange and carbon dioxide in photosynthesis are explained. (AVSB)

Producer: Alberta School Broadcasts, 1965/Unlimited
21 min. color sound jrsr

C7.3 - V-2
SCIENCE OF THE SEA

Studies the activities and equipment of the marine scientists. Explains water cycle and food cycles of the ocean, and the factors affecting density, salinity. (AVSB)

Producer: Martin Bovey Films, 1972?
   18 min.   b/w   sound

SEE FOR YOURSELF: BIRDS OF THE HIGHLANDS

Examines the great variety of birds in the mountains and around the lochs in the Scottish Highlands. (AVSB)

Producer: Alberta School Broadcasts, 1970/Unlimited
Series: See for Yourself
   30 min.   b/w   sound
LIFE?

The film discusses the general characteristics of life as we know it. A number of examples are included to show how life has adapted to Earth conditions, and how certain life forms can withstand environmental shocks. The conditions on Mars are described, raising the question of the possibility of life existing there. (NASA Group) (AVSB)

Producer: NASA 1976/Perpetual
14 min. color sound jrsr

LIVING IN SPACE I: THE CASE FOR REGENERATION

Shows what is needed to provide men with fresh air, drinkable water, food and personal hygiene as well as the problems of converting waste materials into usable products. (NASA Group) (AVSB)

Producer: NASA 1967/Perpetual
Series: Living in Space
12 min. color sound jrsr

LIVING IN SPACE II: REGENERATION PROCESSES

Shows the principles of physics, chemistry, and mechanics employed in regenerative life support systems. Includes oxygen recovery, water purification, food and waste management, humidity and temperature control. (NASA Group) (AVSB)

Producer: NASA 1967/Perpetual
Series: Living in Space
12 min. color sound jrsr
LIVING IN SPACE III: A TECHNOLOGY FOR SPACECRAFT DESIGN

Shows the features that must be incorporated into a spacecraft intended for long duration manned space flight and the technology that is being developed to solve the numerous problems. (NASA Group) (AVSB)

Producer: NASA 1967/Perpetual
Series: Living in Space
20 min. color sound jrsr

MARS AND BEYOND?

This film traces the Viking mission to Mars to explore the biochemical evidences of life. Elementary chemical components of life (as we know it) are introduced; these are related to the Gas Chromatograph Mass Spectrometer (GCMS). Design and operating function are described. The film concludes with the potential significance of biochemical findings--how they may relate to past, present and future Martian life. (NASA Group) (AVSB)

Producer: NASA 1975/Perpetual
14 min. color sound jrsr

MARS--IS THERE LIFE?

Students are introduced to the possible past history of Mars and its present surface topography--volcanoes, ice caps, streambeds, impact craters, canyons and wind-eroded surfaces. The Viking Lander and its biology experiments are discussed in relationship to the search for life on Mars. Students are asked to consider life forms that might be able to survive on Mars and the potential significance of their discovery. (NASA Group) (AVSB)

Producer: NASA 1975/Perpetual
14 min. color sound jrsr

MARS--THE SEARCH BEGINS

Review of the knowledge gained from over 7,000 pictures obtained by Mariner 9. The film focuses on the possibility of life on Mars and offers graphic portrayals of life forms that could exist there. (NASA Group) (AVSB)

Producer: NASA 1973/Perpetual
29 min. color sound jrsr

C7.3 - V(N)-2
<table>
<thead>
<tr>
<th>FILM</th>
<th>ANNOTATION</th>
<th>NOTES</th>
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<tbody>
<tr>
<td>ABOVE THE TIMBERLINE</td>
<td>Explores the upper regions of the Alpine tundra zone, showing in close-up the flora and fauna which survive in extremes of altitude and cold. Explains that the alpine height nurtures a remarkable variety of vegetation including bright flowers and plants with hairy or waxy leaves. Includes views of the mountain goat, elk, and bighorn sheep.</td>
<td>B1634</td>
</tr>
<tr>
<td>Producer: NFB, 1960</td>
<td>16 min. color sound g $2.50</td>
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<tr>
<td>ANIMAL ADAPTATIONS TO A NORTHERN ENVIRONMENT</td>
<td>Shows how animals in the Arctic region of North America adapt to their environment. Describes food gathering in summer and hibernation in winter.</td>
<td>B3368</td>
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<tr>
<td>Producer: CBS-BFA, 1970</td>
<td>11 min. color sound jrsra $3.40</td>
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<tr>
<td>BACTERIA</td>
<td>Demonstrates the basic characteristics of bacteria: structure, feeding, and reproduction. Shows how bacteria are classified and describes their ecological importance as the first link in certain food chains and as a cause of decomposition. Photomicrography is used to show cell division and conjugation.</td>
<td>B1965</td>
</tr>
<tr>
<td>Producer: EBF, 1962</td>
<td>19 min. color sound jrsrca $3.90</td>
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</table>
BIRD WING ADAPTATIONS

Uses charts, close-up photography, and action spots on land and in flight to examine the structure of the various bird wings and to relate the structure to survival by adaptation. Among the birds studies are the heron, pigeons, hummingbirds, crows, and the bald eagle.

Producer: IFB, 1964
17 min. color sound a $4.00

ECHINODERMS: SEA STARS AND THEIR RELATIVES

Describes the characteristics of the echinoderm body and shows how it is adapted for locomotion, respiration, digestion, and reproduction. Examples of the five classes of echinoderms are shown, and the various stages of reproduction and development are illustrated with live photography and photomicrography. Laboratory experiments using sea urchin eggs are shown.

Producer: EBF, 1962
14 min. color sound jrsrca $3.40

GENE ACTION

This is a film about the biochemical mechanisms of inheritance, a field in which some of the most exciting discoveries in science are now being made. Through simple animation, the film shows how the DNA of chromosomes can replicate itself during mitosis and how it can serve as a pattern for messenger RNA, how the arrangement of nucleotides in the DNA molecule can form a genetic code for amino acids. The role of RNA as intermediary at protein formation sites in the cytoplasm is shown. Live action sequences show how work with neurospora and other simple organisms is useful in the study of genetic mechanism. The film concludes with an example of how new knowledge of the biochemical mechanisms of inheritance is helping in the treatment of genetic disorders among humans.

Producer: EBF, 1963
16 min. color sound jrsrca $3.40
GROWTH OF PLANTS

Illustrates the dynamics of plant process, especially as it affects woody plants, and shows how cell division, elongation, and differentiation contribute to stem and root growth. Explains how materials are dispersed throughout the plant and demonstrates the effects of various stimuli, such as hormones, gravity, and light on plant growth.

Producer: EBF, 1962
21 min. color sound jrsrca $5.10

GYMNOSPERMS

Demonstrates that gymnosperms are seed plants which bear their seeds on cones. Animation and time-lapse sequences trace the life cycle of the pine through the growth of the pollen and seed cones, pollination, fertilization, and germination of seeds. Examples of less known gymnosperms are shown, and the importance of conifers is illustrated.

Producer: EBF, 1961
17 min. color sound jrsrca $3.40

HOW NATURE PROTECTS ANIMALS

Shows various ways by which animals are provided with devices to conceal themselves, either for the purposes of protection or as a means of securing food through fleetness of foot, mimicry, protective coloration, armor, and secluded homes. Includes the rabbit, raccoon, giraffe, tiger, lion, zebra, goat, pheasant, looper caterpillar, and beehawk moth.

Producer: EBF, 1959
11 min. color sound g $2.50
HOW PINE TREES REPRODUCE: PINE CONE BIOLOGY

Time-lapse and close-up photography examine the processes involved in the reproduction of pine trees: the opening mechanism of pine cones, the fertilization of seed producing cones by windborn pollen from male cones, the dissemination and the germination of seeds. The film also stresses the importance of continuing research to improve the quality of North America's valuable pine forests.

Producer: EBF, 1964
11 min. color sound jrsrca $2.70

INTRODUCING INSECTS

A veritable Who's Who of the insect world. Ushers you into a wonderland of nature for an absorbing study of creatures more colorful and quite as complex as much larger forms of animals. The film considers such questions: What really is an insect? Do insects differ from other animals?

Producer: NFB, 1960
17 min. color sound g $2.50

LIFE STORY OF THE HUMMINGBIRD

Presents a study of the life cycle of the smallest bird. Shows and explains physical characteristics, feeding habits, courtship, nest building, incubation and hatching of eggs, care and growth of the nestling, and eventually the first flight of the young.

Producer: EBF, 1963
16 min. color sound g $4.00

LIFE STORY OF THE REDWINGED BLACKBIRD

The film reveals the redwing's typical activities and behavior during the nesting season: its courtship ritual, nest-building techniques, hatching and care of the young, food gathering, and defence against natural enemies. Views of the mass migration to their winter ranges in the south are also shown.

Producer: EBF, 1966
11 min. color sound g $2.70

C7.3 - F-4
## THE MAYFLY: ECOLOGY OF AN AQUATIC INSECT

This film reveals the mayfly Hexagenia's life history, its importance as part of freshwater food chains and its dependence upon unpolluted water for survival.

Producer: E.B.E. Corporation, 1973  
15 min. color sound jrsrc $4.10

### ORIGIN OF LAND PLANTS: LIVERWORTS AND MOSSES

Traces the evolution of land plants and illustrates the structural characteristics, reproductive processes, and adaptive mechanisms of liverworts and mosses. Shows their relationship to the development of higher land plants. Photomicrography and animated drawings are used to illustrate the adaptive and reproductive processes.

Producer: EBF, 1962  
14 min. color sound jrsrca $2.90

### POLAR BEAR

The film traces the animal's migration from summer dens to winter ice floes and records the work being done by Canadian scientists who are gathering information.

Producer: CBC, 1972  
28 min. color sound jrsra $6.90

### ROOT GROWTH AND SOIL FAUNA

A study of the growth of fruit tree roots and the relationships which exist between the roots and different species of soil. The film was shot over a period of three years from a specially built underground glass chamber.

Producer: Dept. of Education and Science, 1972  
9 min. color sound g $2.50
SECRETS OF THE PLANT WORLD B1684

Describes the various ways in which seeds are planted without the help of men. Uses time-lapse photography to show the growing, budding, and flowering of many plants.

Producer: Walt Disney Productions, 1960
Series: Walt Disney: Secrets of Life
15 min. color sound g $2.80

SIMPLE PLANTS: THE ALGAE B1966

Illustrates typical forms of algae, explains their structure, describes their revolutionary development, and shows how algae have adapted to all types of moist environments. The reproductive processes of algae are shown with photography. The importance of algae to aquatic animals and man is explained.

Producer: EBF, 1962
18 min. color sound jrsrca $3.40

STINGING-CELLED ANIMALS: COELENTERATES B1974

Describes characteristics of the phylum Coelenterata, the typical coelenterate body plan, and provides examples of the three classes. Shows how coelenterates obtain and digest their food, how they reproduce by sexual and asexual processes, and how they move. Examples of fresh and salt water coelenterates are shown.

Producer: EBF, 1962
17 min. color sound jrsrca $3.40

SURVIVAL OF THE KIT FOX B3150

This film is a case history of an animal now threatened with extinction due to the widespread use of DDT. Also shows the kit fox in its natural habitat.

Producer: Journal, 1969
15 min. color sound g $3.70
A TREE IS A LIVING THING

For all children, especially those studying natural science in elementary grades. This film shows, through a motion picture camera linked to a high-powered microscope, the miracle of the leaf as it turns sunlight into chlorophyll, how a tree feeds, breathes, and grows.

Producer: NFB, 1964
11 min. b/w sound ejr $2.50

WAY OF LIFE

A study of predation that deals with an essential way of living in which all creatures, including man, take part.

Producer: Missouri Conservation, 1958
27 min. color sound jrsrca $4.30
LOCAL RESOURCE LISTING

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ALL LIVING THINGS INTERACT WITH AND ARE INTERDEPENDENT WITH EACH OTHER AND THEIR ENVIRONMENT

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<tr>
<td>Producer: Educational Film Distributors, 197?</td>
<td>18 min. color sound jrsr</td>
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<tr>
<td>BIRDS THAT NEVER FLY  124014</td>
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<tr>
<td>Examines prehistoric evidence relating to the characteristics of flightless birds and illustrates several examples of contemporary species. (AVSB)</td>
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<tr>
<td>Producer: Educational Film Distributors, 1971/1977</td>
<td>20 min. b/w sound uejrsr</td>
</tr>
<tr>
<td>DESERT ECOLOGY  124011</td>
<td></td>
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<tr>
<td>A useful tape on plant and animal life in the Arizona Desert. (AVSB)</td>
<td></td>
</tr>
<tr>
<td>Producer: Educational Film Distributors, 1970/1977</td>
<td>18 min. b/w sound jrsr</td>
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<tr>
<td>ECOLOGY OF THE ARCTIC  124232</td>
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<tr>
<td>Highlights the ecology of this vast frontier, one of the most sparsely populated areas, but home to an infinite variety of plants and animals. (AVSB)</td>
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<tr>
<td>Producer: Oxford Film Inc., 1974/1979</td>
<td>15 min. b/w sound uejr</td>
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<tr>
<td>ECOLOGY, YOU AND YOUR ENVIRONMENT:  132206</td>
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<tr>
<td>Comments on man's misuse of his own body through overeating, lack of exercise, misuse of drugs and chemicals, and an unbalanced diet.</td>
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<tr>
<td>Producer: Ontario Educational Communications Authority, 1972?/Sept. 1978</td>
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<tr>
<td>Series: Ecology, You and Your Environment</td>
<td>20 min. color sound uejrsr</td>
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</table>
ECOLOGY, YOU AND YOUR ENVIRONMENT: 132207
VENI VIDI VICI
Deals with the preservation of all life forms which share our environment and illustrates the concept of a food chain.
Producer: Ontario Educational Communications Authority, 1972?/Sept. 1978
20 min. color sound uejrsr

ENVIRONMENTAL SCIENCE: OUR 132303
DEPENDENCE ON PLANTS
The many ways in which man depends upon vegetation for food, clothing, shelter and a multitude of other products are the topics of this program.
Producer: Ontario Educational Communications Authority, 1968/March 1980
Series: Environmental Science
20 min. color sound jr

ENVIRONMENTAL SCIENCE: SERVANTS 132304
OF MAN
The relationships between men and domesticated animals are examined. The question of feeding palatable food to pets when many are starving is also discussed.
Producer: Ontario Educational Communications Authority, 1968/March 1980
Series: Environmental Science
20 min. color sound jr

LAY OF THE LAND: WASTELANDS 120503
. . . OR??
The land previously referred to as "bald" prairie, "boggy" marshes, "desolate" deserts has gained greater regard due to a higher degree of ecological awareness and appreciation. (AVSB)
Producer: Alberta School Broadcasts, 1973/Unlimited
Series: Lay of the Land
30 min. color sound uejr
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<tbody>
<tr>
<td>NATURE ENVIRONMENT: ALBERTA</td>
<td>110602</td>
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<tr>
<td>WILDLIFE</td>
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<tr>
<td>Al Karvonen and his family hike to Egypt Lake, Scarab Lake and Mummy Lake, filming the beautiful wildlife along the way. Producer: ACCESS, 1972 Series: Nature Environment 20 min. b/w sound jrsr</td>
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<tr>
<td>SCIENCE OF THE SEA</td>
<td>126601</td>
</tr>
<tr>
<td>Studies the activities and equipment of the marine scientist. Explains water cycle and food cycles of the ocean, and the factors affecting density, salinity. (AVSB) Producer: Martin Bovey Films, 1972? 18 min. b/w sound jrsr</td>
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<tr>
<td>WORLD IN A MARSH</td>
<td>120635</td>
</tr>
<tr>
<td>An intimate view of the miniature cosmos that seethes in a ferment of beauty and savagery behind the tall reeds and in the quiet water of the marsh. (AVSB) Producer: National Film Board, 1956/March 1980 22 min. b/w sound jr</td>
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<tr>
<td>THE WORLD OF DARKNESS</td>
<td>133704</td>
</tr>
<tr>
<td>Illustrates the ways in which different animals are adapted for life in the dark. Shown are cats, hyenas, barn owls and bats. (National Geographic Group) Producer: National Geographical Society, 1974/April 1979 25 min. color sound sr</td>
<td></td>
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</table>
LIVING IN SPACE 111: A TECHNOLOGY FOR SPACECRAFT DESIGN

Shows the features that must be incorporated into a spacecraft intended for long duration manned space flight and the technology that is being developed to solve the numerous problems. (NASA Group) (AVSB)

Producer: NASA 1967/Perpetual
Series: Living in Space
20 min. color sound jrsr
ABOVE THE TIMBERLINE

Explores the upper regions of the Alpine tundra zone, showing in close-up the flora and fauna which survive in extremes of altitude and cold. Explains that the Alpine height nurtures a remarkable variety of vegetation including bright flowers and plants with hairy or waxy leaves. Includes views of the mountain goat, elk and bighorn sheep.

Producer: NFB, 1960
16 min. color sound g $2.50

ANIMAL ADAPTATIONS TO A NORTHERN ENVIRONMENT

Shows how animals in the Arctic region of North America adapt to their environment. Describes food gathering in summer and hibernation in winter.

Producer: CBS-BFA, 1970
11 min. color sound jrsra $3.40

BAOBAB: PORTRAIT OF A TREE

Studies the interdependence of life in and around an African baobab tree.

53 min. color sound jrsr $13.50

BATHURST ISLAND EXPEDITION

Shows a biological expedition to the High Arctic Islands. Studies behavior and adaptations of tundra wolf, Arctic hare, muskox, Peary caribou, rock ptarmigan, sanderling, and other birds.

