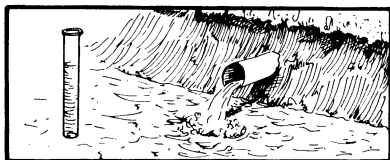


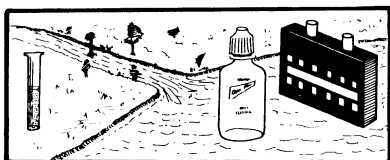


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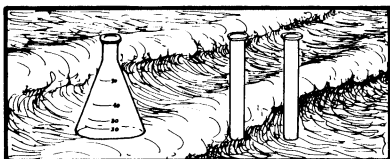
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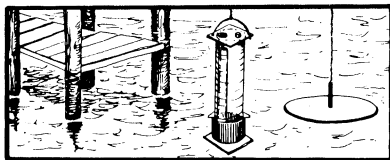
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sleeves and tackled the real problem: getting modern biologic concepts, procedures, and instruments into the student's hands and within a framework that allows the student some flexibility in developing experiments to satisfy his curiosity about biologic phenomena.

Pertinent background information is presented for each of the 12 problems with explanations of procedures and instrumentation. Typical problems or experiments are suggested, and the student is encouraged to design one or more scientific experiments and interpret the data that he collects. Most of the problems require several weeks to complete. Most are of a physiologic nature and many sophisticated (though typical) instruments, other than the microscope, are used; these include centrifuges, colorimeters, kymographs, and oscilloscopes.

Although the manual probably will be used in "majors" courses, it presumes no experience in biology; and the directions are so detailed that anyone with scientific curiosity could soon become deeply involved. Many of the problems would be excellent for projects by advanced high school students.

The manual is not specifically geared to the textbook by Baker and Allen. It does, however, follow their pattern of hypothesis-prediction, in which the real objective is to teach scientific method, not an encyclopedia of facts.

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Textbook

LIFE SCIENCE: A LABORATORY APPROACH: INQUIRING INTO LIFE, by John H. Marean, Odell Johnson, and Bernadette R. Menhusen. 1972. Addison-Wesley Publishing Co., Menlo Park, Calif. 329 p. Price not given. (With teacher's guide, 141 p.)

This textbook was designed for use in junior high school life-science courses. It is divided into 13 chapters, covering the following topics: characteristics of life, response to water, transport in organisms, motion in living things, food-getting and food-making, fuel for the human machine, changes foods undergo, respiration, reproduction, behavior, ecology, biologic clocks, and man's role in natural communities. Each chapter contains laboratory activities, discussions of related content, a summary, questions to check student understanding, suggestions for further exploration, and a bibliography. An explanation of the metric system, a list of calories in common foods, and a glossary are presented in the appendixes.

The outstanding feature of the textbook is the emphasis placed on student-centered laboratory activities. It represents

an attempt to remove the traditional textbook and factual material from the center of the teaching-learning process. Students are provided with an introduction to living things through a series of laboratory activities, which generally reflect the objectives stated in the teacher's guide and do not require extensive laboratory equipment or special facilities. More than just a token number of activities involving plants are included. Many thought-provoking questions, whose answers are not given, are distributed throughout the book. Numerous illustrations are presented that pose questions or supply directions for setting up laboratory apparatus.

However, the book does have serious shortcomings. A few of the illustrations have no captions and are not mentioned in the text. Human reproduction is not given adequate attention, and the section on diffusion is not well done. A large number of laboratory activities appear to be drawn, either directly or with slight modification, from existing biology textbooks and laboratory manuals. This may create problems in articulating the life-science course with high school biology courses. Many of the laboratory activities are traditional and do not lend themselves to student inquiry. The solutions to at least four of the laboratory investigations are presented in later sections of the book. The last two chapters contain only one laboratory activity.

Even though the book has several shortcomings, it is still a welcome alternative to most of the existing junior high school life-science textbooks because of its approach to the teaching of life science. I recommend this book to all life-science teachers. It should also be of general interest to high school biology teachers.

The teacher's guide contains an overview of the textbook, suggestions for conducting the classes, time schedules, goals for each chapter, lists of materials, answers to student questions, and directions for preparing special materials. Several of the sections are extremely brief, but as a whole the guide is adequate.

