oil and its disposal. For use in junior and senior high classes, the program covers enough areas to stimulate research ideas for students. For the general public, it covers enough areas to lead to discussions about waste oil in the viewing area.

No specific solutions are covered, but the program encourages everyone to work toward saving our "basic finite resource."

Robert E. Phipps
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GENETICS

Genetic fix. Agency for Instructional Technology, Bloomington, IN. 1984. 16 mm color/sound film. 30 min. $300 ($135 videocassette).

This film focuses on genetic research and its ethical ramifications. It begins by contrasting the gradual genetic changes that have occurred in nature, and those that have been achieved through the years by selective breeding, with the rapid and radical changes made possible by modern genetic engineering.

High school students who are summer interns at Jackson Laboratory in Bar Harbor, Maine, briefly describe their experiences at the laboratory. One major sequence follows an experiment in which a human globin gene, isolated from one student's blood, is prepared and injected in a mouse embryo. Eventually, the researchers hope, such gene surgery will lead to cures for some serious genetic diseases.

Two of the students travel to Washington, D.C., where they meet Alexander Caprow, executive director of the President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research.

Through the use of live film and marvelous graphics the viewer gets an excellent look at the methods of DNA extraction and gene manipulation. Even with the speed that technology is moving, this film is produced in such a manner that it is not likely to be outdated soon. It is a real "inquiry type" film.

A small teacher's quide accompanies the film which helps guide discussion that should follow viewing. One of the main points is the importance for the public at large to understand the issues involved so that genetic research will be properly channeled.

This is one of the best programs in recent years for science and social studies not only for high school, but also for college students and adult groups.

Donald R. Winslow
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MICROBIOLOGY

Microbiology: imaging a hidden world. The light microscope. 1984 Coronet Films, Dearfield, IL. 16 mm color/sound film. 15 min. $395.

As an educational tool to be used during instruction in the use of microscopes, this outstanding film is unsurpassed.

There are only two major complaints I have about the film. The first is its title—it's too wordy. My students always want to know the name of the film they are about to watch, supposedly, "for their notes," but in reality, to know whether or not they should prepare to "tune out" mentally. This title gets them well prepared for that. And, even if you give them only part of the title—like "Microbiology" or "The Light Microscope"—you still get a groan from the best of students. "Imaging a Hidden World" is more interesting, true, but you will spend the next ten minutes repeating and spelling the word "imaging" and "No, it's not a woman's name." After several showings, I decided to use simply "A Hidden World."

My second complaint, and also the complaint of many of my students, is that the film is too short. After 15 minutes of most educational films, half of the class would be either asleep or "tuned out." The film left them screaming for more.

Once the film starts, even the "tuned out" students come alive to the music and pictures on the screen. The opening is colorful and interesting and the music is especially well done. It was designed to build just the correct amount of suspense and then to punctuate key points being made by the narrator.

The photography is excellent in every way. It, alone, could hold the attention of the rowdiest junior high class. The narration is clear and understandable.

Without doubt, however, the film is of greatest value to high school and college biology classes that have already had some instruction and experience in the use of the microscope.

The film should be followed immediately with an exciting lab . . . try some of the ideas from the film and actually use polarized, colored light, and dark field illumination to observe microorganisms.

The written synopsis is very complete. In addition to a summary and a statement of their instructional design, it lists learning objectives (which I agree with) and suggestions for both before and after viewing. The after viewing questions are quite in-depth. I would suggest showing the film twice: once for the total enjoyment and once for seeking answers to questions.

Marlene M. Hurley
Dietrich High School
Dietrich, ID

NATURE STUDIES

The Columbia River gorge: a natural history. 1983. Northwest Film Study Center, Portland, OR. 16mm color/sound film. 23 min. Rental $35. Purchase $350.

This narrative, dedicated to presentation of the environmental diversity located in the gorge, is well targeted for junior and senior high students as well as adults. Clay is used for a dramatic introduction to the ancient geological processes responsible for the current geophysical characteristics of the gorge. These events are sequentially presented first in a two-dimensional, then in a three-dimensional, model. Following this introduction, the authors have canvassed the majority of the gorge's north and south banks to illustrate thoroughly the types of habitats and differences among these habitats due to variation in precipitation, exposure, and substrate composition. Provided with the film is a two-page descriptive summary that has a satisfactory list of references users may cite for further student reading about the gorge.

This quality production by the students at Cleveland High School has only two technical discontinuities. First, depiction of the ice dams, associated dam failure and catastrophic floods leaves the viewer with the idea these dams were located in the gorge itself. The narrator does refer to these dams' location "in northern Idaho"

but the casual viewer misses this important fact since it is presented separately from depiction of the ice dam/flood process. Citation of the U.S.G.S. publication "Channeled Scablands" in the readings list would allow users to become acquainted with the exact location of one source of these flood waters.