Producer: Cymar, 19?
30 min. color sound jrsr $6.50
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<td>BEHAVIOR AND ECOLOGY OF CORAL REEF FISHES</td>
<td>C3498</td>
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<tr>
<td>Examines a number of species of butterfly fish and how they have adapted to life on the coral reef.</td>
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<tr>
<td>Producer: ?, 1974</td>
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<tr>
<td>29 min. color sound ca $7.30</td>
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<tr>
<td>BETWEEN THE TIDES</td>
<td>PB1</td>
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<tr>
<td>Reveals some of the interesting plant and animal life that is not always visible to the naked eye and shows creatures of the rock-pools and shallow waters of Britain's coastal area. Explains their relationships to each other and to their environment.</td>
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<tr>
<td>Producer: British Transport, 1963</td>
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<tr>
<td>22 min. color sound jrsrca $2.50</td>
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<tr>
<td>DEATH OF A LEGEND</td>
<td>F2960</td>
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<tr>
<td>The wolf is yet another threatened species, largely because of the myths that have grown around it. This film disproves many of the fallacies, studying the wolf's life cycle, social organization, and role in the balance of nature,</td>
<td></td>
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<tr>
<td>Producer: NFB, 1971</td>
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<td>50 min. color sound g $8.50</td>
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<tr>
<td>DEER FAMILY OF NORTH AMERICA</td>
<td>B2350</td>
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<tr>
<td>The origins, ranges, habitats, characteristics, and life histories of the North American members of the deer family are examined. Migration and evolution are made clear with animation techniques. The special survival needs of different members are considered, including conservation measures in supplementary feeding programs, hunting restrictions, and habitat preservation.</td>
<td></td>
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<tr>
<td>Producer: IFB, 1966</td>
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<td>18 min. color sound jrsrca $4.40</td>
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THE DESERT I

The desert biome is characterized by widespread drought-resistant evergreen plants which carry on photosynthesis all year and by small annual plants that flower only in the spring rainy season and then die. The true deserts of California and Arizona have as their dominant plants the creosote bush in association with the burro weed. In the film, we see a wide variety of plant and animal life and locate the desert areas of the world.

Producer: EBF, 1962
22 min. color sound jrsrca $4.30

THE DESERT II

Shows the many plants and animals that have adapted to the desert's difficult conditions.

Producer: CBC, 1971
28 min. color sound jrsra $6.80

DUCKS, OF COURSE

That one duck is not necessarily the same as another is made clear in this film in an attempt to protect the dwindling species. The star of the film is a hunter who is obviously light on duck lore but heavy on the trigger. By the time everything has been made clear, he and everyone know a good deal more about duck identification.

Producer: NFB, 1966
16 min. color sound g $3.40
Macro-photography techniques were used to document the life cycle of the aphid and ladybug. Their biological relationship is studied.

Producer: Pyramid, 1971
14 min. color sound jrsrca $4.50

ECOLOGY OF THE PRONGHORN, MOUNTAIN SHEEP AND MOUNTAIN GOAT

Describes the life cycle, yearly habitats, physiology, and defence mechanisms of the pronghorn, mountain sheep, and mountain goat. Discusses how these animals have adapted to their environment.

Producer: Berlet, 1966
15 min. color sound jrsrca $4.00

EDGE OF THE BARRENS

A film study of the tundra of Canada's sub-arctic, stretching from the polar sea to the southern treeline. Despite the permafrost, this land supports a variety of living things such as the musk ox, caribou, birds, and flowers.

Producer: NFB, 1963
14 min. color sound jrsrca $2.50

THE FIRST MANY-CELLED ANIMALS: THE SPONGES

Demonstrates that the sponge represents one development of multicellularity in animals, and shows some of the adaptations of the body plan of this primitive animal. Live photography, animation, photomicrography, and laboratory experimentation show life processes and adaptation of sponges to their environment.

Producer: EBF, 1962
17 min. color sound jrsrca $3.40
A TREE IS A LIVING THING

For all children, especially those studying natural science in elementary grades. This film shows, through a motion picture camera linked to a high-powered microscope, the miracle of the leaf as it turns sunlight into chlorophyll, how a tree feeds, breathes, and grows.

Producer: NFB, 1964
11 min. b/w sound ejr $2.50

WAY OF LIFE

A study of predation that deals with an essential way of living in which all creatures, including man, take part.

Producer: Missouri Conservation, 1958
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1971/1977  
20 min. b/w sound uejrsr |       |
| DESERT ECOLOGY       | 124011|
| A useful tape on plant and animal life in the Arizona Desert. (AVSB) |       |
| Producer: Educational Film Distributors,  
1970/1977  
18 min. b/w sound jrsr |       |
| ECOLOGY OF THE ARCTIC| 124232|
| Highlights the ecology of this vast frontier, one of the most sparsely populated areas, but home to an infinite variety of plants and animals. (AVSB) |       |
| Producer: Oxford Film Inc., 1974/1979  
15 min. b/w sound uejr |       |
| ECOLOGY, YOU AND YOUR ENVIRONMENT: | 132206|
| Comments on man's misuse of his own body through overeating, lack of exercise, misuse of drugs and chemicals, and an unbalanced diet. |       |
| Producer: Ontario Educational Communications Authority, 1972?/Sept. 1978  
Series: Ecology, You and Your Environment  
20 min. color sound uejrsr |       |
ECOLOGY, YOU AND YOUR ENVIRONMENT: 132207
VENI VIDI VICI

Deals with the preservation of all life forms which share our environment and illustrates the concept of a food chain.

Producer: Ontario Educational Communications Authority, 1972?/Sept. 1978
20 min. color sound uejrsr

ENVIRONMENTAL SCIENCE: OUR DEPENDENCE ON PLANTS 132303

The many ways in which man depends upon vegetation for food, clothing, shelter and a multitude of other products are the topics of this program.

Producer: Ontario Educational Communications Authority, 1968/March 1980
Series: Environmental Science
20 min. color sound jr

ENVIRONMENTAL SCIENCE: SERVANTS OF MAN 132304

The relationships between men and domesticated animals are examined. The question of feeding palatable food to pets when many are starving is also discussed.

Producer: Ontario Educational Communications Authority, 1968/March 1980
Series: Environmental Science
20 min. color sound jr

LAY OF THE LAND: WASTELANDS OR?? 120503

The land previously referred to as "bald" prairie, "bog" marshes, "desolate" deserts has gained greater regard due to a higher degree of ecological awareness and appreciation. (AVSB)

Producer: Alberta School Broadcasts, 1973/Unlimited
Series: Lay of the Land
30 min. color sound uejr
NATURE ENVIRONMENT: ALBERTA
WILDLIFE

Al Karvonen and his family hike to Egypt Lake, Scarab Lake and Mummy Lake, filming the beautiful wildlife along the way.

Producer: ACCESS, 1972
Series: Nature Environment
20 min. b/w sound jrsr

SCIENCE OF THE SEA

Studies the activities and equipment of the marine scientist. Explains water cycle and food cycles of the ocean, and the factors affecting density, salinity. (AVSB)

Producer: Martin Bovey Films, 1972?
18 min. b/w sound jrsr

WORLD IN A MARSH

An intimate view of the miniature cosmos that seethes in a ferment of beauty and savagery behind the tall reeds and in the quiet water of the marsh. (AVSB)

Producer: National Film Board, 1956/March 1980
22 min. b/w sound jr

THE WORLD OF DARKNESS

Illustrates the ways in which different animals are adapted for life in the dark. Shown are cats, hyenas, barn owls and bats. (National Geographic Group)

Producer: National Geographical Society, 1974/April 1979
25 min. color sound sr
LIVING IN SPACE 111: A TECHNOLOGY FOR SPACECRAFT DESIGN

Shows the features that must be incorporated into a spacecraft intended for long duration manned space flight and the technology that is being developed to solve the numerous problems. (NASA Group) (AVSB)

Producer: NASA 1967/Perpetual
Series: Living in Space
20 min. color sound jrsr
<table>
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<tr>
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<tbody>
<tr>
<td>ABOVE THE TIMBERLINE</td>
<td>B1634</td>
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<tr>
<td>Explores the upper regions of the Alpine tundra zone, showing in close-up the flora and fauna which survive in extremes of altitude and cold. Explains that the Alpine height nurtures a remarkable variety of vegetation including bright flowers and plants with hairy or waxy leaves. Includes views of the mountain goat, elk and bighorn sheep.</td>
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<tr>
<td>Producer: NFB, 1960</td>
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<tr>
<td>16 min. color sound</td>
<td>$2.50</td>
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<th>Film Title</th>
<th>Catalog No.</th>
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<tbody>
<tr>
<td>ANIMAL ADAPTATIONS TO A NORTHERN ENVIRONMENT</td>
<td>B3368</td>
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<tr>
<td>Shows how animals in the Arctic region of North America adapt to their environment. Describes food gathering in summer and hibernation in winter.</td>
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<tr>
<td>Producer: CBS-BFA, 1970</td>
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<tr>
<td>11 min. color sound</td>
<td>$3.40</td>
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<tr>
<td>BAOBAB: PORTRAIT OF A TREE</td>
<td>F3472</td>
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<tr>
<td>Studies the interdependence of life in and around an African baobab tree.</td>
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<tr>
<td>53 min. color sound</td>
<td>$13.50</td>
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<tr>
<td>BATHURST ISLAND EXPEDITION</td>
<td>C3381</td>
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<tr>
<td>Shows a biological expedition to the High Arctic Islands. Studies behavior and adaptations of tundra wolf, Arctic hare, muskox, Peary caribou, rock ptarmigan, sanderling, and other birds.</td>
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<tr>
<td>Producer: Cymar, 19?</td>
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<tr>
<td>30 min. color sound</td>
<td>$6.50</td>
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</table>
BEHAVIOR AND ECOLOGY OF CORAL REEF FISHES

Examines a number of species of butterfly fish and how they have adapted to life on the coral reef.

Producer: ?, 1974
29 min. color sound ca $7.30

BETWEEN THE TIDES

Reveals some of the interesting plant and animal life that is not always visible to the naked eye and shows creatures of the rock-pools and shallow waters of Britain's coastal area. Explains their relationships to each other and to their environment.

Producer: British Transport, 1963
22 min. color sound jrsrca $2.50

DEATH OF A LEGEND

The wolf is yet another threatened species, largely because of the myths that have grown around it. This film disproves many of the fallacies, studying the wolf's life cycle, social organization, and role in the balance of nature.

Producer: NFB, 1971
50 min. color sound g $8.50

DEER FAMILY OF NORTH AMERICA

The origins, ranges, habitats, characteristics, and life histories of the North American members of the deer family are examined. Migration and evolution are made clear with animation techniques. The special survival needs of different members are considered, including conservation measures in supplementary feeding programs, hunting restrictions, and habitat preservation.

Producer: IFB, 1966
18 min. color sound jrsrca $4.40
The desert biome is characterized by widespread drought-resistant evergreen plants which carry on photosynthesis all year and by small annual plants that flower only in the spring rainy season and then die. The true deserts of California and Arizona have as their dominant plants the creosote bush in association with the burro weed. In the film, we see a wide variety of plant and animal life and locate the desert areas of the world.

Producer: EBF, 1962
22 min. color sound jrsrca $4.30

THE DESERT II

Shows the many plants and animals that have adapted to the desert's difficult conditions.

Producer: CBC, 1971
28 min. color sound jrsra $6.80

DUCKS, OF COURSE

That one duck is not necessarily the same as another is made clear in this film in an attempt to protect the dwindling species. The star of the film is a hunter who is obviously light on duck lore but heavy on the trigger. By the time everything has been made clear, he and everyone know a good deal more about duck identification.

Producer: NFB, 1966
16 min. color sound g $3.40
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<th>Annotation</th>
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<th>Duration</th>
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<tr>
<td>ECOLOGY CHECKS AND BALANCES</td>
<td>Macro-photography techniques were used to document the life cycle of the aphid and ladybug. Their biological relationship is studied.</td>
<td>Producer: Pyramid, 1971 14 min. color sound jrsrca</td>
<td>B3154</td>
<td>$4.50</td>
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<tr>
<td>ECOLOGY OF THE PRONGHORN, MOUNTAIN SHEEP AND MOUNTAIN GOAT</td>
<td>Describes the life cycle, yearly habitats, physiology, and defence mechanisms of the pronghorn, mountain sheep, and mountain goat. Discusses how these animals have adapted to their environment.</td>
<td>Producer: Berlet, 1966 15 min. color sound jrsrca</td>
<td>B2574</td>
<td>$4.00</td>
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<td>EDGE OF THE BARRENS</td>
<td>A film study of the tundra of Canada's sub-arctic, stretching from the polar sea to the southern treeline. Despite the permafrost, this land supports a variety of living things such as the musk ox, caribou, birds, and flowers.</td>
<td>Producer: NFB, 1963 14 min. color sound jrsrca</td>
<td>B2020</td>
<td>$2.50</td>
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<td>THE FIRST MANY-CELLED ANIMALS: THE SponGES</td>
<td>Demonstrates that the sponge represents one development of multicellularity in animals, and shows some of the adaptations of the body plan of this primitive animal. Live photography, animation, photomicrography, and laboratory experimentation show life processes and adaptation of sponges to their environment.</td>
<td>Producer: EBF, 1962 17 min. color sound jrsrca</td>
<td>B1973</td>
<td>$3.40</td>
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</table>
THE GREAT BARRIER REEF  

The unique ecosystem of the Reef, off the coast of Australia, is in danger from the Crown of Thorns, a coral-eating variety of starfish. Man must decide whether to risk introducing new elements, or to leave the Reef alone and wait for the results.

Producer: NBC, 1970
53 min.  color  sound  g  $11.30

THE HIDDEN WORLD  

Dr. Graham Bell Fairchild, a pioneer in the field of entomology, describes his work in Panama. Three themes--discovering the "hidden world," controlling insect populations, and observing social insects--are developed in a visual context in this nature study. Close-ups of insect structure and behavior, dramatic documentation of life in several insect societies, the ant, termite and honeybee are shown.

Producer: National Geographic/EBF, 1966
24 min.  color  sound  jrsrca  $6.79

HOW NATURE PROTECTS ANIMALS  

Shows various ways by which animals are provided with devices to conceal themselves, either for the purposes of protection or as a means of securing food through fleetness of foot, mimicry, protective coloration, armor, and secluded homes. Includes the rabbit, raccoon, giraffe, tiger, lion, zebra, goat, pheasant, looper caterpillar, and bee hawk moth.

Producer: EBF, 1959
11 min.  color  sound  g  $2.50

INTRODUCING INSECTS  

A veritable Who's Who of the insect world. Ushers you into a wonderland of nature for an absorbing study of creatures more colorful and quite as complex as much larger forms of animals. The film considers such questions as: What really is an insect? Do insects differ from other animals?

Producer: NFB, 1960
17 min.  color  sound  g  $2.50
LIFE IN A VACANT LOT
A2436

Presents the interrelation of organisms living in an urban vacant lot. A changing community which can be found almost anywhere, a vacant lot has a short life because it is replaced by construction or plantings and is eventually "disturbed" by man.

Producer: EBF, 1966
10 min. color sound jrsrca $2.70

LIFE IN THE WOODLOT
B1528

A surprising peek into the hidden world of the underbrush where silent, relentless revalry is concealed by overhanging foliage or carpets of woodland flowers. The film brings into focus a pyramid of life in which lower orders sustain and support the higher orders. In the plant world, the film shows a similar struggle for supremacy.

Producer: NFB, 1960
14 min. color sound g $2.50

THE LIVING SEA
E3148

This film illuminates the secret world of the ocean. It reaveals the link in this chain of life and man's dependence on the natural cycle of life in "the living sea."

Producer: BBC, 19?
30 min. color sound jrsrca $5.60

LOOK TO THE MOUNTAINS
C3378

The Rocky Mountains provide a variety of habitats from rocky river valleys to cool alpine meadows. Shows a vast array of plants and animals and how they are adapted to life in their varied surroundings.

Producer: Cymar, 19?
30 min. color sound g $6.50
ONE DAY AT TETON MARSH

Based on the book by Sally Carrighar describing the wild life in a peaceful swamp where animals and birds are as free as the wind, and nature reigns supreme.

Producer: Walt Disney Productions, 1967  
Series: Walt Disney: Animal Adventures  
47 min. color sound g $8.20

POINT PELEE

This narrow peninsula on Lake Erie supports a unique combination of bird and plant life. A growing population desires the area as a playground but unless its use is controlled, it will be destroyed.

Producer: CBC, 1971  
28 min. color sound jrsra $6.80

POLAR ECOLOGY: PREDATOR AND PREY

Illustrates the interaction of animals in both the Arctic and Antarctic regions. Documents principles of ecology governing predator-prey relationships, food chains, territories, and breeding success of selected animal species. Arctic scenes illustrate the interaction among the brown lemming, pomarine jaeger, least weasel, and snow owl. Antarctic scenes deal with parallel aspects among the adelie penguin, South Polar skua, and Weddel seal.

Producer: University of California, 1964  
22 min. color sound jrsrca $4.60

PROWLERs OF THE EVERGLADES

Introduces the many kinds of wildlife found in the everglades: ibis, cormorant, spoonbill, turtle, egret, duck and otter, with emphasis on the alligator.

Producer: Walt Disney Productions, 1960  
32 min. color sound g $5.30
THE RESTLESS SEA

The fascinating work of oceanographers in searching out the complex and interwoven relationship of nature in the sea is shown. Illustrates in film and animation the discoveries in many fields of marine research: physics, biology, meteorology, chemistry, geology, and engineering.

Producer: Walt Disney Productions, 1963
60 min. color sound g $2.50

SECRETS OF THE UNDERWATER WORLD

Describes many of the unusual creatures to be found in the shallow seas in the tidal fringe and fresh water, including the stickle-back, diving spider, archer fish, kelpfish, jellyfish, centophere, angler fish, decorator crab, and fiddler crab.

Producer: Walt Disney Productions, 1960
Series: Walt Disney: Secrets of Life
16 min. color sound g $2.80

SUCCESSION: FROM SAND DUNE TO FOREST

Illustrates the process and general principles of ecological succession by which an area slowly and continuously changes until it becomes a stable, natural community. Photographed in the dunes at the southern end of Lake Michigan, this film shows one of the earliest and most thoroughly studies examples of the process.

