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SOS Galapagos, 17 minutes, color, Contemporary Films, 267 West 25th Street, New York City 10001.

The Galapagos Islands have a special place of honor in the history of human intellectual development and, especially of course, in biology. Perhaps never before in human history has the visit of one man to one place been so fruitful or resulted in controversies of such duration and seeming endurance.

Among the results of the 1959 Darwin Centennial Celebration were a renewal of interest in the Galapagos Islands, the formation of the Charles Darwin Foundation, and the establishment of a research station (by the Foundation), on the island of Santa Cruz, which is open to scientists of all nations. An immediate consequence is the film under review, *SOS Galapagos*, made by UNESCO with the cooperation of the Darwin Foundation, the International Union for the Conservation of Nature and Natural Resources (IUCN), and the government of Ecuador.

The film provides a summary of the present conditions of the flora and fauna of the 13 islands that form the Archipelago, which lies just south of the Equator and about 600 miles west of the coast of Ecuador. It is, as well, a call for help to save a unique and historic ecosystem before it is too late. The film makers discovered that the famous turtles were seriously threatened with extinction, and that other rare or unique species, such as the marine iguana and the frigate bird, have all had their numbers drastically reduced by the depredations of man and the animals he introduced to the islands.

It should be noted, parenthetically, that under a grant from the NSF, the University of California is presently engaged in a 3-year project that calls for a series of 12 color films on the general ecology, evolution, and adaptation of the islands' flora and fauna.

The photography is excellent, the commentary is unobtrusive but informative, and some of the footage is extraordinary. There is a sequence of the courtship dance of the frigate birds that is priceless—and also very funny, particularly the shots of the “loser” waddling away discouraged, unwanted, unloved.

SOS Galapagos is highly recommended for all

levels of biology and ecology. For the high school student, it should come just before or during the unit on evolution or after the unit on ecology to achieve maximum benefit. For the college student, it will be welcome, and useful, any time. It would make an excellent short addition to the program of a cinema club or as part of the program of a faculty meeting.

Volcano Surtsey, 27 minutes, color, produced by McLean Productions, for North Shore News. Available from Professor Paul S. Bauer, The American University, Massachusetts and Nebraska Avenues, N.W., Washington, D.C. 20016.

Birth is an event touched with magic and wonder. Development is a dynamic, fascinating study. In the “new” biology, we introduce the heterotroph hypothesis and invite the student to speculate with us on the origins of life and to let his imagination soar even beyond the bounds of the rational. The question, though, still nags because the imagination cannot really cope. How, we ask ourselves again and again, did it begin, could it begin? We cannot construct a mental picture that satisfies. A tiny insight, the merest wisp of a hint, is offered by *Volcano Surtsey*.

The birth of a volcano is an awesome, magical, wonder-filled spectacle of unimaginable fury and violence. *Volcano Surtsey*, a prize winning film, is the incredible record of a volcano from the moment of its birth beneath the Atlantic Ocean to its consolidation as an island with a future—a biological as well as a geological future.

Iceland lies astride the Mid-Atlantic Ridge. In fact, it is the largest above-water section of this active growing mountain chain. In the past decade, there have been a number of violent eruptions along the Ridge—in the Azores in 1957-58, on Tristan de Cunha in 1961, and, in the same year, the eruption of Askja Volcano in Iceland. And in the early morning hours of 14 November 1963, there boiled up from the bottom of the sea, 425 feet down, a tremendous column of steam and ash that reached a height of 10,000 feet. Within a few hours after the alarm was given, Dr. Sigurdur Thorarinsson, an Icelandic volcanologist, was flying over the area which is just a few miles south of the Westman Islands, and about 75 miles south-southeast of Reykjavik, Iceland's capital city.

The film record of this volcano's birth and early history, (the volcano is named after the Icelandic God of Fire, Surthur), began there and then. Professor Paul Bauer of the American University in Washington, D.C. represented American interests in the phenomenon and was

instrumental in bringing various organizations into the recording enterprise. The result is a unique film of unparalleled and extraordinary beauty and excitement. On this ground alone it would deserve a hearing within these specialized precincts.

