

Audiovisual Reviews

THREE BILLION YEARS OF LIFE: THE DRAMA OF EVOLUTION.

1976. Science and Mankind, Inc. (Two Holland Avenue, White Plains, New York 10603). 240 slides in 3 carousel cartridges, 3 tape cassettes, 3 LP records, teacher's guide, library processing kit. Purchase \$169.50.

The package, which consists of the 240 color slides plus narration, is intended for high school and junior high school audiences. Part One covers the biochemical origin of life and describes a few algae and the main sorts of aquatic animals. The second part deals with land plants and land animals exclusive of the mammals. The final part deals with mammals, especially primates.

Apart from a superficial treatment of Stanley Miller's classic experiment and of continental drift, this presentation could have been written a century or more ago. A parade of invertebrates, with most examples being contemporary, starts with the sponges and goes on to jellyfish, flatworms, roundworms, brachiopods, mollusks, annelids, arthropods, and echinoderms. Students may well come away with the mistaken impression that these living forms represent the true evolutionary sequence. This impression will be reinforced by one of the suggested discussion questions: "Why does it seem likely that animal phyla developed in this order? sponges, coelenterates, flatworms, roundworms, brachiopods and mollusks, annelids, arthropods, echinoderms." The hoped-for answer is: "There is a progression from the simplest to the most complex, evident both in external anatomy and in the function of organic systems." A similar misunderstanding is likely to result from the way the lower primates are treated. The emphasis is on living forms, from tarsiers to the chimpanzee. The point is never made clear that these living species cannot be the lineage that led to *Homo Sapiens*.

Many of the photographs of animals and plants are excellent but others are meaningless. Examples in the second category include a fossil microorganism, yeast cells, a fossil of blue-green alga, amebae (that look like a spread of gravy on a blue dish), and fossil algae. The

drawings, which are much less successful than the photographs, are not always related to the narration. For example, though the narrator discusses the nervous system of an annelid, the drawing shows only the outlines of the body; and the discussion of brain size is accompanied by drawings of entire skulls with no indication of the actual volume occupied by the brain.

Some errors in the presentation are oddly disturbing. Part Two begins with the statement: "Living in the water is a cinch. Aquatic organisms spend their lives literally bathed in food." The accompanying slides are of kelp and a school of grunts. Continuing: "Making it on land, though, is much tougher. . ." The last point is convincingly demonstrated by one slide of Antarctica and another of the Namib Desert. Both are about as abiotic as one can imagine. In another segment, the narration deals with the circulatory system of birds and the accompanying slide is a beautiful shot of snow geese in flight. Not one bit of the circulatory system shows. In another place the discussion of the dinosaur *Stegosaurus* shows a slide of *Triceratops*, which is far removed in time and structure. The beautiful slide "Frog tadpoles hatching" is not of a frog at all. A salamander larva, probably *Anbystoma*, is shown.

Most of the questions that are asked of the students are not only poor but also above the abilities of most to answer in a useful way. I would have had quite a

Faith Hickman, Audiovisuals Editor, selects materials and coordinates the review process for this feature. Catherine Marble is her assistant. Their continuing contribution to the journal is deeply appreciated.

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Post Office Box 930
Boulder, Colorado 80306

problem with: "Why is Archaeopteryx considered the first bird?" The answer is: "Archaeopteryx had feathers." Every bird I know has feathers but that hardly makes each a candidate for the first bird. I have much trouble with this statement as well: "Perhaps the most dramatic evidence for evolution comes from internal chemistry. The hemoglobin in animal cells, for instance, is remarkably close in chemical composition to the chlorophyll in green plants. It points toward the very early history of life, more than a billion years ago, when plants and animals evolved from simple, one-celled forms."

This series cannot be considered an adequate coverage of evolution. There is nothing on the mechanisms of evolution, genetic variation, selection, development of resistance to drugs and pesticides, Darwin, Lyell, measurement of geological time and so on. Possibly these deletions are intentional as the teacher's guide mentions that the publisher has two complementary series: *How Life Survives: Adaptation and Evolution* and *An Inquiry into the Origin of Man: Science and Religion*. Nevertheless, what is here is a fairly old-fashioned parade of the animal and plant kingdoms that fails to distinguish clearly between living organisms arranged in order of increasing structural complexity and what the paleontologists tell us may have been the evolutionary lineages. Even the large number of first-rate color slides cannot make up for the inadequate informational and conceptual level of the narrative. A sadly pedestrian product.

John A. Moore
University of California
Riverside

ANIMAL MIGRATION.

1977. BFA Educational Media (2211 Michigan Avenue, Santa Monica, California 90406). 16 mm color-sound film. 11½ minutes. Purchase \$170; rental \$15.

This film touches on a variety of migration patterns without going into great depth. With the exception of birds, the emphasis is more on what migration is than on how it is achieved.

The introduction is an animated illustration of how people throughout history