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Zoology

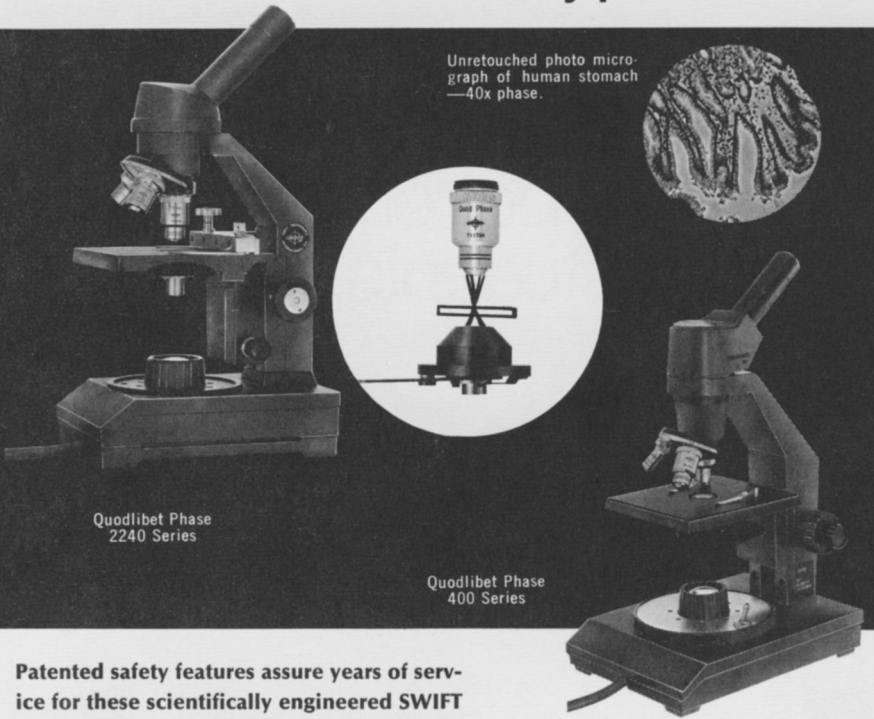
CONTROL OF PLANT-PARASITIC NEMATODES.

Vol. 4 of *Principles of plant and animal pest control*, by the Subcommittee on Nematodes (W. F. Mai, chairman) of the Committee on Plant and Animal Pests, Agricultural Board, National Research Council. 1968. Pub-

(Continued on p. 170)

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If your teaching technique includes laboratory investigations by students, or if you are called upon to help develop projects for science fairs, or if you would just like to do something different in biology class with living plants and animals, a random reading of this simplified account of the biology of plant-parasitic nematodes will suggest a great variety of significant original research that can be carried out with limited time, space, and equipment. Biologists generally are not well ac-

quainted with soil and plant-parasitic nematodes, but a few soil samples or chopped plant samples in a homemade Baermann apparatus will reveal that the nematode is ubiquitous.

The book gives very little nematode morphology and no taxonomy. These would be unnecessary to conduct a project, as long as the student's descriptive designations, such as "nematode from clover field" or "sample #11 nematode," would suffice. Beyond that, however, the teacher must be prepared to help the student through some complex literature to discover the name and function of some body structure and the species name.

The physiology chapter does not present chemical reactions; rather, it describes the responses of nematodes to varying conditions. There is a good but brief discussion of the ecology of plant-parasitic nematodes. The chapter on histopathology, with its illustrations, would give enough information for a comparative study by a student who is following the cause of an infection.

Details of collecting, isolating, and preserving soil and plant nematodes are given; these include photographs of equipment. The procedures are not complex: a student should be able to begin collecting data quickly while enthusiasm is still high. The discussion of nematode damage and economic loss and the extensive discussion of control factors should provide the neophyte researcher with sufficient background, along with an ample number of problems to investigate.

Most of the bibliography dates from the late 1950s and the early 1960s. More recent research in nematology has added many details and new information but has not substantially altered the concepts presented in this book. I am sure that the one sentence the authors would most like to update is the one having to do with the use of chemical nematocides (p. 169): "Control need not await complete understanding." Today's environmentally concerned biologist would not accept that contention.

The lack of an index may be a disadvantage; however, the table of contents is quite detailed.

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For Young Readers

THE LIFE OF SHARKS, by Paul Budker. 1971. Columbia University Press, New York. 222 p. \$12.50.

This comprehensive study of sharks should be a useful reference for the high school biology teacher. High school students interested in the anatomy of sharks will find the book a valuable source of information. Chapters on taxonomy and anatomy will prove to be challenging to high school students because of the extensive use of scientific terminology. The general reader will find the later chapters, on natural history, interesting and entertaining. Some of the chapter titles indicate the breadth and depth of the treatment: general form; anatomy; food and feeding habits; man-eaters; freshwater sharks; pilots and remoras; shark myths and legends; fisheries and the utilization of sharks.

The book is well illustrated with

(Continued on p. 172)