Producer: Northwestern University/EBF, 1962
16 min. color sound jrsrca $4.00

SUCCESSION ON LAVA

Photographs the many stages of succession that exist at different locations in Hawaii at the site of volcanic eruptions. Includes scenes of destruction due to lava flows and shows how new forms of life modify the environment.

Producer: E.B.E. Corporation, 1970
14 min. color sound jrsr $4.10
THE TEMPERATE DECIDUOUS FOREST

Illustrates the complex network of plant and animal relationships that make up the temperate deciduous forest community. Shows typical deciduous forest plants and animals and their adaptations to seasonal change. The full yearly cycle of spring, summer, autumn and winter is shown through the use of time-lapse photomicrography and live photography.

Producer: EBF, 1962
14 min. color sound jrsrca $3.40

THE TROPICAL RAIN FOREST

Illustrates the interrelationship between the rich variety of plant and animal life and the warm, humid environment of the tropical rain forest. Shows the layered structure of tropical rain forest vegetation, describes conditions of temperature and rainfall, and provides a view of typical and rare species of tropical rain forest animal and plant life.

Producer: EBF, 1962
17 min. color sound jrsrca $3.40

WAY OF LIFE

A study of predation that deals with an essential way of living in which all creature, including man, take part.

Producer: Missouri Conservation, 1958
27 min. color sound jrsrca $4.30

WHAT IS ECOLOGY?

Introduces the study of ecology by illustrating the wide variety of interrelationships between plants, animals, and their environment. Shows how biologists study these interrelationships and explains the importance of such studies to mankind. The major biomes of the world are introduced.

Producer: University of Pittsburgh/EBF, 1962
11 min. color sound jrsrca $2.70
WILD DOG FAMILY: THE COYOTE  
B2588

Tells the story of America's intelligent wild dog of the West and how it has survived and adjusted to encroaching civilization. Establishes the coyote's place in the canine family and reveals little known facts about its life.

Producer: Walt Disney Productions, 1968  
18 min. color sound g $4.60

THE WINNERS  
C3307

Time-Life's cameramen use a high-powered lens to photograph nature's most adaptable species, the insect. Shows how quickly insects adapt to threats to their existence as in the case of their ability to develop resistance to insecticides.

30 min. color sound jrsr $7.80

WORLD IN A MARSH  
B1249

The film examines the floating world of the marsh. It probes into the life forms that dwell beneath the water's surface and watches the creatures that choose the green jungle of weeds and swamp lilies for their habitat.

Producer: NFB, 1955  
22 min. color sound g $2.50
LOCAL RESOURCE LISTING

PLEASE LIST BELOW LOCAL RESOURCES APPLICABLE TO THIS CURRICULUM CONCEPT SECTION

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E7.1 MANKIND'S INFLUENCE MAY INCREASE THE RATE OF CHANGE, WITH BENEFICIAL OR HARMFUL RESULTS TO THE ENVIRONMENT

I. Prescribed References for Grade 7


II. From Prescribed References for Grades 8 and 9


III. Additional Textual Resources for Grade 7


IV. Other Print Resources

A. Available from: Alberta Transportation
   Communications Branch
   Transportation Building
   9630 - 106 Street
   Edmonton, Alberta T5K 2B8

   *Alberta Resource Maps: Forests and Parks*, 1975. Four maps, 21 cm. x 28 cm., color, $.20 each. (Content item 5)


1. "Asphalt Jungle" (Content items 1 and 2, pp. 63-84)
2. "Networks" (Content item 1, pp. 47-65)
V. From Learning Resources Kit

The following items may be obtained from the Learning Resources Kit. Please refer to page ____ for further information.

A. Agriculture Canada:
   1. Five Ways to Keep Pesticides on Our Side
   2. (Series) Proper Use of Pesticides Program
      a. "The Program"
      b. "Biological Control of Pests"
      c. "Pest Control Products Act"
      d. "Methods of Pest Control"
      e. "Pesticides Development"
      f. "Pesticides Waste Disposal"
      g. "First Aid for Accidents with Pesticides"
      h. "How to Use Pesticides"

B. Environment Conservation Authority:
   1. Employment, Productivity and Environment
   2. Biocides and Birds
<table>
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<tr>
<th>ANNOTATION</th>
<th>NOTES</th>
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<tr>
<td>ECOLOGY, YOU AND YOUR ENVIRONMENT: LOOK BACK FOR TOMORROW!</td>
<td>132201</td>
</tr>
<tr>
<td>An introductory program designed as a capsule view of the environment; it shows how man has evolved from total dependence on his environment to being oblivious to it.</td>
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<tr>
<td>Producer: Ontario Educational Communications Authority, 1972?/Sept. 1978</td>
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<tr>
<td>Series: Ecology, You and Your Environment</td>
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| ENVIRONMENTAL SCIENCE: CREATURES OF THE WILD                              | 132305|
| The different ways in which man has tried to control wild animals are discussed. |       |
| Producer: Ontario Educational Communications Authority, 1968/March 1980  |       |
| Series: Environmental Science                                             |       |
| 20 min. color sound                                                        |       |

| ENVIRONMENTAL SCIENCE: THE ENVIRONMENT OF MAN                             | 132301|
| Discusses the natural environment of Ontario when the Indians were the only inhabitants. Changes in the environment since that time are described. |       |
| Producer: Ontario Educational Communications Authority, 1974/March 1980  |       |
| Series: Environmental Science                                             |       |
| 20 min. color sound                                                        |       |

| NATURE ENVIRONMENT: OUR ENDANGERED ENVIRONMENT                             | 110603|
| Our natural resources: mountains, lakes and rivers, forests and wildlife, are quickly disappearing as a result of the over-clearing of land. How can we best conserve our land? |       |
| Producer: ACCESS, 1972                                                      |       |
| Series: Nature Environment                                                  |       |
| 20 min. b/w sound                                                          |       |
The problems incurred in land development and urbanization are explored.

Producer: Ontario Educational Communications Authority, 1968/March 1980
Series: Environmental Science
20 min. color sound jr

Man has been dependent on his environment for food, clothing and shelter. We must use the environment well if we want its benefits to last.

Producer: Ontario Educational Communications Authority, 1976/March 1980
Series: Environmental Science
20 min. color sound jrsr
THE AGRICULTURAL REVOLUTION: MAN AS A FOOD PRODUCER

This film depicts man in his role as farmer and domesticator of animals and demonstrates the effects of his change in lifestyle on man's culture. It relates the ancient food-producing societies to the present ones.

14 min. color sound jrsr $6.40

ALBERTA'S CHANGING ENVIRONMENT

Examples of how strip mining, farming, spraying, and dumping are changing the Alberta landscape and affecting the wildlife. In some instances, these activities are being carried out with an eye to conservation, and the total effect is really only a change in location. In other instances, careless procedures result in almost irreparable destruction of the natural vegetation and wildlife habitats.

Producer: Edgar T. Jones, 1971
22 min. color sound g $2.50

THE CANADIAN SHIELD: SAGUENAY REGION

The Saguenay area of Quebec is seen from a helicopter. From this vantage point, the size of region and its immense store of resources (wood, water, arable land, and mineral-bearing rock) are easy to see. At closer range, the film shows industrial and agricultural life, the high capacity aluminum smelters of Arvida, Chicoutimi's giant pulp and paper industry, and quiet pastoral scenes of rural Quebec.

Producer: NFB, 1965
11 min. color sound ejrsr $2.50
DEATH OF A DELTA

Documents the urban/industrial benefits of the W.A.C. Bennett Dam on the Peace River in B.C. being received by the lower B.C. mainland, and studies the ecological effect of the dam—the delta is drying up, destroying the wildlife which provided the livelihood of the Indian and Metis population in Fort Chipewyan.

Producer: Film Frontiers Ltd., 1970
27 min. color sound jrsrca $6.70

ENVIRONMENT IN THE BALANCE

Shows how geological, topographical, and social developments in Britain have helped to shape the environment. Discusses the problems of industrial expansion and population growth.

Producer: BIS, 1970
31 min. color sound g $2.50

GREAT AMERICAN GOOSE EGG CO. OF CANADA

A satire on technology and industry in which the goose egg is symbolic of our natural resources. Civilization trods over a nature which struggles to survive.

Producer: Rank Audio, 1971
10 min. color sound jrsrca $2.60

THE HOUSE OF MAN: OUR CHANGING ENVIRONMENT

Reveals the waste of resources in cities, woodlands, and farmlands, and the pollution of river water and air. Comparison is made between wasteful methods and through the intelligent preservation of resources.

Producer: Conservation Foundation/EBF, 1965
17 min. color sound jrsrca $4.00
MAN AND HIS RESOURCES C1616

Without reference to national boundaries, the film presents comparisons between privileged and underprivileged parts of the world. The whole range of social and economic disparity is examined from literacy to industrial output and techniques.

Producer: NFB, 1960
Series: Earth and Mankind, No. 2
29 min. b/w sound srca $2.50

TRAGEDY OF THE COMMONS C3163

Discusses problems of overcrowding and questions whether there is an abundance of space left in which to expand. Points out problems that arise from overpopulation.

Producer: King Broadcasting
28 min. color sound jrsr $6.60

WATER: OLD PROBLEMS, NEW APPROACHES C2936

It takes 1,800 gallons of water per day to support an average North American, both directly and indirectly. As we near the end of the International Hydrological Decade (1965-75), this film looks at what is being done to provide water to arid land, to prevent or cure the waste and pollution of natural supplies, and methods to make the most efficient use of water in large quantities.

30 min. color sound jrsr $7.80
WATERFOWL: A RESOURCE IN DANGER

The prairies are the incubators of vast numbers of Canadian waterfowl, principally ducks, but as more land is drained and cultivated, there are fewer breeding grounds. This film shows the immense flocks of birds, their habits, and their dependence on wetlands of the prairies. How to maintain living space for the ducks without having them pose a threat to farmers' grainlands is a problem being studied by the Canadian Wildlife Service.

Producer: NFB, 1965
16 min. color sound jrsrca $2.50

WHAT ARE WE DOING TO OUR WORLD?

Dr. Barry Commoner states that men must choose between modern comforts and conveniences on a reduced scale, or a world unfit for life. The nature of the interrelationships of living things is explained, and the effects of pollution on the planetary biosphere. Takes a closer look at such things as the greenhouse effect, oxygen cycles, and the results of chemical, air, and water pollutants.

Producer: CBC News, 1969
27 min. color sound jrsrca $7.80
LOCAL RESOURCE LISTING

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</table>
MANKIND COMMANDS THE USE OF A GREAT SUPPLY OF ENERGY TO CHANGE THE ENVIRONMENT TO HIS LIKING

I. Prescribed References for Grade 7


II. From Prescribed References for Grade 8


III. Additional Textual Resources for Grade 7


IV. Other Print Resources

A. Bryan Rorke, Much is Taken, Much Remains: Canadian Issues in Environmental Conservation, N. Scituate, Massachusetts: Dunbury Press, 1973. $6.25 (paperback)


F. Stanton, Chas. R., *Canadian Forestry: The View Beyond the Trees*, Canadian Forestry Service, Department of the Environment: MacMillan, Canada, 1976. (Content items 2 and 3)

V. From the Learning Resources Kit

A. Alberta Energy and Natural Resources:
   1. *Clearing Land?* 1 page, illustrations. (Content item 3)
   2. *The First Harvest.* 16 pages. See also videotape: *The First Harvest.* (Content item 3)
   3. *The Vital Two-Thirds.* 14 pages. See also videotape: *The Vital Two-Thirds.* (Content item 3)

B. Environment Conservation Authority:
   1. *Environmental Impact of Surface Mining in Alberta*, 1971. 6 pages. (Content items 2 and 3)
   2. *Erosion of Land in Northeastern Alberta: Information Bulletin No. 3.* 22 pages, maps, illustrations. (Content items 2 and 3)
<table>
<thead>
<tr>
<th>ANNOTATION</th>
<th>NOTES</th>
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<tbody>
<tr>
<td>ENERGY: THE CONSUMPTION ASSUMPTION 125101</td>
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<tr>
<td>This program examines the flow of various kinds of energy in primitive societies and the wasteful consumption in the industrial world. (AVSB)</td>
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<tr>
<td>Producer: Alberta School Broadcasts, 1975/Unlimited</td>
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<tr>
<td>Series: Energy 15 min. color sound jrsr</td>
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<tr>
<td>ENERGY: TILTING AT WINDMILLS 125104</td>
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<tr>
<td>Some new and some old-fangled ideas about converting natural forces into usable energy are examined. (AVSB)</td>
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<tr>
<td>Producer: Alberta School Broadcasts, 1974/Unlimited</td>
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<tr>
<td>Series: Energy 30 min. color sound jrsr</td>
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<tr>
<td>ENVIRONMENTAL SCIENCE: CREATURES OF THE WILD 132305</td>
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<tr>
<td>The different ways in which man has tried to control wild animals are discussed.</td>
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<tr>
<td>Producer: Ontario Educational Communications Authority, 1968/March 1980</td>
<td></td>
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<tr>
<td>Series: Environmental Science 20 min. color sound jr</td>
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<tr>
<td>ENVIRONMENTAL SCIENCE: USING OUR ENVIRONMENT 132308</td>
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<tr>
<td>Man has been dependent on his environment for food, clothing and shelter. We must use the environment well if we want its benefits to last.</td>
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<tr>
<td>Producer: Ontario Educational Communications Authority, 1976/March 1980</td>
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<tr>
<td>Series: Environmental Science 20 min. color sound jrsr</td>
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</tbody>
</table>
THE FIRST HARVEST

The processes and considerations which must be undertaken in managing Alberta's forests are vividly presented in this program. Changes from a forest's natural life cycle to a man-made life cycle are well illustrated by sequences shot on location throughout Alberta. The program provides an excellent overview of the technologies and techniques necessary to the effective management of large tracts of forested land.

Producer: Jem Film Productions Ltd., 1977
30 min. color sound

NOTE: This program is complementary to the publication The First Harvest found in the Learning Resources Kit.

TREES FOR TOMORROW

Points out a variety of techniques employed by the wood processors (pulp mills) to restore the sections of the forest which they harvest. (AVSB)

Producer: North Western Pulp and Power, 1970/Unlimited
20 min. b/w sound

THE VITAL TWO-THIRDS

The splendors and uses of Alberta's forests are presented via exciting, vivid images, music and narration. Covering two-thirds of the province, the forests are presented as a source of many products and an answer to the population's many needs. A constantly renewable resource, forests will be of continued concern to Albertans.

Producer: Jem Film Productions Ltd., 1977.
30 min. color sound

NOTE: This program is complementary to the publication The Vital Two-Thirds found in the Learning Resources Kit.
### ERTS: EARTH RESOURCES TECHNOLOGY SATELLITE

Our resources are declining while demand increases. ERTS is developing a method to survey the Earth's resources by satellite. (NASA Group) (AVSB)

Producer: NASA 1972/Perpetual
28 min. color sound jrsr

### NEW LOOK AT AN OLD PLANET

This program uses the experiences of a Texas family to dramatize the benefits of satellites in agricultural, oceanographic and natural resource studies. (NASA Group) (AVSB)

Producer: NASA 1969/Perpetual
27 min. color sound jrsr

### SPACE IN THE SEVENTIES: SPACE DOWN TO EARTH

A visual presentation of the role satellites play in solving Earthbound problems. The film illustrates pollution tracing, mineral resources, making weather forecasts and measuring the earth. (NASA Group) (AVSB)

Producer: NASA 1970/Perpetual
Series: Space in the Seventies
28 min. color sound jrsr
Explores how Landsat's remote sensing capabilities help resolve water resource problems. The satellite provides information to hydrologists about snowfall in the mountains, enabling them to estimate the basic water supply available to western states. Landsat helps in controlling floods, both by monitoring flood plains, and by mapping snow packs and potentially dangerous manmade lakes. Landsat also makes valuable contributions in flood assessment and pollution control. (NASA Group) (AVSB)

Producer: NASA 1976/Perpetual
15 min. color sound jrsr
<table>
<thead>
<tr>
<th>Annotation</th>
<th>Notes</th>
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<tbody>
<tr>
<td><strong>The Aging of Lakes</strong></td>
<td>B3037</td>
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<tr>
<td>After introducing geological and ecological factors of normal aging of lakes, the film shows how man is speeding up the process through examples of indiscriminate disposal of fertilizers, sewage and industrial waste.</td>
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<tr>
<td>Producer: EBF, 1971</td>
<td>14 min. color sound jrsrca $3.80</td>
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<tr>
<td><strong>The Canadian Shield: Saguenay Region</strong></td>
<td>B2294</td>
</tr>
<tr>
<td>The Saguenay area of Quebec is seen from a helicopter. From this vantage point, the size of the region and its immense store of resources (wood, water, arable land, and mineral-bearing rock) are easy to see. At closer range, the film shows industrial and agricultural life, the high-capacity aluminum smelters of Arvida, Chicoutimi's giant pulp and paper industry, and quiet pastoral scenes of rural Quebec.</td>
<td></td>
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<tr>
<td>Producer: NFB, 1965</td>
<td>11 min. color sound ejrsr $2.50</td>
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<tr>
<td><strong>The Changing Forest I</strong></td>
<td>PC86</td>
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<tr>
<td>Until about fifty years ago, trees were cut down with complete disregard for the future, and little or no replanting took place. Today, land conservation, preservation, and reforestation is carried out by the Forestry Commission in two and one half million acres of Britain. This film outlines the necessity for forest conservation for future generations and shows how wildlife has been preserved and land made available for recreational activities.</td>
<td></td>
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<tr>
<td>Producer: Pilot Films Ltd., 1966</td>
<td>27 min. color sound g $2.50</td>
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</table>
THE CHANGING FOREST II

The forest is shown as an integrated community of living things. The changing seasons are illustrated by shots of animals, plants, and flowers. Other scenes show insects laying eggs. Woven into this is a vivid picture of the battle of each living thing for survival, often at the expense of other living things.

