run that program, and ask them if they really want to run it again or a variety of other things. (That will be a topic for a future column.)

Finally, at the end of the question and answer program, you want to return them to the Driver program using a similar LOAD ". . .", R statement. In that way, the student always enters and exits via a single program.

Another, more complicated approach to these types of question and answer programs is to use the program to evaluate the student's understanding of a topic, and take appropriate steps. You may want to write a larger program with more questions and decide in the program whether or not some questions are to be asked. You could begin with the standard 10 questions. However, for each question, you might have four additional questions on the same topic. If students get the first question correct, they are branched to the first question in the next topic. If they do not get the first question correct, they are branched to the next question covering that same topic. The response to the second question then determines if they get the third question or are branched to the first question of the next topic. Thus, students may get anywhere from 10 to 50 questions, depending upon how many questions they answer correctly. The actual programming for this is no more complex than we saw last month; it only involves writing larger programs with a little more branching.

Finally, our programs so far have involved only objective, multiple choice questions. It should be obvious that true-false questions will work just as well. Short answer questions are a little more difficult. If you are expecting the student to enter a specific word from the keyboard, there are a couple of things to keep in mind. By using the UCASE statement we discussed last month, you can eliminate problems of capitalization. However, you must determine to what extent the response can be misspelled. Normally, you may want to allow for one or two common errors in the spelling of the word that you are looking for. Otherwise, it can be quite frustrating for the student who enters what is thought to be the correct word, only to find that the word was misspelled and considered by the computer to be wrong. I have found this to be serious enough that I do not use such questions. If I do want to ask such a question, I can usually force it into a multiple choice format to avoid such problems.

AV Reviews

Rachel Hays
Department Editor

The earthworm: Darwin's plow. (Science-Biology/Life Series). 1985. Coronet Film and Video, Northbrook, IL. 16mm color-sound film. 12.5 min. Purchase $350.

This is a rather short, interesting, nontraditional presentation of the earthworm. Instead of just discussing the various earthworm systems, it uses Charles Darwin's research on the annelid as the theme around which to orient the presentation. This alone is an important feature of the film, since most students are only aware of Darwin's work on natural selection. It even shows a problem that Darwin couldn't solve: how the earthworm detects light. The photography showing earthworm movement is excellent. However, it is puzzling that the film did not explain the reason for using red light for these photographic sequences.

The inquiry method is demonstrated following a typical dissection of the earthworm's gizzard by looking at the gizzard contents under a microscope. Since leaf particles are found, time-lapse photography was used to examine the earthworm's diet by providing a leaf as food. After showing that earthworms eat and excrete humus, thereby recycling nutrients, an estimate is made that today there are one million earthworms per farming acre recycling approximately 100 tons per pear. Earthworm burrowing behavior is graphically shown when hot wax is poured into empty earthworm tunnels, and then excavated when cool. Earthworm reproductive behavior is demonstrated with time-lapse photography.

A complete teacher's guide is included, consisting of a summary, background information, learning objectives and questions for before and after showing the film. This film would be most appropriate for a junior high audience, although it could be used with high school students as well.

Edward B. Ruth
Milton Hershey School
Hershey, PA 17033-0830

The Portugese man-of-war. 1986. Carolina Biological Supply Co., Burlington, NC. Video. 9 min. Purchase: $119.95.

This color video depicts the characteristics of the Portugese man-of-war and certain of its ecological relationships. The video emphasizes the sting cells and other cnidarian characteristics. It also shows and contrasts the polyp and medusae forms of life within the colony and describes the colony's feeding behavior, reproductive methods, enemies and habitat.

The lack of specialized vocabulary and the stress on natural history of the colony make this suitable for use with students of all ages. A brief teacher's guide suggests uses for the video and provides questions and references. Teachers who emphasize invertebrate zoology and/or ecological relationships will find this video useful.

Gerald Skoog
Texas Tech University
Lubbock, TX 79413

Forests across the United States. 1984. Library Filmstrip Center, Bloomington, IL. Sound-filmstrip. 14 min. Purchase: $35.

This filmstrip is a survey of several different forest communities in America. It is a well illustrated program with 76 color frames. These are uniformly high quality photographs that take us to rain forests in the Pacific Northwest, coniferous forests in the Midwest, cypress swamps in Louisiana, and through the Appalachians to Maine. Locator maps precede each forest discussed, helping to separate segments of the filmstrip. Most of the photographs are of moun-

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