Within 2 days—by 16 November—the volcano was 130 feet above sea level and 1800 feet long. By 30 December, it had risen to 500 feet and had attained a diameter of half a mile. As it was building up, however, it was being worn away by the sea. The question in the minds of all the watchers was, would the island last long enough to be visited and studied?

In February, fire was seen for the first time as a vent was sealed off from the sea. A lava lake gradually developed, and, as the lava poured out and cooled, it formed a shield over the island that would withstand the pounding waves and roaring winds. The future of Surtsey was assured.

By July of 1964, the surface of the lava lake was 365 feet above sea level. Some of the most beautiful and awesome shots are of streams of lava, flowing at rates of up to 45 mph, roaring into the boiling sea. The most dramatic sequence involved the landing of a party of 5 men and 2 women on the island. Within minutes after the landing, the island erupted with particular violence and the brave scientists are seen disappearing in a rain of brimstone, black ash, and smoke. An hour later, as the cloud advanced slowly on the sea, out of its leading edge came 2 dinghies with all hands saved.

The last few minutes of the film are given over to that hint which was mentioned in the first paragraph. Thousands of fish, killed by the heat, are thrown up by the waves and litter the beaches. Birds are attracted to this easy harvest. And the biology class can take it from there into a lively and scientifically based discussion.

This film is recommended, without reservation, for all types of audiences. Schools should present this film in a series of assembly programs so that the entire student body can see it. It would make memorable any faculty or club meeting. It is the story of our very beginnings—how our land came to be and where it came from and the life upon it—beautifully told.

The Thorne Biology Demonstration Series of 8mm films in Technicolor cartridges now has nine titles, available in Standard or Super 8 formats at \$12.50 per cartridge or \$112.50 for the entire series. The films can be purchased from Thorne Films, 1229 University Avenue, Boulder, Colorado 80302.

The following four 8mm film loops are the latest to be added to the series. All are silent, color.

Pocket Garden For Germination Studies, 3 min., 30 sec., 1966.

This film loop demonstrates a method for constructing a small glass-enclosed area for observing seed germination, root and stem formation, tropistic responses, etc. The procedure is very simple and consists of cutting to size two pieces of glass and several pieces of blotting paper, two of which have their central area removed to serve as spacers. Two rubber bands hold the glass and blotting paper together. The film loop may be useful for demonstration of a procedure on the elementary level, but it would seem that a few paragraphs describing the procedure would be as effective at higher levels. However, it may have motivational value since it does show uses for the finished chamber.

Pollen Tube Growth, 3 min., 12 sec., 1966.

This loop demonstrates a method for preparing flower pollen for the study of pollen tube growth. A petunia flower is stripped and the anthers are touched to hardened sucrose-enriched agar on microscopic slides. The growth of the tubes is shown in time lapse. The description on the film box of the content of the film is so clear that probably most students (and teachers) would be able to duplicate this procedure from the written description alone. However, the film loop would provide reinforcement and perhaps added incentive. It also contains a time lapse sequence of pollen tube growth.

Regeneration in Flatworms, 1 min., 52 sec., 1966.

This brief film loop shows a planarian cut transversely and the two resulting planarians with regenerated tail and head. A drawing indicates a midline cut on another planarian and the resulting two-headed planarian is shown. The final scene shows several planarians feeding on ground meat. The procedure and results are clear; however, more magnification and better lighting would improve some of the shots.

Inducing Ovulation in Mice, 3 min., 40 sec., 1966.

This loop opens by showing the injection of pregnant mare serum into the peritoneal cavity of a female mouse and 48 hours later the injection of chorionic gonadotropin. The abdomen is opened 12 hours later; the oviduct is removed and placed in a physiological saline solution. Hyaluronidase is added to disperse the follicular cells from the area around the ova. The loop concludes by pointing out the vaginal plug, and showing cleavage to the eight cell stage. The visuals with the accompanying detailed description on the film box make the procedure appear

simple. The organs in the abdominal cavity were very difficult to distinguish because of the blending of their red colors.