Producer: NFB, 1959
18 min. color sound g $2.50

DEATH OF A DELTA

Documents the urban/industrial benefits of the W.A.C. Bennett Dam on the Peace River in B.C. being received by the lower B.C. mainland, and studies the ecological effect of the dam--the delta is drying up, destroying the wildlife which provided the livelihood of the Indian and Metis population in Fort Chipewyan.

Producer: Film Frontiers Ltd., 1970
27 min. color sound jrsrca $6.70

THE FORESTERS

The professional forester's day to day work is most responsible for making effective the discoveries, experiments, and research carried on at forestry stations across Canada. This film shows the modern technology of the timberland, and the role of the forester in the preservation and regeneration of this great natural resource.

Producer: NFB, 1968
14 min. color sound jrsr $3.30
Based on the writings of Joseph Wood Krutch, the film concerns the natural heritage of the West, basic geography of the canyon, conservation of natural beauty and primitive Indian culture. Contrasting footage juxtaposes primitive and modern life in its treatment of the Havasupi Indian tribe, the oldest native culture in the U.S., who still live in tenth-century fashion only miles from Boulder Dam. The film ends with a look at man's well-intentioned tampering with nature and the price he has paid for a lesson about the balance of nature.

Producer: NBC/EBF, 19?  
26 min. color sound jrsrca $5.00

THE HOUSE OF MAN: OUR CHANGING ENVIRONMENT  
B2427

Reveals the waste of resources in cities, woodlands, and farmlands, and the pollution of river water and air. Comparison is made between wasteful methods and through the intelligent preservation of resources.

Producer: Conservation Foundation/EBF, 1965  
17 min. color sound jrsrca $4.00

THE LONG VIEW  
B3632

A look at ERTS, an earth-orbiting sensor-equipped satellite used in conjunction with air-borne sensing to relay a view of our planet. Also points out Canada's participation with NASA in a global study of our planet's eco-systems.

Producer: NFB, 1973  
20 min. color sound jrsra $4.00
MAN AND HIS RESOURCES

Without reference to national boundaries, the film presents comparisons between privileged and underprivileged parts of the world. The whole range of social and economic disparity is examined from literacy to industrial output and techniques.

Producer: NFB, 1960
29 min. b/w sound srca $2.50

NORTH PACIFIC

It is an ocean of plenty, a vast aquatic pasture teeming with many species of fish and other marine life. Most sought is the salmon, but sometimes they do not "run". This film shows extensive studies of the ocean to determine how temperatures, winds, currents, and plankton affect the sea harvest.

Producer: NFB, 1966
27 min. color sound jrsrca $3.30

OUR SOIL RESOURCES

(Second edition) Describes the formation of soil, four soil zones of the U.S. and the damage to which they are subject, and three important ways to stop soil erosion. It shows how rock becomes soil and the characteristic vegetation of each soil zone and principal cultivated crops.

Producer: EBF, 1966
10 min. b/w sound ejrsr $2.50

THE RAVAGED EARTH

Deals primarily with the reclamation of land left barren and eroded by strip mining in the Appalachians. The industry's path is marked by acidic soil, dust pollution, sulphuric rivers, and unhappy people.

Producer: NBC, 1970
27 min. color sound g $7.50
RIGHT TO BURN

Settlers and campers cause forest fires that burn millions of dollars worth of timber which costs thousands of dollars to bring under control. The film depicts events relating to the issuing of a burning permit to a settler who has made all the necessary preparations according to the regulations. However, a careless and foolish act becomes the start of a full-scale forest fire. Method of controlling and extinguishing the fire is shown.

Producer: Dept. of Lands and Forests, 19?
30 min. color sound g $2.50

THE ROCKY MOUNTAINS

Depicts what scientists are doing to prevent environmental pollution and ecological disruption in the Canadian Rockies: control of animal populations, management of timber reserves, restrictions on commercial and tourist activities.

Producer: CBC, 1971
35 min. color sound g $6.60

TREES FOR TOMORROW

An account of the forestry practices by North West Pulp and Power Ltd. to maintain a perpetual, sustained timber yield from their leases in western Alberta. Mechanical scarification of the land reduces fire hazard, eliminates soil erosion potential, and prepares a new seed bed. Greenhouse-grown seedlings are provided when natural regeneration is not successful.

Producer: North West Pulp and Paper, 19?
18 min. color sound jrsrca $2.50

THE ULTIMATE FOREST

Shows the beauty and perfection of the natural systems within the forest, the impact man can make on such a resource and the conflicts in land use.

Producer: Proctor Gamble/Alberta Gov't., 1974
35 min. color sound jrsra $2.50
Shows that conservation of water supplies requires attention throughout the world. Now you see that adequate water supplies depend not only on maintaining purity of our streams, but also on wise management of forests and other moisture-conserving herbiage of the earth.

Producer: U.N./NFB, 1961
15 min. color sound g $2.50

It takes 1,800 gallons of water per day to support an average North American, both directly and indirectly. As we near the end of the International Hydrological Decade (1965-75), this film looks at what is being done to provide water to arid land, to prevent or cure the waste and pollution of natural supplies, and methods to make the most efficient use of water in large quantities.

30 min. color sound jrsr $7.80
### LOCAL RESOURCE LISTING

Please list below local resources applicable to this curriculum concept section.

<table>
<thead>
<tr>
<th>TITLE</th>
<th>GRADE:</th>
<th>CONCEPT #:</th>
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</tbody>
</table>
E7.3 pollution due to mankind's production and use of energy can be minimized

I. Prescribed References for Grade 7


II. From Prescribed References for Grades 8


III. Additional Textual Resources for Grade 7


IV. Other Print Resources


Information Canada, *Air Quality--Local, Regional and Global Aspects*, Ottawa, 1972. $.75 (paperback) (Content items 3 and 4)


*People and Pollution*, Addison, 1977. 64 pages, $2.00. (Use for general reference)

V. From Learning Resources Kit

Alberta Environment:
1. *Air Quality*
2. *Fact Sheet--Urban Air Pollution*
ALBERTA'S CHANGING ENVIRONMENT 124230
An overview of factors leading to pollution in Alberta. (AVSB)
28 min. b/w sound uejrsr

ECOLOGY, YOU AND YOUR ENVIRONMENT: 132202
AIR--WE ERR
Explains the oxygen cycle, showing that the amount of oxygen produced by plants is nowhere near the amount required to support the oxygen consumed on this planet. Stresses the urgent need for air pollution control.
Producer: Ontario Educational Communications Authority, 1972?/Sept. 1978
Series: Ecology, You and Your Environment
20 min. color sound uejrsr

ECOLOGY, YOU AND YOUR ENVIRONMENT: 132205
Shhh!! SOUND
Points out some interesting aspects of excess sound investigations, stressing the necessity of curbing noise pollution if we are to retain our ability to hear.
Producer: Ontario Educational Communications Authority, 1972?/Sept. 1978
Series: Ecology, You and Your Environment
20 min. color sound uejrsr
ECOLOGY, YOU AND YOUR ENVIRONMENT: WATER!!

Designed to create concern for and awareness of the environmental crisis which threatens forms of life, the program illustrates the value of water and shows how man has polluted and misused this essential resource.

Producer: Ontario Educational Communications Authority, 1972/Sept. 1978
Series: Ecology, You and Your Environment
20 min. color sound uejrsr

ENERGY: WHICH ECO IS LOUDEST

Some of the accepted trade-offs between what is economically desirable and what is ecologically sound are examined. (AVSB)

Producer: Alberta School Broadcasts, 1975/Unlimited
Series: Energy
15 min. color sound jrsr

HOW GREEN PLANTS MAKE FOOD:

PHOTOSYNTHESIS

Through animation, microphotography and live demonstrations, the process of photosynthesis is explored. Emphasizes the importance of green plants as food and examines recent research in this vital field of scientific study. (AVSB)

13 min. color sound jrsr

NATURE ENVIRONMENT: AIR POLLUTION

What is air; why is it so important; who uses air? What causes air pollution? What can we do about pollution? These are the questions raised in this program.

Producer: ACCESS, 1972
Series: Nature Environment
20 min. b/w sound jrsr
ANNOTATION

SPACE IN THE SEVENTIES: SPACE DOWN TO EARTH

A visual presentation of the role satellites play in solving Earthbound problems. The film illustrates pollution tracing, mineral resources, making weather forecasts and measuring the earth. (NASA Group) (AVSB)

Producer: NASA 1970/Perpetual
28 min. color sound jrsr

POLLUTION BELOW

This film presents the stories of three people far apart, caught up in dangerous situations caused by unexpected pollution. The threatening pollution of these three stories is seen through the eyes of NASA's satellite cameras, creating exciting images and colorful mosaics. (NASA Group) (AVSB)

Producer: NASA 1975/Perpetual
14 min. color sound jrsr
Examples of how strip mining, farming, spraying, and dumping are changing the Alberta landscape and affecting the wildlife. In some instances, these activities are being carried out with an eye to conservation, and the total effect is really only a change in location. In other instances, careless procedures result in almost irreparable destruction of the natural vegetation and wildlife habitats.

Producer: Edgar T. Jones, 1971
22 min. color sound g $2.50

Air, as well as water, is being polluted by the wastes of urban civilization. Cities whose lives are already crippled by smog are seen. Even where air pollution shows in less noxious forms, the threat gathers evidence of air pollution and its effects and presents the findings of experts who seek ways to control it.

Producer: NFB, 1961
28 min. b/w sound g $2.50

Reveals the waste of resources in cities, woodlands, and farmlands, and the pollution of river water and air. Comparison is made between wasteful methods and through the intelligent preservation of resources.

Producer: Conservation Foundation/EBF, 1965
17 min. color sound jrsrca $4.00
NOISE: POLLUTING THE ENVIRONMENT

Scientific investigation exposes various noise pollutants and shows how they affect our lives. These pollutants range from air and land vehicles to household appliances. The need for concern over increased noise levels and controls are explored.

Producer: EBF, 19?
16 min. color sound jrsrca $4.50

OF BROCCOLI, PELICANS AND CELERY AND SEALS

Traces the deterioration of the environment in California. Points out how pesticides sprayed on the Oxnard Plain are being washed to sea. Stresses the dangers of DDT to man and nature.

Producer: NET, 1970
Series: Our Vanishing Wilderness
30 min. color sound jrca $3.60

OUR ENDANGERED ENVIRONMENT: AIR

A film to acquaint young people with the composition and function of air and the sources and effects of pollution. Explains the responsibility of the individual and tells how the student can help.

Producer: Environmental Films, 1971
17 min. color sound ejr $2.50

THE RAVAGED EARTH

Deals primarily with the reclamation of land left barren and eroded by strip mining in the Appalachians. The industry's path is marked by acidic soil, dust pollution, sulphuric rivers, and unhappy people.

Producer: NBC, 1970
27 min. color sound g $7.50
RIVER WITH A PROBLEM C1771

Shows the effect of pollution from the domestic and industrial wastes of cities. Interviews with specialists who study the problem and municipal leaders who are worried by it show the extent of pollution and its threat to the health and well-being of communities dependent on the river.

Producer: NFB, 1961
29 min. color sound g $3.30
LOCAL RESOURCE LISTING

PLEASE LIST BELOW LOCAL RESOURCES APPLICABLE TO THIS CURRICULUM CONCEPT SECTION

<table>
<thead>
<tr>
<th>TITLE</th>
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THE PRESERVATION OF MANKIND'S BIOLOGICAL RESOURCES DEPENDS ON AN AWARENESS AND THE POSITIVE ACTION OF EACH INDIVIDUAL.

I. Prescribed References for Grade 7


II. Additional Textual Resources for Grade 7


III. Other Print Resources

A. Available from: Publications Library
   Alberta Research Council
   11135 - 87 Avenue
   Edmonton, Alberta T6G 2C2

   31 pages, $1.00. (Content item 6)


D. *Environmental Management: Perspectives in Alberta*, The Bio-Sciences Society of the University of Calgary, Calgary. (Use for general reference)


G. Vancouver Environment Education Project, *Bush Studies--Creeks*, V.E.E.P., University of British Columbia, 1972. (Content items 2 and 5)


IV. From Learning Resources Kit

The following items may be obtained from the Learning Resources Kit. Please refer to page ____ for further information.

A. Alberta Energy and Natural Resources:

B. Alberta Environment:
   *Environment Views*

C. Environment Conservation Authority:
   1. *Human Communities and the Environment*, 1974. 24 pages. (Content items 1 and 5)
<table>
<thead>
<tr>
<th>ECOLOGY, YOU AND YOUR ENVIRONMENT:</th>
<th>132203</th>
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<tbody>
<tr>
<td><strong>BROWN INCIDENT</strong></td>
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<tr>
<td>A humorous sketch involving Farmer Brown, a worm and a reporter is used to illustrate the dangers of land misuse and to show that soil is the most critical substance in our environment.</td>
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<tr>
<td>Producer: Ontario Educational Communications Authority, 1972?/Sept. 1978</td>
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<tr>
<td>Series: Ecology, You and Your Environment</td>
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<td>20 min. color sound uejrsr</td>
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<tr>
<th>ECOLOGY, YOU AND YOUR ENVIRONMENT:</th>
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<tr>
<td><strong>LOOK BACK FOR TOMORROW!</strong></td>
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<tr>
<td>An introductory program designed as a capsule view of the environment; it shows how man has evolved from total dependence on his environment to being oblivious to it.</td>
<td></td>
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<tr>
<td>Producer: Ontario Educational Communications Authority, 1972?/Sept. 1978</td>
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<tr>
<th>EDGE OF THE BARRENS</th>
<th>120621</th>
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<tbody>
<tr>
<td>An excursion into the vast solitudes of the Arctic tundra extending across Canada between the tree line and the Arctic Ocean. (AVSB)</td>
<td></td>
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<tr>
<td>Producer: National Film Board, 1963/June 1979</td>
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<td>14 min. b/w sound uejrsr</td>
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<tr>
<th>ENERGY: WHICH ECO IS LOUDEST</th>
<th>125102</th>
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<tr>
<td>Some of the accepted trade-offs between what is economically desirable and what is ecologically sound are examined. (AVSB)</td>
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<tr>
<td>Producer: Alberta School Broadcasts, 1975/Unlimited</td>
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<tr>
<td>Series: Energy</td>
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<td>15 min. color sound jrsr</td>
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ENVIRONMENTAL SCIENCE: OUR DEPENDENCE ON PLANTS

The many ways in which man depends upon vegetation for food, clothing, shelter and a multitude of other products are the topics of this program.

Producer: Ontario Educational Communications Authority, 1968/March 1980
Series: Environmental Science
20 min. color sound jr

ENVIRONMENTAL SCIENCE: USE OF LAND

The problems incurred in land development and urbanization are explored.

Producer: Ontario Educational Communications Authority, 1968/March 1980
Series: Environmental Science
20 min. color sound jr

ENVIRONMENTAL SCIENCE: USING OUR ENVIRONMENT

Man has been dependent on his environment for food, clothing and shelter. We must use the environment well if we want its benefits to last.

Producer: Ontario Educational Communications Authority, 1976/March 1980
Series: Environmental Science
20 min. color sound jrsr

LAY OF THE LAND: WASTELANDS

... OR??

The land previously referred to as "bald" prairie, "bog" marshes, "desolate" deserts has gained greater regard due to a higher degree of ecological awareness and appreciation. (AVSB)

Producer: Alberta School Broadcasts, 1973/Unlimited
Series: Lay of the Land
30 min. color sound uejr
Our natural resources: mountains, lakes and rivers, forests and wildlife, are quickly disappearing as a result of the over-clearing of land. How can we best conserve our land?

Producer: ACCESS, 1972
Series: Nature Environment
20 min.  b/w  sound  jrsr

A look at Canada's first National Park; its origins, geology and vegetation. The importance of existing parks and the development of additional parks is stressed. (AVSB)

Producer: Alberta School Broadcasts, 1971/Unlimited
Series: Outdoors Unlimited
14 min.  b/w  sound  uejrsr

Points out a variety of techniques employed by the wood processors (pulp mills) to restore the sections of the forest which they harvest. (AVSB)

Producer: North Western Pulp and Power, 1970/Unlimited
20 min.  b/w  sound  uejrsr
Explores how Landsat's remote sensing capabilities help resolve water resource problems. The satellite provides information to hydrologists about snowfall in the mountains, enabling them to estimate the basic water supply available to western states. Landsat helps in controlling floods, both by monitoring flood plains, and by mapping snow packs and potentially dangerous manmade lakes. Landsat also makes valuable contributions in flood assessment and pollution control. (NASA Group) (AVSB)

Producer: NASA 1976/Perpetual
15 min. color sound jrsr

This program uses the experiences of a Texas family to dramatize the benefits of satellites in agricultural, oceanographic and natural resource studies. (NASA Group) (AVSB)

Producer: NASA 1969/Perpetual
27 min. color sound jrsr
THE AGING OF LAKES

After introducing geological and ecological factors of normal aging of lakes, the film shows how man is speeding up the process through examples of indiscriminate disposal of fertilizers, sewage, and industrial waste.

Producer: EBF, 1971
14 min. color sound jrsrca $3.80

THE AGRICULTURAL REVOLUTION:
MAN AS A FOOD PRODUCER

This film depicts man in his role as farmer and domesticator of animals and demonstrates the effects of his change in lifestyle on man's culture. It relates the ancient food producing societies to the present ones.

14 min. color sound jrsrca $6.40

NORTH PACIFIC

It is an ocean of plenty, a vast aquatic pasture teeming with many species of fish and other marine life. Most sought is the salmon, but sometimes they do not "run." This film shows extensive studies of the ocean to determine how temperatures, winds, currents, and plankton affect the sea harvest.

Producer: NFB, 1966
27 min. color sound jrsrca $3.30

POINT PELEE

This narrow peninsula on Lake Erie supports a unique combination of bird and plant life. A growing population desires the area as a playground but unless its use is controlled, it will be destroyed.

Producer: CBC, 1971
28 min. color sound jrsra $6.80
THE RAVAGED EARTH C2917

Deals primarily with the reclamation of land left barren and eroded by strip mining in the Appalachians. The industry's path is marked by acidic soil, dust pollution, sulphuric rivers, and unhappy people.