The second half of the film does an admirable job presenting the diversity of habitats in the gorge. While the narration alludes to man's effect on the gorge, no boats or barges are seen on the waterway. Few roads, residences, sheep, or cattle and no wind-powered electricity generation facilities are shown during the close of the commentary. Apparent to most users will be the seasonal condition of the vegetation, the footage was taken mostly during the winter and early spring. Since the intent of this film is to depict geological processes and the resultant diversity in habitats, this is an acceptable bias.

I highly recommend this film as a quality production worthy of its topic. More student-produced materials of this caliber should be on the market.

Vincent R. Lee
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The earth's climate. 1984. National Geographic, Washington, D.C. Color/sound filmstrip. 2 Parts, each 20 min. $61.95.

The first filmstrip, *What is Climate?*, describes the main components shaping the earth's climate—heat from the sun, latitude, prevailing winds, ocean currents, and mountains. Three major climatic zones are defined: the tropics, the mid-latitudes, and the polar zones. Within each zone, various climates are described and the major factors important in shaping these climates are discussed.

Useful booklets accompany the filmstrips. Here the objectives are stated, key words are defined, and suggestions are given for additional classroom activities and discussion.

The second filmstrip, *Our Changing Climate*, shows how scientists gather evidence and interpret data to study past climates and how this might be used to predict future climates. While it is difficult to predict changes in climate, this filmstrip can be useful in stimulating discussions on the effects of volcanic eruption upon climate, greenhouse effect, and how a warmer or a cooler global climate might affect agriculture.

Overall quality of the production is good. Only one minor criticism is that the blue lettering on a green background is difficult to read.

The filmstrips would be useful additions to science classrooms on both the junior and high school level. They could be used either as an introduction or review to a study of climate.

Joyce B. Greene
Boulder High School
Boulder, CO

Forest in the city: Forest Park, Portland, Oregon. 1984. Northwest Film Study Center, Portland, Ore. 16 mm color/sound film. 17 min. Rental $25, Purchase $250.

This film is about one of the largest urban parks in the country. As early as 1903 its possibilities as a park were recognized. Community interest heightened in the 30s, and the park was established on 3,000 acres in 1948. Later it was increased to its present size of 5,000 acres on approximately seven square miles of forested hills.

The park is unique as part of a corridor to the coast range of mountains and as such is traversed by more than 110 species of birds and 50 species of mammals, as well as some amphibians and reptiles, many of them shown in the film. The unusually close proximity of the park to the hustle and bustle of the city is illustrated in many shots. The park features 50 miles of nature trails.

The forests of douglas fir, red cedar, western hemlock, alder, and big leaf maple are interrupted by areas of grassy forbs, ferns, berry bushes, and wet places. The film presents many ecological concepts, with sequences and narration on such topics as territorial requirements, layering affects in forest habitats, the importance of downed logs and snags, songs of amphibians, beaver activity and the use of holes and nests in trees.

The film is well organized and the photography is outstanding. I especially enjoyed the sequences on the tree foliage patterns, the individual animals, and, particularly, some of the wild flowers.

My greatest criticism of the film is that many of the individual species of animals and plants are not identified in the narration or on camera. To compound this problem, no comprehensive film guide accompanies the film. Some outstanding opportunities to teach biology, natural history, and ecology are missed or left to the individual teacher (who may or may not be knowledgeable enough). Early in the film, I also had some difficulty hearing the first narrator who seemed to mumble somewhat.

The film can be useful to introduce and illustrate concepts in ecology to elementary, junior high, and senior high students, especially at the local and regional level. Adult groups involved in bird and other natural history studies may also find the film stimulating. At the college level it may be helpful in conservation courses or perhaps in use with urban planning groups.

I thoroughly enjoyed the film in spite of the criticisms. Used with careful planning, it does have potential in education.

Alden E. Smith
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Spiders in perspective: their webs, ways, and worth: Part 1: Introduction to the families and predatory behavior; Part 2: Spiders as prey, courtship behavior, and benefits to humans. 1984. educational images, ltd., Elmira, NY. Color/sound filmstrip. 15 min and 14 min. $69.95.

The title is an accurate summary of the content of this filmstrip program. The program ends by reviewing the beneficial effects of spiders in an ecosystem, hinting that their utilization as natural pest controllers would be limited by their generalist predatory behavior.

In general, this program contains much good information, however, its use may be limited because of its lack of clarity. Labels or titles on the frames would make it more useful for a review session or an independently viewed introduction. The films could be well-used as a focal point of a presentation or a discussion in an ecology or animal behavior course, or in a general biology course to illustrate the evolutionary results of environmental pressures on an animal form. In either case, considerable clarification and discussion by the teacher are necessary.

The accompanying guide contains a glossary, script, some supplementary information, suggested projects, and additional references. Still, more information needs to be included for most teachers. A useful addition would be an introduction containing a program rationale and learning objectives.

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