Book Reviews

All unsigned reviews were made by the Editor.

Biology

LABORATORY EXERCISES IN THE PRINCIPLES OF BIOLOGY, Thomas R. Mertens and Jeanette C. Malayer, 124 pp., Burgess Publishing Co., Minneapolis, Minnesota, 1966.

The explosive growth of knowledge in the biological sciences and the related efforts in the area of curriculum development, particularly at the secondary and elementary school levels, is beginning to affect the teaching of biology in the colleges. All but the most insensitive instructors in freshmen courses have become embarrassingly aware that the classical laboratory approach, built on demonstration and verification, is a distinct let-down for students accustomed to a more dynamic approach. This is the experience of students who have taken BSCS or BSCS-influenced courses in the better high schools. In many institutions, however, the task of providing college level laboratory experiences, as dynamic as these high school courses and characterized by the spirit of inquiry, poses numerous problems with which the inexperienced instructor (the one too frequently assigned to beginning courses) finds it difficult to cope. He is often hampered by increasing enrollments, restricted operational budgets, and modest facilities. Most of the available laboratory manuals available to him for beginning courses are either hopelessly traditional, or they present activities which demand costly equipment and elaborate preparations.

It is encouraging to note that this book offers a means of making the laboratory program of a two-quarter or one-semester course in beginning biology interesting and meaningful on a modest budget. Influenced by the BSCS and CUEBS efforts and attitudes, the authors have produced a manual in which the exercises are straightforward, easy to follow, and should encourage an inquisitive attitude on the part of the student.

Although I personally do not like the workbook format and wish that the exercises had been made open-ended, I appreciate the authors' attempt to build the activities around thought-producing problems. Of course, a few minor criticisms, of which one or two examples will suffice, can be leveled at a number of the exercises. In Exercise I, on the use of the microscope, I find unnecessarily awkward the

method described for estimating true size of an observed object. For a dollar, a simple eye-piece micrometer can now be purchased from at least one biological supply house. By the use of this micrometer, an object can be measured directly and rapidly in microns, eliminating the need for more complicated methods of estimating true size. If a simple micrometer is not available, the diameter of the low-power field of view of most microscopes can be measured directly with a plastic rule and thereafter used to estimate actual size of objects with surprising accuracy. In another exercise, I notice the term protoplasm is still employed as designating living substance. The authors might have simply talked about the chemical constituents of cells rather than employing this out-dated concept. Similar minor modifications could be suggested at places throughout the manual, but in general, it is one which should find wide acceptance.

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Botany

PLANT DIVERSIFICATION, Theodore Delevoryas, 145 pp., \$2.25, Holt, Rinehart and Winston, Inc., New York, 1966.

A paperback in the publisher's *Modern Biology Series* and this one devoted to an evolutionary history of plants. This implies a heavy emphasis on paleobotany; yet the author carefully weaves this knowledge into current morphological information in such a way as to present quite a coherent and smooth reading account of the evolution of plants. Absent are the many pictures so traditional in this type of treatment and fresh ones have been substituted.

Chapters take up algae, fungi (achlorophyllous), vascular plants, flowering plants, and a paleobotanical summary. There has been no reduction of terminology.

This is an interesting book on aspects of plants which are often relegated to backs of general texts or in brief introductory statements. A fine reference.

ABOUT PLANTS, Topics in Plant Biology, F. C. Steward, 174 pp., \$2.95, Addison-Wesley Publishing Company, Reading, Massachusetts, 1966.

Paperback by a well-known plant physiologist and dealing with this subject. The author indicates he dictated the manuscript, but the wealth of detailed information rather belies this statement if it were a casual dictation. The illustrations are superb, especially the diagrams. Of course, there is an index and bibliography.