Producer: NBC, 1970
27 min. color sound g $7.50

SURVIVAL OF THE KIT FOX B3150

This film is a case history of an animal now threatened with extinction due to the widespread use of DDT. Also shows the kit fox in its natural habitat.

Producer: Journal, 1969
15 min. color sound g $3.70

TREES FOR TOMORROW B3057

An account of the forestry practices by North West Pulp and Power Ltd. to maintain a perpetual, sustained timber yield from their leases in western Alberta. Mechanical scarification of the land reduces fire hazard, eliminates soil erosion potential, and prepares a new seed bed. Greenhouse-grown seedlings are provided when natural regeneration is not successful.

Producer: North West Pulp and Power, 19?
18 min. color sound jrsrca $2.50

THE ULTIMATE FOREST D3545

Shows the beauty and perfection of the natural systems within the forest, the impact man can make on such a resource and the conflicts in land use.

Producer: Proctor Gamble/Alberta Gov't., 1974
35 min. color sound jrsra $2.50
WATERFOWL: A RESOURCE IN DANGER
B2194

The prairies are the incubators of vast numbers of Canadian waterfowl, principally ducks, but as more land is drained and cultivated, there are fewer breeding grounds. This film shows the immense flocks of birds, their habits, and their dependence on wetlands of the prairies. How to maintain living space for the ducks without having them pose a threat to farmers' grainlands is a problem being studied by the Canadian Wildlife Service.

Producer: NFB, 1965
16 min. color sound jrsrca $2.50
<table>
<thead>
<tr>
<th>TITLE</th>
<th>GRADE:</th>
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</table>
A SIMPLE KEY MAY BE USED TO FACILITATE IDENTIFICATION OF ORGANISMS

I. Prescribed References for Grade 7


WHAT IS A FISH?

Illustrates the major types of fishes. Shows the anatomy of a typical fish and demonstrates characteristic behavior patterns of various kinds of fishes. Underwater photography is used to reveal behavior patterns such as commensalism, spawning, predation, and territoriality.

Producer: EBF, 1963
22 min. color sound jrsrca $4.40

WILD DOG FAMILY: THE COYOTE

Tells the story of America's intelligent wild dog of the West and how it has survived and adjusted to encroaching civilizations. Establishes the coyote's place in the canine family and reveals little known facts about its life.

Producer: Walt Disney Productions, 1968
18 min. color sound g $4.60
Prescribed References


A stimulating text written in a colloquial style which will appeal to many students. Most topics normally studied in grade 8 are presented at a level involving a good deal of physics and chemistry. Student activities, though rather limited, do relate directly to content. The selection of color photos and diagrams appears adequate but may have to be supplemented to relate more specifically to Alberta. This text has been screened by the Metric Commission staff and uses SI units throughout.


This book offers a unique and appealing approach to the study of Earth Science (see chapter introductions and "Skullduggery" section at chapter end), yet presents an excellent blend of "discovery approach" along with concept development. It also offers a balanced approach to the theory of evolution and the biblical explanation. Considerable emphasis is placed on the topic of space with little emphasis on glaciation. The reading level and the many fine illustrations make it a very useful text. It does not, however, use SI units consistently, and some imperial units appear in the descriptions.

Additional Textual Resources

These are materials that are available in the market place but, for one reason or another, have not been recommended as prescribed references:


Presents Earth Science in a unified manner utilizing a concept development approach. Many and unique investigations together with excellent illustrations all emphasize the inquiry orientation of the book. Written for the able or above average student. Good as a teacher reference and as an alternate student reference.


Fairly detailed coverage of the Earth, its rocks and minerals, its crust and its atmosphere. Well-illustrated with end-of-chapter activities serving as good review. Activities or laboratory work are supplemental rather than essential to the content presented. Reading level is likely above that of the average grade 8 student. Useful as a teacher and/or student general reference.

A solid comprehensive book that presents a broad, integrated perspective of the universe, the solar system and the Earth. The controlled vocabulary used in the text all but ensures that the student learns the necessary terms as they first appear in their proper context. The process dimension is introduced in practically every lesson. The style is readable and clear, and much thought has gone into the selection of the diagrams and photographs which amply illustrate the text. The book can be recommended for use as an alternative program that introduces students to Earth-Space science. It does not use SI units.


This text uses activities, investigations and experiments to focus on Earth Science concepts and on science processes. Kits of laboratory supplies are recommended but most of the experiments can be performed with inexpensive materials. Many fine colored photographs and historical prints are included. Metric units are used but it has not been screened by the Metric Commission staff. The higher than average reading level and complex laboratory instructions reduce the general usefulness of this text.


The authors have produced a comprehensive set of materials that presents a view of the Earth and its content in a non-dogmatical way. The program has a high dependence on reading the text and a lot of the activities evolve from an interpretive type of action and tend to be very cognitive in character. The material covers a large number of topics to a considerable depth. The reading and conceptual level is a little high, being aimed at a grade 9 market. For example, Kepler's laws are introduced on page 13 and Newton's Law of Gravitation on page 15 in considerable detail. An excellent resource for the teacher! The rather poor use of metric units is somewhat distracting.

Teacher References

In addition to the teacher's editions of the above titles, the following seem especially suited as resources:


- Fossils
- Stars
- Rocks and Minerals
- Weather
- Geology
- Landforms
- Ecology


*List of Resource Materials for Earth Science Teachers in Canadian Schools*, Canadian Geoscience Council, c/o Queens University.
Astronomy-Related Texts


A well-illustrated encyclopedia outlining the various areas of astronomy in easy to understand language.

Pasachoff, J. M., Contemporary Astronomy (Saunders Golden Sunburst Series), W. B. Saunders Company, 1977. 588pp., illus., color/b&w.

Pasachoff, Jay M., Marc L. Kutner, and Naomi Pasachoff, Student Study Guide to Contemporary Astronomy. 155pp., diagrams, b&w.

This is a text designed for introductory astronomy at a university level. All main areas of astronomy are covered in a non-technical manner. The study guide features exercises based on the text to complement the basic concepts.

Hoyle, Fred, Highlights in Astronomy, W. H. Freeman and Company, 1975. 179pp., illus., color/b&w.

An overview of the contemporary state of astronomical science in general, non-technical terms. Well illustrated.

Hoyle, Fred, Astronomy and Cosmology--A Modern Course, San Francisco: W. H. Freeman and Company. 729pp., illus., color/b&w.

A university level text, well illustrated, and providing an overview of astronomy and cosmology. Essentially non-technical.


A general purpose, illustrated, university level, non-technical text.

Simple step-by-step procedures for making a reflecting telescope are given. A must for the young telescope maker.


Considered by some to be a near classic, the book covers the historical development of astronomy from earliest times through Copernicus to Galileo and the birth of Newton. An excellent reference.


Concise definitions and relevant data characterizes this encyclopedia of astronomy and astronomical sciences.


A recent history of the development of thought relative to man's place in the universe and the concept of galaxies.


History of man in space, origin of planets, the moon, Mars, Venus, and some other planets--a geological perspective.

**Astronomical Magazines**

*Astronomy*, published by AstroMedia Corporation, 411 E. Mason Street, 6th floor, Milwaukee, WI 53202. Monthly, illus., color/b&w, $18.00/yr. in Canada.

Billed as the world's most beautiful astronomy magazine, *Astronomy* is directed at the amateur, covering a wealth of topics in easy to understand, beautifully illustrated articles.
Note: Copies may be available from the Calgary Centennial Planetarium, Calgary, and the Queen Elizabeth Planetarium in Edmonton. See "Field Trips," page 29 for addresses.


A semi-technical journal, *Scientific American* is noted for the quality of its articles by notables in a variety of fields.

Note: *Scientific American* is available through a variety of magazine outlets.


Designed more for the advanced amateur, *Sky and Telescope* is an excellent source of up-to-date information and projections of upcoming events.

Note: This magazine usually has to be subscribed, as it is not usually available off the magazine shelf.

Astronomical Atlases


A classic sky atlas for the advanced amateur, dividing the sky into fourteen sections with north polar and south polar areas.


Well illustrated by photographs, the text covers the features of the moon on a day by day basis as more features come into view. An excellent teacher and student reference.


Constellation maps and information on each.
Rukl, Antonin, *Moon, Mars and Venus (A Concise Guide in Color)*, Hamelyn, c1976. 255pp., illus., color.

General information and maps. Contains a detailed map of the moon.


An excellent student atlas of the night sky, prefaced with much basic information of interest to the amateur.

**Astronomical Societies**


Dedicated to the advancement of astronomy and related sciences, the R.A.S.C. has eighteen centres across Canada. The centres are usually comprised of a majority of amateur astronomers of all ages, with a few professional astronomers in the larger centres. The centres encourage student involvement and are able to provide assistance to the student in this hobby and related activities.

Two R.A.S.C. centres exist in Alberta at present, Calgary and Edmonton. In Calgary, contact:

Ms. Cynthia Wannamaker  
Royal Astronomical Society of Canada  
Calgary Centre  
#1006, 3524 - 31 Street N.W.  
Calgary, Alberta T2L 2A5

In Edmonton, contact:

Mr. Ivan Rogers  
Royal Astronomical Society of Canada  
Edmonton Center  
11041 - 153 Street  
Edmonton, Alberta T5P 2E3

The R.A.S.C. produces three publications of interest:


2. *The National Newsletter* (periodical)

These three publications come with membership in the R.A.S.C. However, publication #3 may be purchased separately.

*The Observer's Handbook* is a compilation of a wealth of information on astronomical phenomena. Virtually indispensable to anyone planning observing, the handbook has come to be considered by many as a "must." The handbook may usually be purchased through the secretaries of the R.A.S.C. or the National Office of the Royal Astronomical Society of Canada, 124 Merton Street, Toronto, M4S 2Z2.
A perspective of the position and motion of the Earth in space is gained by celestial observation and measurements.

Prescribed References for Grade 8


THE SOLAR SYSTEM: MEASURING ITS DIMENSIONS

An explicit demonstration, principally graphical, of the triangulation techniques of measuring interstellar distances and the sizes of stellar bodies. (AVSB)

10 min. b/w sound jrsr

UNIVERSE

Creates on the screen a vast, awe-inspiring picture of the universe as it would appear to the voyageur through space. (AVSB)

Producer: National Film Board, 1968/1978
26 min. b/w sound jrsr
<table>
<thead>
<tr>
<th>Annotation</th>
<th>Notes</th>
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<tbody>
<tr>
<td><strong>ADVENTURES IN RESEARCH</strong></td>
<td>120114</td>
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<tr>
<td>This tape describes the sort of research the</td>
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<tr>
<td>NASA/Ames Research Centre in California is</td>
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<tr>
<td>involved in. (NASA Group) (AVSB)</td>
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<tr>
<td>Producer: NASA 197?/Perpetual 16 min. color</td>
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<td>sound jrsr</td>
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<tr>
<td><strong>THE APOLLO 4 MISSION</strong></td>
<td>120101</td>
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<tr>
<td>Story of the assembly and launching of the first</td>
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<tr>
<td>manned Apollo/Saturn V space vehicle. Shows</td>
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<td>details of stage separations, acceleration to</td>
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<td>an altitude of 11,232 miles above Earth and the</td>
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<tr>
<td>effects of re-entry. (NASA Group) (AVSB)</td>
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<tr>
<td>Producer: NASA 1968/Perpetual 16 min. color</td>
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<td>sound jrsr</td>
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<tr>
<td><strong>APOLLO 9: SPACE DUET OF SPIDER AND GUMDROP</strong></td>
<td>120104</td>
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<tr>
<td>Introspective view of Apollo 9 astronauts</td>
<td></td>
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<tr>
<td>McDvitt, Scott and Schweickart before, during,</td>
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<tr>
<td>and after their Earth orbital mission. The tape</td>
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<tr>
<td>concentrates on the launching, rendezvous, and</td>
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<tr>
<td>docking. (NASA Group) (AVSB)</td>
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<tr>
<td>Producer: NASA 1969/Perpetual 29 min. color</td>
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<td>sound jrsr</td>
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<td>Annotation</td>
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<tr>
<td>APOFFLO 10: GREEN LIGHT FOR A LUNAR LANDING</td>
<td>120105</td>
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<tr>
<td>Features highlights of second lunar orbital mission by astronauts Stafford, Gernan, and Young, including undocking and descent of the lunar module within ten miles of the lunar surface. (NASA Group) (AVSB)</td>
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<td>Producer: NASA 1969/Perpetual</td>
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<td>29 min. color sound jrsr</td>
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<tr>
<td>APOFFLO 12: PINPOINT FOR SCIENCE</td>
<td>120107</td>
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<tr>
<td>Emphasizing the scientific studies involved to pinpoint accuracy of the landing, this tape documents the second manned lunar landing in November, 1969. (NASA Group) (AVSB)</td>
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<td>Producer: NASA 1969/Perpetual</td>
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<tr>
<td>28 min. color sound jrsr</td>
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<tr>
<td>APOFFLO 13: HOUSTON, WE'VE GOT A PROBLEM</td>
<td>120108</td>
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<tr>
<td>Dramatic fight to return the crewmen of Apollo 13 mission safely to Earth following an explosion on board the service module. (NASA Group) (AVSB)</td>
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<td>Producer: NASA 1970/Perpetual</td>
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<td>28 min. color sound jrsr</td>
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<tr>
<td>APOFFLO 14: MISSION TO FRA MAURA</td>
<td>120109</td>
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<tr>
<td>A factual documentary account of the mission. This tape includes problems encountered on the way to the moon and how they were solved. (NASA Group) (AVSB)</td>
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<td>Producer: NASA 1971/Perpetual</td>
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<td>28 min. color sound jrsr</td>
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<tr>
<td>APOFFLO 15: IN THE MOUNTAINS OF THE MOON</td>
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<tr>
<td>Story of the most ambitious and successful lunar landing missions to date in the Apollo program. Includes details of the three lunar surface scientific expeditions and the experiments in lunar orbit. (NASA Group) (AVSB)</td>
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<td>Producer: NASA 1971/Perpetual</td>
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APOLLO 16: NOTHING SO HIDDEN 120110

Shows Apollo 16 astronauts Young, Madingly, and Duke and the problems encountered with the mission. (NASA Group) (AVSB)

Producer: NASA 1971/Perpetual
26 min. color sound jrsr

APOLLO 17: ON THE SHOULDERS OF GIANTS 120111

A documentary of the Apollo 17 journey to Taurus-Littrow, the final lunar landing mission. Preparation for the Skylab and US/USSR link-up and Space Shuttle programs are described. (NASA Group) (AVSB)

Producer: NASA 1972/Perpetual
28 min. color sound jrsr

APOLLO-SOYUZ 120112

The historic space agreement between the United States and the Soviet Union has brought about a joint space flight called Apollo/Soyuz. The purposes of the mission and the flight are discussed. (NASA Group) (AVSB)

Producer: NASA 1973/Perpetual
12 min. color sound jrsr

CHALLENGE OF SPACE--LEGACY OF GEMINI 120142

In the perspective of a single composite mission, this documentary illustrates the major accomplishments of the Gemini two-man space flights and the significance of these flights to the Apollo Program. The film includes outstanding photography of the Earth and man in space. (NASA Group) (AVSB)

Producer: NASA 1967/Perpetual
27 min. color sound jrsr

DEBRIEF: APOLLO 8 120103

The story of man's first journey around the moon with comments on significance of Apollo 8 flight. The tape features photographs of the Moon, the Earth, and the activities of astronauts. (NASA Group) (AVSB)

Producer: NASA 1968/Perpetual
28 min. color sound jrsr
DOORWAY TO TOMORROW

A documentary portrait of John F. Kennedy Space Centre with emphasis on the Complex 30 "moon-port" from which the Apollo astronauts were launched to the moon. (NASA Group) (AVSB)

Producer: NASA 1967/Perpetual
28 min. color sound jrsr

THE DREAM THAT WOULDN'T DOWN

The dream of Dr. Robert Goddard, the father of modern rocketry, is explored and examined through reminiscences of Mrs. Goddard. Included are historic scenes of Dr. Goddard's early experiments and the personal commentary of Mrs. Goddard.

Producer: NASA 1965/Perpetual
27 min. b/w sound jrsr

EAGLE HAS LANDED: FLIGHT OF APOLLO 11

A documentary of the first NASA space mission which successfully landed Americans on the Moon and returned them safely to Earth. (NASA Group) (AVSB)

Producer: NASA 1969/Perpetual
28 min. color sound jrsr

FLIGHT OF APOLLO 7

A report on the first manned mission in the Apollo series. Major events covered are the launching, rendezvous, and docking maneuvers, television transmission, re-entry and recovery. (NASA Group) (AVSB)

Producer: NASA 1968/Perpetual
14 min. color sound jrsr

FLIGHT OF FAITH SEVEN

The story of the last flight in the one-man Project Mercury series. The tape follows astronaut Gordon Cooper from preflight training through the launching, Earth orbital flight, and recovery. (NASA Group) (AVSB)

Producer: NASA 1963/Perpetual
28 min. color sound jrsr

C8.1 - V(N)-4
<table>
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<tr>
<th>FLIGHT WITHOUT WINGS</th>
<th>120119</th>
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<tr>
<td>Traces the development of the wingless lifting body aero-spacecraft and relates it to future space shuttles which will return men from an Earth orbiting space station to landings on conventional runways. (NASA Group) (AVSB)</td>
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<tr>
<td>Producer: NASA 1969/Perpetual</td>
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<td>15 min. color sound jrsr</td>
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<th>FOUR DAYS OF GEMINI 4</th>
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<tr>
<td>Documents the first extravehicular activity of &quot;walk in space&quot; by an American astronaut during the Gemini 4 mission. (NASA Group) (AVSB)</td>
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<tr>
<td>Producer: NASA 1965/Perpetual</td>
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<td>28 min. color sound jrsr</td>
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<tr>
<th>FOUR ROOMS: EARTH VIEW</th>
<th>120152</th>
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<tr>
<td>Skylab was the first United States manned space program developed specifically to carry activities and equipment aimed at improving man's life on earth. (NASA Group) (AVSB)</td>
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<td>Producer: NASA 1975/Perpetual</td>
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<td>28 min. color sound jrsr</td>
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<th>FREEDOM SEVEN</th>
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<tr>
<td>The first American manned space mission is the subject of this film. The training, preparation, launching and recovery of astronaut Sheppard for this first Project Mercury sub-orbital flight are included. (NASA Group) (AVSB)</td>
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<td>Producer: NASA 1961/Perpetual</td>
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<tr>
<th>FRIENDSHIP SEVEN</th>
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<tr>
<td>A historical documentary illustrating the first American orbital space flight by astronaut Glenn in 1962. The tape provides background on Project Mercury and the tracking network planned for the one-man Mercury missions. (NASA Group) (AVSB)</td>
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<tr>
<td>Producer: NASA 1962/Perpetual</td>
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<tr>
<td>58 min. color sound jrsr</td>
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<tr>
<td>ANNOTATION</td>
<td>NOTES</td>
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<tr>
<td><strong>JUPITER ODYSSEY</strong></td>
<td>120154</td>
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<tr>
<td>A look at Jupiter and the Pioneer 10 spacecraft. This spacecraft, containing many scientific instruments, was built to study the planet in more detail. (NASA Group) (AVSB)</td>
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<tr>
<td>Producer: NASA 1974/Perpetual</td>
<td>29 min. color sound jrsr</td>
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<td><strong>LIFE BEYOND EARTH AND THE MIND OF MAN</strong></td>
<td>120126</td>
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<tr>
<td>A panel held by NASA and Boston University discusses the search for another civilization in the galaxy of the stars. (NASA Group) (AVSB)</td>
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<tr>
<td>Producer: NASA 1975/Perpetual</td>
<td>27 min. color sound jrsr</td>
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<tr>
<td><strong>MARINER MARS '69</strong></td>
<td>120145</td>
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<tr>
<td>Reviews the principal features of Mars that were known prior to 1969 and those that were determined by the two Mariner spacecraft that passed close by in 1969. (NASA Group) (AVSB)</td>
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<tr>
<td>Producer: NASA 1971/Perpetual</td>
<td>21 min. color sound jrsr</td>
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<tr>
<td><strong>THE MISSION OF APOLLO/SOYUZ: TEST PROJECT</strong></td>
<td>120150</td>
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<tr>
<td>The Apollo/Soyuz mission was a precedent-setting event in the sphere of international manned space flight. The film stresses the spirit of cooperation and friendship that helped make the mission a success. (NASA Group) (AVSB)</td>
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<tr>
<td>Producer: NASA 1975/Perpetual</td>
<td>12 min. color sound jrsr</td>
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C8.1 - V(N)-6
NEW VIEW OF SPACE 120141
Shows the value of cameras and photography in the space program. Camera images show us more than man can perceive. Provides an important visual record of space flight. (NASA Group) (AVSB)
Producer: NASA 1972/Perpetual
28 min. color sound jrsr

RADIO ASTRONOMY EXPLORER 120139
Describes design and function of the new Radio Astronomy Explorer, a spacecraft which will detect and relay various radio waves emitted by the Sun, Earth and Jupiter. (NASA Group) (AVSB)
Producer: NASA 1968/Perpetual
30 min. color sound jrsr

RESEARCH PROJECT X-15 120148
The story of the development of the X-15 research airplane in a series of experimental aircraft, and the results obtained from X-15 flights. (NASA Group) (AVSB)
Producer: NASA 1966/Perpetual
27 min. color sound jrsr

SATELLITE ASTRONOMY: PROGRESS AND PROMISE 120122
Briefly reviews the results of moon, near planet, and star exploration in the 1960's and proposals for the 1970's. (NASA Group) (AVSB)
Producer: NASA 1969/Perpetual
17 min. color sound jrsr

SEAS OF INFINITY 120140
Reviews the planning, development, launching, and function of the Orbiting Astronomical Observatory, a series of orbiting telescopes used to study our solar system and stars. (NASA Group) (AVSB)
Producer: NASA 1969/Perpetual
15 min. color sound jrsr
An introduction to planetary exploration and scientific satellite research planned for the 1970's. The film briefly describes plans for Mariner fly-bys of Mars. (NASA Group) (AVSB)

Producer: NASA 1970/Perpetual  
28 min. color sound jrsr

SMALL STEPS, GIANT STRIDES

A recap of two decades of space exploration that has brought about research leading to technical advancements in aviation, computers, communication, weather forecasting, and many other areas. (NASA Group) (AVSB)

Producer: NASA 1973/Perpetual  
28 min. color sound jrsr

SPACE IN THE SEVENTIES: THE KNOWLEDGE BANK

This tape takes a broad look at physics and astronomy research performed in the laboratory of space. (NASA Group) (AVSB)

Producer: NASA 1971/Perpetual  
25 min. color sound jrsr

SPACE IN THE SEVENTIES: MAN IN SPACE--THE SECOND DECADE

Reviews the achievements of manned space flight during the 1970's. Projects that are technically feasible and desirable beyond 1980 are included. (NASA Group) (AVSB)

Producer: NASA 1971/Perpetual  
Series: Space in the Seventies  
28 min. color sound jrsr
SPACE NAVIGATION

Explains the principles of charting a course in space, showing navigational techniques of the future. Emphasis is on the Apollo program. (NASA Group) (AVSB)

Producer: NASA 1967/Perpetual
21 min. color sound jrsr

THE TIME OF APOLLO

In the year 1961, the President of the United States set forth the task: "This nation should commit itself to achieving the goal, before this decade is out, of landing a man on the Moon and returning him safely to Earth." (NASA Group) (AVSB)

Producer: NASA 197?/Perpetual
28 min. color sound jrsr

TRIAL BALANCE

Presents recent knowledge in the field of space science, particularly that gained through the analysis of information from spacecraft. (NASA Group) (AVSB)

Producer: NASA 1965/Perpetual
27 min. color sound jrsr

UNIVERSE ON A SCRATCH PAD

Problems posed and solved by the modern-day astrophysicist are highlighted in this program. (NASA Group) (AVSB)

Producer: NASA 1967/Perpetual
29 min. b/w sound jrsr
THE VITAL LINK

A documentary view of NASA's world-wide tracking and communications system for manned and unmanned missions. (NASA Group) (AVSB)

Producer: NASA 1967/Perpetual
29 min. color sound jrsr

WHO'S OUT THERE?

A portrayal of a contemporary scientific belief that there are intelligent civilizations in the universe. Narrated by Orson Welles. (NASA Group) (AVSB)

Producer: NASA 1976/Perpetual
30 min. color sound jrsr

WITHIN THIS DECADE: AMERICA IN SPACE

Brief overview of NASA's first five years, showing the growth of America's space program from Explorer 1 through early phases of the Apollo program for manned exploration of the moon. (NASA Group) (AVSB)

Producer: NASA 1963/Perpetual
14 min. color sound jrsr
<table>
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<tr>
<th>ANNOTATION</th>
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<tr>
<td>CHARTING THE UNIVERSE</td>
<td>B1825</td>
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<tr>
<td>Shows an astronomer at work inside the giant observatory at Mount Palomar and illustrates the working of some of the mechanisms. Explains how the new science of radio-astronomy has brought about important discoveries. Shows how physicists interpret spectrum photographs.</td>
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<td>Producer: EBF, 1963</td>
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<tr>
<td>13 min.</td>
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<td>THE ISAAC NEWTON TELESCOPE</td>
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<td>Representing a big advance in astronomy is the largest optical telescope in Europe, the ninety-eight inch Isaac Newton Telescope, now housed in the grounds of Herstmonceux Castle, the home of the Royal Greenwich Observatory.</td>
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<td>Producer: BIS, 19?</td>
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<td>18 min.</td>
<td>color sound jrsrca</td>
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<td>$2.50</td>
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<td>THE RADIO SKY</td>
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<tr>
<td>Britain's part in the development of the radio telescope in the service of astronomy and communications.</td>
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<tr>
<td>Producer: Viewpoint Productions, 1966</td>
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<td>28 min.</td>
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<td>STARS AND STAR SYSTEMS</td>
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<tr>
<td>Illustrates the work of astronomers with the reflecting and the radio telescope. Shows how astronomers rely on the theoretical analysis as well as direct observation for answers to the mysteries of the universe.</td>
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<tr>
<td>Producer: EBF, 1961</td>
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<tr>
<td>16 min.</td>
<td>b/w sound jrsrca</td>
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VAN ALLEN RADIATION BELTS

Dr. Van Allen and other scientists explain methods of obtaining information in space flights. Models and animation are used to relate earth, sun magnetosphere, and radiation belts. Live photography and models illustrate preparations, launching, and orbit of a space vehicle designed to explore the radiation regions.

Producer: EBF, 1963
17 min. color sound jrsrca $4.00

WHY EXPLORE SPACE?

What are the values of space research? How does it relate to world problems? What are the goals of science? How will new knowledge change your life? The theme is brought to life through a documented event: the flight of John Glenn, first American to circle the earth in space.

Producer: Churchill Films, 1962
16 min: color sound ejrsr $3.40
LOCAL RESOURCE LISTING

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VARIOUS THEORIES ATTEMPT TO EXPLAIN THE ORIGIN OF THE SOLAR SYSTEM AND THE UNIVERSE

Prescribed References for Grade 8


The Science Coordinating Committee of the Curriculum Branch is currently reviewing some locally developed material intended to be of use in teaching this concept. It, along with other material, may be added to this listing in the future.
LOCAL RESOURCE LISTING

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C8.3 THE SUN IS A TYPICAL STAR

Prescribed References for Grade 8


ANNOTATION

ORBITING SOLAR OBSERVATORY

Describes the orbiting solar observatory spacecraft which is designed to gather information concerning the sun's effect on the earth.
(NASA Group) (AVSB)

Producer: NASA 1962/Perpetual
25 min. color sound jrsr

RADIO ASTRONOMY EXPLORER

Describes design and function of the new Radio Astronomy Explorer, a spacecraft which will detect and relay various radio waves emitted by the Sun, Earth and Jupiter. (NASA Group) (AVSB)

Producer: NASA 1968/Perpetual
30 min. color sound jrsr

UNIVERSE ON A SCRATCH PAD

Problems posed and solved by the modern-day astrophysicist are highlighted in this program.
(NASA Group) (AVSB)

Producer: NASA 1967/Perpetual
29 min. b/w sound jrsr
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<th>NOTES</th>
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<tbody>
<tr>
<td><strong>ECLIPSES OF THE SUN AND MOON</strong></td>
<td><strong>B2258</strong></td>
</tr>
<tr>
<td>Stop-motion and time-lapse photography are used to bring a solar eclipse to the screen. Shows NASA scientists studying the solar eclipse from a high altitude jet flight over Canada. An animation sequence reveals the cause and effect of this dramatic phenomenon—a total solar eclipse.</td>
<td></td>
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<tr>
<td>Producer: EBF, 1965</td>
<td>11 min. color sound srca $2.70</td>
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| **THE NEAREST STAR** | **C2146** |
| The film explains how present-day astronomers are expanding their knowledge of the sun: how they watch it, measure it, analyze its structure, and the complex forces behind its brilliant glare. New film footage from all over the world has been specifically gathered for this purpose in order to convey to the viewer the synoptic aspect of modern scientific research on the sun and the dimension and scope of present inquiry and investigation. | |
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 Prescribed References for Grade 8


PLANET OF MAN: THE COSMIC CONNECTION  201010

Meteorite bombardment is now known to be common to all planets in the solar system. Meteorite impacts on the surfaces of the earth is the subject of this program.

Producer: Ontario Educational Communications Authority, 1976/March 1981

30 min. color sound jrsr
MARS--IS THERE LIFE?

Students are introduced to the possible past history of Mars and its present surface topography--volcanoes, ice caps, streambeds, impact craters, canyons and wind-eroded surfaces. The Viking Lander and its biology experiments are discussed in relationship to the search for life on Mars. Students are asked to consider life forms that might be able to survive on Mars and the potential significance of their discovery. (NASA Group) (AVSB)

Producer: NASA 1975/Perpetual
          14 min.  color   sound   jrsr

MARS--THE SEARCH BEGINS

Review of the knowledge gained from over 7,000 pictures obtained by Mariner 9. The film focuses on the possibility of life on Mars and offers graphic portrayals of life forms that could exist there. (NASA Group) (AVSB)

Producer: NASA 1973/Perpetual
          29 min.  color   sound   jrsr

THE MOON: AN EMERGING PLANET

The Apollo program has given a new insight into the violent and dynamic history of the moon. This program compares similarities in the earth's geological make-up. (NASA Group) (AVSB)

Producer: NASA 1972/Perpetual
          16 min.  color   sound   jrsr

RADIO ASTRONOMY EXPLORER

Describes design and function of the new Radio Astronomy Explorer, a spacecraft which will detect and relay various radio waves emitted by the Sun, Earth and Jupiter. (NASA Group) (AVSB)

Producer: NASA 1968/Perpetual
          30 min.  color   sound   jrsr
READING THE MOON'S SECRETS

This film is divided into ten short segments, each treating an important aspect of lunar knowledge, using Apollo-gained data as appropriate. It is designed to be used as a teaching film in science classes in secondary schools at the seventh grade level and above. The student is expected to answer questions designed into the film in each segment. A discussion period will follow the screening of the film and will be based on an accompanying teacher's guide which contains the major part of the instruction related to the film. (NASA Group) (AVSB)

Producer: NASA 1976/Perpetual
18 min. color sound jrsr

SATELLITE ASTRONOMY: PROGRESS AND PROMISE

Briefly reviews the results of moon, near planet, and star exploration in the 1960's and proposals for the 1970's. (NASA Group) (AVSB)

Producer: NASA 1969/Perpetual
17 min. color sound jrsr

SEAS OF INFINITY

Reviews the planning, development, launching and function of the Orbiting Astronomical Observatory, a series of orbiting telescopes used to study our solar system and stars. (NASA Group) (AVSB)

Producer: NASA 1969/Perpetual
15 min. color sound jrsr

SEEDS OF DISCOVERY

An introduction to planetary exploration and scientific satellite research planned for the 1970's. The film briefly describes plans for Mariner fly-bys of Mars. (NASA Group) (AVSB)

Producer: NASA 1970/Perpetual
28 min. color sound jrsr
SPACE IN THE SEVENTIES: THE KNOWLEDGE BANK

This tape takes a broad look at physics and astronomy research performed in the laboratory of space. (NASA Group) (AVSB)

Producer: NASA 1971/Perpetual
Series: Space in the Seventies
25 min. color sound jrsr

TRIAL BALANCE

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Producer: NASA 1965/Perpetual
27 min. color sound jrsr

UNIVERSE ON A SCRATCH PAD

Problems posed and solved by the modern-day astrophysicist are highlighted in this program. (NASA Group) (AVSB)

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| **THE FORCE OF GRAVITY** C1595 |
| The nature of gravitation from early times to the present, as seen by man, is discussed. Tells how the gravitational field accounts for the motions of planets: Newtonian and Einsteinian theories and gravitational problems of the space age. |
| 27 min. color sound jrsrca $5.70 |

| **JUPITER, SATURN, AND MARS IN MOTION** A2435 |
| Time-lapse photographs taken through the 60-inch telescope, the Mount Wilson Observatory, illustrate significant characteristics of the planets Jupiter, Saturn and Mars. Shows approximately ten hours' rotation time of the planet Jupiter, including a complete orbit of Jupiter's satellite. Film sequences of Saturn demonstrate how weather conditions determine the efficiency of telescope observation. Photographs of Mars show its polar cap and planet-wide dust storm. |
| Producer: EBF, 1962 |
| 8 min. color sound jrsrca $2.50 |
PLANETS IN ORBIT: THE LAWS OF KEPLER  A2434

The film traces a brief history of man's earliest observations and beliefs about the universe and then goes on to show how Johannes Kepler made three discoveries that revolutionized astronomy. Explanation of Kepler's three laws is visualized in animated sequences.

Producer: EBF, 1961
10 min.  b/w  sound  jrsrca  $2.50
LOCAL RESOURCE LISTING

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THE SURFACE OF THE EARTH AND ITS INHABITANTS ARE SURROUNDED BY AN ATMOSPHERE OF AIR

Prescribed References for Grade 8


The first of a series of films on disaster phenomena (created by the elements or by man) and NASA's contribution of providing data to reduce casualties and property loss through observations from space. (NASA Group) (AVSB)

Producer: NASA 1971/Perpetual
14 min. color sound jrsr
AROUND A BIG LAKE

Traces the effects of weather through the seasons on the environmental conditions in and around a typical large lake. Thermal stratification, the thermocline, and winter stagnation are described. Life forms typical of wave-swept shores, beaches, islands, the open water, and sheltered bays and coves are examined in detail. Particular attention is focused on adaptations important for survival in the various habitats as well as the plant based, interrelated food chains.

Producer: IFB, 1963
17 min. color sound jrsrca $3.30

THE ORIGINS OF WEATHER

Illustrates from the vantage of off-the-earth observation the factors that produce the climate we know. Animation illustrates the earth's heat exchange, the effect of the sun's heat, the movement of air masses, and resulting weather is then shown in actuality. Awards: Columbus, Ohio; Canada; La Plata, Argentina.

Producer: NFB, 1962
12 min. color sound ejrsr $2.50
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<tr>
<td>OUR ENDANGERED ENVIRONMENT: AIR</td>
<td>B2872</td>
<td>A film to acquaint young people with the composition and function of air and the sources and effects of pollution. Explains the responsibility of the individual and tells how the student can help.</td>
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<tr>
<td>Producer: Environmental Films, 1971</td>
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<td>17 min. color sound ejr $2.50</td>
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<tr>
<td>SEA SURFACE METEOROLOGY</td>
<td>C2942</td>
<td>Concerned with the role played by the oceans in the formation of rain, in particular, with the transfer of large condensation nuclei and electrical charges from the sea surface to the atmosphere. These phenomena are illustrated, as well as a volcano erupting at sea surface, a possible consequence of the transfer process.</td>
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<td>Producer: Universal Education and Visual Arts, 1967</td>
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<td>24 min. b/w sound sc $3.20</td>
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<tr>
<td>SNOW</td>
<td>B1633</td>
<td>A study of snow. From the time it falls until the time it melts, snow ages or &quot;ripen.&quot; Snow's whiteness has a purpose--to reflect rather than absorb rays of winter sun. Shows flakes forming in upper atmosphere, frost crystals joining into flakes, and settling on the ground. Illustrates the smooth crystals of &quot;powder&quot; snow and the congealing crystals of &quot;corn&quot; snow.</td>
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<td>Producer: NFB, 1961</td>
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<td>13 min. b/w sound jrsrca $2.50</td>
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<td>WHAT MAKES CLOUDS?</td>
<td>B2546</td>
<td>A close look is taken at fog and at a cloud, noting that both are composed of droplets of water. An experiment with condensation produces fog in a bottle, and the film concludes with an investigation of how condensation occurs in nature.</td>
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<td>Producer: EBF, 1965</td>
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<td>12 min. color sound jrsr $5.20</td>
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WHAT MAKES THE WIND BLOW?  
Possible explanations for the cause of a typical inshore breeze are tried out in the laboratory, then double-checked in nature. Pressure differences are found to be associated with normal daytime air movements. Explanations are given for violent windstorms which blow off shore.
Producer: EBF, 1965  
16 min.  color  sound  jrsrca  $4.00

WINDS AND THEIR CAUSES  
About the discovery of convection currents around an electric lamp and a heated radiator. Animated diagrams explain the causes of heat currents, air bumps, and thunderstorms. A sailboat illustrates the effects of offshore and onshore winds and causes of easterly and westerly winds are demonstrated.
Producer: Coronet, 1948  
11 min.  color  sound  jrsr  $2.50
PLEASE LIST BELOW LOCAL RESOURCES APPLICABLE TO THIS CURRICULUM CONCEPT SECTION

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LOCAL CONDITIONS IN THE ATMOSPHERE
ARE REFERRED TO AS WEATHER

Prescribed References for Grade 8


This film involves a young female student pilot who almost gets caught in the path of a tornado on her first solo flight. The film explains how tornados are formed, their characteristics, and the devastating destruction they cause. It also relates to work being done in the laboratory to better understand the dreaded phenomenon and the importance of information from early warning weather satellites in an attempt to reduce casualties. (NASA Group) (AVSB)

Producer: NASA 1975/Perpetual
14 min. color sound jrsr
ABOVE THE HORIZON

An exploration of weather and how man may one day learn to control it. Rainmaking is not always a success but in this film you see that it can be done. Views of the geysers of the sun, of bright streamers of northern lights, of wind-stirred clouds, and the awesome fury of a hurricane are shown filmed at close range by a Navy weather plane.

Producer: NFB, 1965
21 min. color sound jrsrca $2.70

AROUND A BIG LAKE

Traces the effects of weather through the seasons on the environmental conditions in and around a typical large lake. Thermal stratification, the thermocline, and winter stagnation are described. Life forms typical of wave-swept shores, beaches, islands, the open water, and sheltered bays and coves are examined in detail. Particular attention is focused on adaptations important for survival in the various habitats as well as the plant based, interrelated food chains.

Producer: IFB, 1963
17 min. color sound jrsrca $3.30

THE ORIGINS OF WEATHER

Illustrates from the vantage of off-the-earth observation the factors that produce the climate we know. Animation illustrates the earth's heat exchange, the effect of the sun's heat, the movement of air masses, and resulting weather is then shown in actuality. Awards: Columbus, Ohio; Canada; La Plata, Argentina.

Producer: NFB, 1962
12 min. color sound ejrsr $2.50
A study of snow. From the time it falls until the time it melts, snow ages or "ripen." Snow’s whiteness has a purpose—to reflect rather than absorb rays of winter sun. Shows flakes forming in upper atmosphere, frost crystals joining into flakes, and settling on the ground. Illustrates the smooth crystals of "powder" snow and the congealing crystals of "corn" snow.

Producer: NFB, 1961
13 min. b/w sound jrsrca $2.50

WHAT MAKES CLOUDS?

A close look is taken at fog and at a cloud, noting that both are composed of droplets of water. An experiment with condensation produces fog in a bottle, and the film concludes with an investigation of how condensation occurs in nature.

Producer: EBF, 1965
12 min. color sound jrsr $5.20
**LOCAL RESOURCE LISTING**

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THE CRUST OF THE EARTH IS FORMED OF ROCKS

Prescribed References for Grade 8


PLANET OF MAN: ANIMAL, VEGETABLE MINERAL 201006

The chemical and physical properties of minerals were necessary information for fashioning tools, weapons, and art of early civilizations. Looks at the work of modern craftsmen such as the diamond cutter.

Producer: Ontario Educational Communications Authority, 1976/March 1981
Series: Planet of Man
30 min. color sound jrsr

PLANET OF MAN: CHALLENGE OF THE DEEP 201008

A world hungry for mineral resources has turned its search to the oceans. This program focuses on the process of sediment accumulation on ocean floors.

Producer: Ontario Educational Communications Authority, 1976/March 1981
Series: Planet of Man
30 min. color sound jrsr

PLANET OF MAN: THE INNER LIMIT 201009

This program takes viewers on a journey to the center of the earth, through the outer crust, a denser underlayer, a hot molten core, and a solid center.

Producer: Ontario Educational Communications Authority, 1976/March 1981
Series: Planet of Man
30 min. color sound jrsr
THE FRACTURED LOOK

Examines the ways in which Landsat may serve as a tool in searching for minerals and monitoring geological hazards. The satellite can reveal fractures or faults that may indicate past, present and potential earthquake activity. Faults are pathways that minerals used to make their way from deep within the Earth to its surface. By revealing fractures and rock alterations, Landsat imagery can contribute to exploration for mineral resources. (NASA Group) (AVSB)

Producer: NASA 1972/Perpetual
15 min. color sound jrsr
### THE BEACH: A RIVER OF SAND

An elementary analysis of currents produced by waves proves that most of the pronounced net movement of sand is usually along the shore. The film demonstrates that the beach is thus a river of sand, existing between land and breaking waves.

Producer: EBF, 1965  
20 min. color sound jrsr $5.40

### DECISION TO DRILL

A film about the people who search and drill for oil and natural gas in western Canada. It tells of the lone geologist in the mountains, the surveyor cutting through virgin bush, the seismic crews who chart rock formations deep beneath the earth's crust, and the drillers with their multi-ton rigs.

Producer: Imperial Oil, 1963  
27 min. color sound jrsrca $2.50

### THE HIDDEN EARTH

The structure of solid earth is analyzed from the crust through the mantle to the central core. The dynamic quality of the earth is demonstrated through the analysis of earthquakes and volcanoes. Application of seismology to the study of other planets is shown.

Series: Planet Earth  
27 min. color sound jrsrca $3.30
METAL IN HARMONY  PB25
The great amount of electrical energy required to produce aluminum is available in Scotland, and it is here that bauxite from Ghana is transformed into a useful metal. The film portrays some of the processes necessary before aluminum finds its way into a wide variety of items used in everyday life.
Producer: Anglo-Scottish Pictures, 1962
22 min. color sound jrsrca $2.50

RICHES OF THE EARTH  B2646
Animation depicts the formation through geological ages by fire and water, wind and ice of the earth's crust which holds our wealth of minerals, oil, coal, arable land, and even our water power. Awards: Venice, Padua, Italy.
Producer: NFB, 1966
16 min. color sound g $3.40

ROCKS THAT FORM ON THE EARTH'S SURFACE  B2422
Designed to help students investigate sedimentary rocks, to discover where they come from, what they are made of, and how they are formed. Explores some of the ways in which sediments are produced, transported, accumulated, and hardened into sedimentary rock.
Producer: EBF, 1965
16 min. color sound jrsr $4.00

ROCKS THAT ORIGINATE UNDERGROUND  C2417
Since igneous and metamorphic rocks are not produced by surface processes, the film suggests they must be formed within the earth's crust. Conditions are reconstructed by use of indirect evidence--the fact that both types of rock are composed of intergrown crystalline mineral grains.
Producer: EBF, 1966
23 min. color sound jrsr $5.40
LOCAL RESOURCE LISTING

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THE CRUST OF THE EARTH IS CONSTANTLY BEING CHANGED

Prescribed References for Grade 8


EARTH: THE RESTLESS PLANET 133702

A look at one of the most awesome forces in nature—the volcano. Three active volcanoes are shown: the Hawaiian volcano, Kilauea; Mount Etna in Sicily; and the Nyiragongo in Zaire. (National Geographic Group)

Producer: National Geographic Society,
1974/April 30, 1979
25 min. color sound sr

ENVIRONMENTAL SCIENCE: CLIMATE 132306
AND SOILS

The climatic forces of wind and weather were instrumental in breaking down the rocks into soil.

Producer: Ontario Educational Communications Authority, 1976/March 1980
Series: Environmental Science
20 min. b/w sound jrsr

LAY OF THE LAND: ENTERING THE GATEWAY 120501

This program deals specifically with shield, parkland, northern sea, lakes, forest, and eskers. (AVSB)

Producer: Alberta School Broadcasts,
1973/Unlimited
Series: Lay of the Land
30 min. color sound uejr

LAY OF THE LAND: SOLID LANDS 120502

Looks at the high lands and how they came to be. An examination of the changes from day to day help to answer the question of how these lands took their shape. (AVSB)

Producer: Alberta School Broadcasts,
1973/Unlimited
Series: Lay of the Land
30 min. color sound uejr
OUTDOORS UNLIMITED:  BADLANDS
A look at the animals and topography of the land from twenty million years ago to the present day. (AVSB)
Producer:  Alberta School Broadcasts, 1971/Unlimited
Series:  Outdoors Unlimited
14 min.  b/w  sound  uejrsr

PLANET OF MAN:  BEYOND A DOUBT, REVOLUTION
In 1910, Alfred Wegener first proposed the concept of continental drift—the theory of a super-continent breaking up two hundred million years ago with the fragments drifting to their present places.
Producer:  Ontario Educational Communications Authority, 1976/March 1981
30 min.  color  sound  jrsr

PLANET OF MAN:  THE COSMIC CONNECTION
Meteorite bombardment is now known to be common to all planets in the solar system. Meteorite impacts on the surfaces of the earth is the subject of this program.
Producer:  Ontario Educational Communications Authority, 1976/March 1981
Series:  Planet of Man
30 min.  color  sound  jrsr

PLANET OF MAN:  THE FIRE WITHIN
An account of the various types of volcanic activity. Divers risk their lives to capture on camera the effects of molten lava bursting open upon the ocean's floor.
Producer:  Ontario Educational Communications Authority, 1976/March 1981
Series:  Planet of Man
30 min.  color  sound  jrsr
PLANET OF MAN: JIGSAW FIT 201002
The key to many geological questions is believed to lie in the theory of plate tectonics which suggests that the earth's crust is composed of six major plates which are slowly on the move.
Producer: Ontario Educational Communications Authority, 1976/March 1981
Series: Planet of Man
30 min. color sound jrsr

PLANET OF MAN: MOUNTAIN HERITAGE, THE APPALACHIANS 201005
Shrinking seas, colliding continental masses, volcanism, mountain building—all are inscribed in a catalogue of continuous change preserved in the rock of Appalachia.
Producer: Ontario Educational Communications Authority, 1976/March 1981
Series: Planet of Man
30 min. color sound jrsr

PLANET OF MAN: SHIELD OF PLENTY 201007
The precambrian period ended before the first arrival of plants and animals, by which time ancient mountains had already been worn almost to plain.
Producer: Ontario Educational Communications Authority, 1976/March 1981
Series: Planet of Man
30 min. color sound jrsr

PLANET OF MAN: TRAIL OF THE ICE AGE BLUES 201004
In words, song, film and graphics, the story of glaciation, its effects on the features of North America, and man's adaptation to the subsequent landforms is portrayed.
Producer: Ontario Educational Communications Authority, 1976/March 1981
Series: Planet of Man
30 min. color sound jrsr
PLANET OF MAN: THE UNEVENTFUL DAY

The face of the Earth is undergoing continuous alteration but in ways so slow that change for the most part remains invisible. This program looks at the processes of weathering.

Producer: Ontario Educational Communications Authority, 1976/March 1981
Series: Planet of Man
30 min. color sound jrsr
EARTHQUAKE BELOW

This film takes us to lovely San Francisco, a shining jewel of a city that lives in constant threat of earthquake. Through a look back in time, we see how earthquakes shattered the San Francisco of 1906, and we experience the agony of a more recent earthquake in suburban Los Angeles. We learn how earthquakes are caused, and discover through NASA pictures the extensive fault systems that are prime targets for earthquakes of the future. (NASA Group) (AVSB)

Producer: NASA 197?/Perpetual
27 min. color sound jrsr

THE FRACTURED LOOK

Examines the ways in which Landsat may serve as a tool in searching for minerals and monitoring geological hazards. The satellite can reveal fractures or faults that may indicate past, present and potential earthquake activity. Faults are pathways that minerals used to make their way from deep within the Earth to its surface. By revealing fractures and rock alterations, Landsat imagery can contribute to exploration for mineral resources. (NASA Group) (AVSB)

Producer: NASA 197?/Perpetual
15 min. color sound jrsr
THE BEACH: A RIVER OF SAND

An elementary analysis of currents produced by waves proves that most of the pronounced net movement of sand is usually along the shore. The film demonstrates that the beach is thus a river of sand, existing between land and breaking waves.

Producer: EBF, 1965
20 min. color sound jrsr $5.40

EROSION: LEVELLING THE LAND

This film examines the surface processes of weathering, erosion, and deposition. Rocks gradually rust, crack, disintegrate, and decompose. This loosened rock debris can go only in one direction—down. The net effects of transferring rock material from high ground to basin areas is always in the direction of levelling the land. The film ends with the question: If all the land above sea level is constantly being washed into the oceans, why, then, are not all land surfaces not only flat, but also level with the seas?

Producer: EBF, 1964
14 min. color sound jrsrca $3.40

GLACIATION

Opens with a discussion of the Great Ice Age; then, in an animated sequence, demonstrates how snow hardens into ice and ice flows under stress, and ends with scenes of a glacier and its effect on terrain and climate.

Producer: NFB, 1965
15 min. color sound g $2.50
GLACIER ON THE MOVE  A3410

Still photographs and time-lapse photography reveal the progress of a glacier as it moves down its valley. Footage was gathered over a four-year period at the Athabasca Glacier.

Producer: EBFC, 19?
11 min. color sound jrsra $3.00

GLACIERS  B2722

Tells how glaciers are formed and shows glaciers from Mount Rainier to Washington to Alaska. Scenes of the ice sheets of Antarctica are shown. Relates the present warm era to the Ice Ages of the past.

Producer: Northern, 1960
15 min. color sound jra $4.00

THE HIDDEN EARTH  C2143

The structure of solid earth is analyzed from the crust through the mantle to the central core. The dynamic quality of the earth is demonstrated through the analysis of earthquakes and volcanoes. Application of seismology to the study of other planets is shown.

27 min. color sound jrsrca $3.30

HOW SOLID IS ROCK?  C2594

Designed to help students grasp the concept that the earth, when considered over the long span of geologic time, behaves much like a softball. Field evidence, confirmed by laboratory experiments, show that underground rock can both break and flow, even at the same time, when under great pressure and high temperature.

Producer: EBF, 1968
22 min. color sound jrsr $5.90
OUR SOIL RESOURCES A546

(Second edition) Describes the formation of soil, four soil zones of the U.S. and the damage to which they are subject, and three important ways to stop soil erosion. How rock becomes soil is shown and the characteristic vegetation of each soil zone and principal cultivated crops.

Producer: EBF, 1966
10 min. b/w sound ejrsr $2.50

RICHES OF THE EARTH B2646

Animation depicts the formation through geological ages by fire and water, wind and ice of the earth's crust which holds our wealth of minerals, oil, coal, arable land, and even our water power.
Awards: Venice, Padua, Italy.

Producer: NFB, 1966
16 min. color sound g $3.40

SECRETS OF THE ICE C2309

The role of snow and ice on man's physical environment is explained. Mountain glaciers and the ice fields of Greenland and Antarctica are explored with research parties. The relationship between glaciology on the one hand, and oceanography and weather on the other is explained.

27 min. color sound jrsrca $3.70

WAVES ON WATER B2426

With the help of large experimental tanks, the film explains how waves are created and demonstrates that even though waves may travel at a good rate of speed, the water does not move. It also points out that high-energy waves are created by underwater earthquakes.

Producer: University of Washington/EBF, 1965
16 min. color sound jrsrca $4.00
WHY DO WE STILL HAVE MOUNTAINS?   C2367

The struggle between weathering and erosion and the deformation of the earth's crust is investigated. Simple measurements show that erosion should long ago have reduced North America almost to sea level. This apparent paradox is explored by looking at the very nature of mountains. The film concludes with a look at careful bench mark measurements over a 40-year period. These bench marks prove that, in certain places, uplift is occurring today at rates which could produce mountains in a geologically short time.

Producer: EBF, 1964
20 min.  color  sound  jrsrca  $5.40
ELECTIVES 8
E8.1 MATERIALS FROM THE CRUST HAVE HAD AN IMPORTANT INFLUENCE ON MANKIND'S DAILY LIVING

I. Prescribed References for Grade 8


II. Additional Textual Resources for Grade 8


Interaction Science Curriculum Project, Interaction of Earth and Time, Agincourt: Gage, 1974. (Content item 2, pp. 228-29)

III. Other Print Resources

Available from: Surveys Branch
Alberta Transportation
Transportation Building
9630 - 106 Street
Edmonton, Alberta T5K 2B8


2. Alberta Transportation Maps: Surface and Mineral Resources Map. Four maps, 55 cm. x 85 cm., color, $.20 each. (Content item 1)


### ENERGY: THE CONSUMPTION ASSUMPTION 125101
This program examines the flow of various kinds of energy in primitive societies and the wasteful consumption in the industrial world. (AVSB)

**Producer:** Alberta School Broadcasts, 1975/Unlimited  
**Series:** Energy  
15 min. color sound jrsr

### ENERGY: SOURCES OF RESOURCES 125103
Energy that is stored beneath the earth's surface and the actual stores of this energy are examined. (AVSB)

**Producer:** Alberta School Broadcasts, 1974/Unlimited  
**Series:** Energy  
30 min. color sound jrsr

### PLANET OF MAN: THE INNER LIMIT 201009
This program takes viewers on a journey to the center of the earth, through the outer crust, a denser underlayer, a hot molten core, and a solid center.

**Producer:** Ontario Educational Communications Authority, 1976/March 1981  
**Series:** Planet of Man  
30 min. color sound jrsr
THE FRACTURED LOOK

Examines the ways in which Landsat may serve as a tool in searching for minerals and monitoring geological hazards. The satellite can reveal fractures or faults that may indicate past, present and potential earthquake activity. Faults are pathways that minerals used to make their way from deep within the Earth to its surface. By revealing fractures and rock alterations, Landsat imagery can contribute to exploration for mineral resources. (NASA Group) (AVSB)

Producer: NASA 197/Perpetual
15 min. color sound jrsr
### ANNOTATION

**DECISION TO DRILL**  
C1851  
A film about the people who search and drill for oil and natural gas in western Canada. It tells of the lone geologist in the mountains, the surveyor cutting through virgin bush, the seismic crews who chart rock formations deep beneath the earth's crust, and the drillers with their multi-ton rigs.  
Producer: Imperial Oil, 1963  
27 min. color sound jrsrca $2.50

### METAL IN HARMONY  
PB25  
The great amount of electrical energy required to produce aluminum is available in Scotland, and it is here that bauxite from Ghana is transformed into a useful metal. The film portrays some of the processes necessary before aluminum finds its way into a wide variety of items used in everyday life.  
Producer: Anglo-Scottish Pictures, 1962  
22 min. color sound jrsrca $2.50
LOCAL RESOURCE LISTING

PLEASE LIST BELOW LOCAL RESOURCES APPLICABLE TO THIS CURRICULUM CONCEPT SECTION

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E8.2  EVIDENCE FOR DETERMINING THE PAST HISTORY
OF THE EARTH COMES FROM A STUDY OF THE CRUST

I. Prescribed References for Grade 8


II. Additional Textual Resources for Grade 8


III. Other Print Resources

PLANET OF MAN: VOICES OF TIME AND THE EARTH

The Grand Canyon of Arizona serves as the clock of prehistory in this introductory program which attempts to place in perspective the awesome age of the planet Earth.

Producer: Ontario Educational Communications Authority, 1976/March 1981
Series: Planet of Man
30 min. color sound jrsr
HOW SOLID IS ROCK?

Designed to help students grasp the concept that the earth, when considered over the long span of geologic time, behaves much like a softball. Field evidence, confirmed by laboratory experiments, show that underground rock can both break and flow, even at the same time, when under great pressure and high temperature.

Producer: EBF, 1968
22 min. color sound jrsr $5.90
LOCAL RESOURCE LISTING

PLEASE LIST BELOW LOCAL RESOURCES APPLICABLE TO THIS CURRICULUM CONCEPT SECTION

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MATTER IN THE UNIVERSE APPEARS TO BE MOVING AT TREMENDOUS VELOCITIES

I. Prescribed References for Grade 8


II. Additional Textual Resources for Grade 8


III. Other Print Resources

<table>
<thead>
<tr>
<th>ANNOTATION</th>
<th>NOTES</th>
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<tr>
<td><strong>THE SOLAR SYSTEM: MEASURING ITS DIMENSIONS</strong></td>
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<tr>
<td>An explicit demonstration, principally graphical, of the triangulation techniques of measuring interstellar distances and the sizes of stellar bodies. (AVSB)</td>
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<td>10 min. b/w sound</td>
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<td><strong>UNIVERSE</strong></td>
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<td>Creates on the screen a vast, awe-inspiring picture of the universe as it would appear to the voyageur through space. (AVSB)</td>
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<td>Producer: National Film Board, 1968/1978</td>
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<td>26 min. b/w sound</td>
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WHO'S OUT THERE?

A portrayal of a contemporary scientific belief that there are intelligent civilizations in the universe. Narrated by Orson Welles. (NASA Group) (AVSB)

Producer: NASA 1976/Perpetual
30 min. color sound jrsr
LOCAL RESOURCE LISTING

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I. Prescribed References for Grade 8


II. Additional Textual Resources for Grade 8


PLANET OF MAN: CHALLENGE OF THE DEEP  201008

A world hungry for mineral resources has turned its search to the oceans. This program focuses on the process of sediment accumulation on ocean floors.

Producer: Ontario Educational Communications Authority, 1976/March 1981
Series: Planet of Man
30 min.  color  sound  j rsr
LOCAL RESOURCE LISTING

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Prescribed References


A straightforward presentation of physical science topics that develops the concepts by having students participate in many activities. It follows the program reasonably well and uses metric units although it is not SI. There are some potentially dangerous activities with mercury on pages 42 and 211-215 that should be monitored closely.


A directed-inquiry approach characterizes this text. Geared to the needs of the average student, the text incorporates clearly outlined experiments and exercises that focus attention on the main purpose of the chapter. The teacher's guide includes suggestions for teaching, for managing the program and a set of transparency masters. It is SI and approved by the Metric Commission.


An activity-centered approach to the teaching of physical science that follows the program quite well. The kinetic-molecular theory provides the theme of the book and the science processes structure the laboratory activities. The teacher's guide provides assistance in the laboratory activities highlighting the cautions and the salient points that are to be made in each activity. It is Canadian and SI. There are some potentially hazardous experiments with carbon disulphide (page 67), molten sulphur (pages 88-89) that should only be done as demonstrations.


A clearly written, colorful text with many demonstrations. There is much more material than can be used and some choice must be made to complete the program. The reading level is a little high and this text is more for the above average student. The accompanying laboratory manual is needed to guide the student through the lab activities. (American and non-SI)
Additional Textual Resources

These are materials that are available in the market place but for one reason or another are not recommended as prescribed references.


Physical science is related to everyday experiences and concerns of average grade 9 students. It is written in a simple, straightforward style that is very useful in the classroom. The content follows the outline rather poorly, and unfortunately imperial units are freely mixed with metric throughout the text.


A highly activity-centered approach to the teaching of physical science. The teacher's guide is an invaluable source of ideas and organizational assistance for a student-centered laboratory program.

Teacher References

In addition to the teacher's guides to the above, the following titles seem suited as resources:


Prescribed References for Grade 9


ABOUT TIME

A survey of the measurement of time from the sundial to Einstein's theory of relativity. Deals with the construction of the calendar and with the development of clocks, the latest of which is estimated to have a maximum error of one second in 3,000 years. The built-in time mechanisms of plants and animals, the reconstruction of time in the earth's geophysical history and the application of precise timing in communications and scientific research are also discussed.

Producer: Warner, 1961
59 min. color sound jrsrca $2.50

MEASUREMENT OF MAN

Shows that measurement is description and comparison. Measurement as a communication tool is demonstrated through the recipe in the home and the blueprint in construction. Discussed are a series of scientific and industrial scenes showing measurement as an observation tool, the function of measurement in accurate communication and data recording, the importance of mathematics in measurement, choice of tools, repetition for accuracy, and the importance of precision measurement in science and industry.

Producer: Indiana University, 1965
16 min. color sound ejr $3.90
LOCAL RESOURCE LISTING

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THE FORMS AND BEHAVIOR OF MATTER CAN BE EXPLAINED BY THE KINETIC MOLECULAR THEORY

Prescribed References for Grade 9


LOCAL RESOURCE LISTING

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C9.3 HEAT AND TEMPERATURE CAN BE EXPLAINED IN TERMS OF MOLECULAR MOTION

Prescribed References for Grade 9


Demonstration of kinetic molecular theory of matter by showing diffusion of gases in air, the condensation of stream, the evaporation of liquids, and transformation of liquids into solids.

Producer: EBF, 19?
11 min.  color  sound  g  $3.00
LOCAL RESOURCE LISTING

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C9.4 ENERGY ENABLES WORK TO BE DONE AND MOTION TO BE CHANGED

C9.4

Prescribed References for Grade 9


ATOMIC ENERGY EXPLAINED

An outline of atomic energy and its peaceful applications. Studies the structure of atomic particles and shows how energy can be released from them to produce atomic power. Illustrates how radio-isotopes are being put to use in industry and medicine.

Producer: Technical and Scientific Films, 1971
20 min. color sound jrsrca $2.50

THE ELECTRON'S TALES

An animated electron's eye view of the history of electronics. Beginning in ancient Greece, he tells of man's discoveries over the years which enabled him to direct and use electron flow from the first battery to the integrated circuit.

Producer: BIS, 1970
16 min. color sound ejr $2.50

EXPLORING ELECTROMAGNETIC ENERGY

An introduction to electromagnetic energy and some of the ways in which it is used in daily living. Explains why radio waves, infrared, visible light, ultraviolet, X-rays and gamma rays are all members of the same family.

Producer: Film Associates, 1961
16 min. color sound jrsrca $3.30
## The Force of Gravity

The nature of gravitation from early times to the present, as seen by man, is discussed. Tells how the gravitational field accounts for the motion of planets: Newtonian and Einsteinian theories and gravitational problems of the space age.

27 min. color sound jrsrca $5.70

## Introduction to the Cathode-Ray Oscilloscope

Demonstrates early experiments leading to the development of the cathode-ray tube. Explains how the tube works to respond to voltages and the various transducers that convert physical phenomena such as sound, light and heat into voltages that can be displayed on the screen.

Producer: EBF, 1970  
11 min. color sound jrsr $3.00

## Magnetic Force

Shows how the magnetic field within the earth controls the path of cosmic ray particles and controls other charged particles that make up the aurora. Reviews present efforts to extend man's knowledge of the magnetic field.

27 min. color sound jrsrca $3.30
## LOCAL RESOURCE LISTING

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</table>
C9.5 Matter is composed of atoms and molecules

Prescribed References for Grade 9


ANNOTATION

ATOMIC ENERGY EXPLAINED

An outline of atomic energy and its peaceful applications. Studies the structure of atomic particles and shows how energy can be released from them to produce atomic power. Illustrates how radio-isotopes are being put to use in industry and medicine.

Producer: Technical and Scientific Films, 1971
20 min. color sound jrsrca $2.50

METAL CRYSTALS IN ACTION

Shows metal and its composition. Why every phase in modern life and industry depends on metal and how it applies to each phase is demonstrated. The formation and composition of alloys and crystals are also shown.

Producer: American Society for Metals, 19?
28 min. color sound jrsrca $3.60
LOCAL RESOURCE LISTING

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</table>
E9.1.1 Many forms of energy exist which can be transferred from place to place or converted from one form to another

Work represents a transfer of energy (Simple Machines)

I. Prescribed References for Grade 9


II. Other Print Resources


Chaplin, Sylvia and John Keighley, Focus on Physics, Toronto: Pergamon of Canada, 1977. $6.50 U.S. (Content items 1 and 2, pp. 113-44)


James, E. O., Secondary Physics Outlines, Don Mills: Pergamon of Canada, 1975. (Content items 1 and 2, pp. 26-35)

Projects in Physics: Man and Machines, Don Mills: Pergamon of Canada, 1975. 84 pages. (Use for general reference)

LOCAL RESOURCE LISTING

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MANY FORMS OF ENERGY EXIST WHICH CAN BE TRANSFERRED FROM PLACE TO PLACE OR CONVERTED FROM ONE FORM TO ANOTHER

E9.1.2 Electrical Energy Can Do Work and Be Changed to Other Forms of Energy

I. Prescribed References for Grade 9


II. Other Print Resources

Chaplin, Sylvia and John Keighley, Focus on Physics, Toronto: Pergamon of Canada, 1977. $6.50 U.S. (Content items 1, 2, 4, pp. 153-208; 3 and 4, pp. 295-328)


James, E. O., Secondary Physics Outlines, Don Mills: Pergamon of Canada, 1975. (Content items 2 and 3, pp. 50-72)

Projects in Physics: Living With Electricity, Don Mills: Pergamon of Canada, 1975. 75 pages. (Content items 1-4)

**ANNOTATION**

**ELECTRICAL POWER GENERATION IN SPACE**  120123

Shows the power requirements of space exploration. The means of providing power--battery, solar, and fuel cells--are shown. (NASA Group) (AVSB)

Producer: NASA 1967/Perpetual
27 min.  color  sound  jrsr

**ELECTRIC PROPULSION**  120131

Shows what electric propulsion is, how it works, why it is needed and how it may be used in manned and unmanned missions. (NASA Group) (AVSB)

Producer: NASA 1965/Perpetual
24 min.  color  sound  jrsr

**FIVE MINUTES TO LIVE**  120117

This informational tape shows a dramatic example of space technology utilization in the form of Telecare. (NASA Group) (AVSB)

Producer: NASA 1975/Perpetual
17 min.  color  sound  jrsr
MAGNETIC FORCE

Shows how the magnetic field within the earth controls the path of cosmic ray particles and controls other charged particles that make up the aurora. Reviews present efforts to extend man's knowledge of the magnetic field.

27 min.  color  sound  jrsrca  $3.30
LOCAL RESOURCE LISTING

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MANY FORMS OF ENERGY EXIST WHICH CAN BE TRANSFERRED FROM PLACE TO PLACE OR CONVERTED FROM ONE FORM TO ANOTHER

Light Energy Can Do Work and Be Changed to Another Form of Energy

I. Prescribed References for Grade 9


II. Additional Textual Resource for Grade 9


III. Other Print Resources


Chaplin, Sylvia and John Keighley, Focus on Physics, Toronto: Pergamon of Canada, 1977. $6.50 U.S. (Content items 1-5, pp. 3-70)


Jacobs, Richard P., Matter and Motion--Physical Science, New York: Cambridge Book Company, 1976. (Content items 1, 2, 3, pp. 195-238)


Searching for Structure: Light and Sound, Toronto: Holt, Rinehart and Winston, 1975. (Content items 1, 2, 3, and 5, pp. 6-56)
LOCAL RESOURCE LISTING

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E9.1 Many forms of energy exist which can be transferred from place to place or converted from one form to another.

E9.1.4 The energy of sound plays a significant role in mankind's daily living.

I. Prescribed References for Grade 9


II. Other Print Resources


Chaplin, Sylvia and John Keighley, Focus on Physics, Toronto: Pergamon of Canada, 1977. $6.50 U.S. (Content items 1, 2, 3, pp. 340-60)

James, E. O., Secondary Physics Outlines, Don Mills: Pergamon of Canada, 1975. (Content item 1, pp. 46-49)

Searching for Structure: Light and Sound, Toronto: Holt, Rinehart and Winston, 1975. (Content items 1, 2, and some of 3, pp. 58-87)
LOCAL RESOURCE LISTING

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AUTOMOBILE TIRE HYDROPLANING: WHAT HAPPENS

Shows how and why automobile tires lose contact with wet pavements and relationship between speed, tire wear, and water depth. The dangers of hydroplaning are emphasized. Recommended for driver training. (NASA Group) (AVSB)

Producer: NASA 1967/Perpetual
12 min. color sound jrsr
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LATENT HEAT ACCOUNTS FOR THE ENERGY REQUIRED TO CAUSE A CHANGE IN THE STATE OF A SUBSTANCE

I. Prescribed References for Grade 9


II. Additional Textual Resources for Grade 9


Chaplin, Sylvia and John Keighley, Focus on Physics, Toronto: Pergamon of Canada Ltd., 1977. (Content items 1, 2 and more, pp. 258-69)

MANY FORMS OF ENERGY EXIST WHICH CAN BE TRANSFERRED FROM
PLACE TO PLACE OR CONVERTED FROM ONE FORM TO ANOTHER

Light Energy Can Do Work and Be
Changed to Another Form of Energy

I. Prescribed References for Grade 9

Bickel, C. L. et al, Physical Science Investigations, Markham:

Carter, J. L. et al, Physical Science: A Problem Solving Approach,

Heath, R. W. and R. R. McNaughton, Physical Science: Interaction of

Townsend, R. D. and P. DeH. Hurd, Energy, Matter and Change, Agincourt:

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Publishing, 1974. Teacher's Guide. (Content items 2 and 3,
pp. 225-60)

III. Other Print Resources

Andrews, William A. et al, Physical Science—An Introductory Study,
Scarborough: Prentice-Hall, 1978. (Content items 1, 2, 3, pp.
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Jacobs, Richard P., Matter and Motion—Physical Science, New York:
Cambridge Book Company, 1976. (Content items 1, 2, 3, pp. 195-238)

James, E. O., Secondary Physics Outlines, Don Mills: Pergamon of
Canada, 1975. (Content items 1 and 3, pp. 14-25)

Searching for Structure: Light and Sound, Toronto: Holt, Rinehart
and Winston, 1975. (Content items 1, 2, 3, and 5, pp. 6-56)
LOCAL RESOURCE LISTING

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E9.1 Many forms of energy exist which can be transferred from place to place or converted from one form to another.

E9.1.4 The Energy of Sound Plays a Significant Role in Mankind's Daily Living

I. Prescribed References for Grade 9


II. Other Print Resources


*Searching for Structure: Light and Sound*, Toronto: Holt, Rinehart and Winston, 1975. (Content items 1, 2, and some of 3, pp. 58-87)
LOCAL RESOURCE LISTING

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Chaplin, Sylvia and John Keighley, *Focus on Physics*, Toronto: Pergamon of Canada Ltd., 1977. (Content items 1, 2 and more, pp. 258-69)

Demonstration of kinetic molecular theory of matter by showing diffusion of gases in air, the condensation of stream, the evaporation of liquids, and transformation of liquids into solids.

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