

those of insects. His extensive knowledge in natural history combined with a commitment to the use of the scientific process is used to help him answer the many questions posed by his observations throughout the book. On this basis alone I would recommend this book to elementary and secondary school educators looking for scientific material for their courses and for examples of the many ways to test hypotheses with inexpensive materials.

The author first presents an accounting of how *Cecropia* moths (his research interest) cope with their task of reproduction after emergence of the adults in the spring. Before this biological imperative is achieved two other imperatives must be met, namely, the avoidance of being eaten and the necessity of finding food for growth. The book takes us through the seasons enumerating and explaining how evolutionary adaptations have eased the struggles to attain these ends.

In anecdote after anecdote he covers a range of behavioral events from crickets engaged in a chirping match over territory to complex behaviors such as a female firefly attracting and eating the male of another species having somehow broken the species-specific flashing code. He even covers the relationships of ants and Lycaenid caterpillars possessing honey glands and the parasites of the immatures, both of which are my particular interests. Arguments are presented to account for the behaviors and in many cases the author designs simple experiments to answer the questions. In one intriguing example he determines if hawk moths have ears by jingling his keys.

As the author explains in his preface, he has attempted to aid the understanding of insects by describing them in context of their "ecological milieu." In addition he feels it important to consider how insects affect people for good or bad and the detrimental effect of causing the extinction of countless beneficial insects. Cases in point for the latter include the absolute necessity of bee pollination for the survival of red clover and the effect of insecticides on insects that control the spread of cactus in areas which cattle ranchers use for grazing.

If I were still in the classroom I would make the third chapter, "The Most Successful Animals on Earth,"

required reading. This chapter manages to cover an introduction to most of the themes and concepts of biology, theoretical and applied, including ecology, evolution, population numbers and distribution, diversity, biological control, relations to man including historical importance, communication and others. Other chapters give numerous examples of testable hypotheses that students could use for science fair experiments ranging from cricket chirp rate varying with temperature to onset of larval diapause related to day length. I would even recommend that college students in search of ideas and motivation preliminary to doing a paper or thesis consider giving this book a read.

The book makes for easy reading. Waldbauer's use of a special character similar to a tilde ~ breaks the chapters into groups of paragraphs covering a topic too long to be covered by one paragraph. I'm not sure why, but it increased my reading interest and sense of completeness as I went from topic to topic. He did not fully cite his references in each chapter as was done at the end of the book. However, this considerably enhanced the speed and ease of reading, and contributed to the readability of a thoroughly enjoyable book. The serious reader looking for backup to the many assertions and conclusions presented should easily find them as his bibliography is organized chapter by chapter in his "Selected Readings" at the end of the book. The book also offers an extensive and comprehensive index.

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## HANDS-ON SCIENCE

**Great Experiments with H<sub>2</sub>O.** By Noel Fiarotta & Phyllis Fiarotta. 1997. Sterling Publishing Company, Inc. (387 Park Avenue South, New York, NY 10016). 80 pp. paperback \$9.95.

**Simple Experiments in Time with Everyday Materials.** By Muriel Mandell. 1998. Sterling Publishing Company Inc. (387 Park Avenue South, New York, NY 10016). 96 pp. Paperback \$4.95.



While each of these books is clearly intended for elementary school children, I feel that the high school teacher will find some very useful demonstration and lab ideas.

The connection between life on Earth and water is not only important but interesting to students. The little (80 pages) book by Noel and Phyllis Fiarotta contains experiments and demonstrations that might be used in a beginning biology class or in an environmental science class. Water's special properties such as cohesion, adhesion, high heat of fusion, and high heat of vaporization are considered and demonstrations or experiments are suggested. The physical states of water and the water cycle are clearly explained. The book is illustrated and includes a complete and useful table of contents and a very inclusive index.

The book about time has experiments more appropriate for physical sciences. However, the biology teacher might use this book when teaching about radioactive clocks and carbon 14. It would also be a good source of science fair ideas. The experiments in the book are simple but could be expanded and made more sophisticated for high school students.

In summary, the biology teacher might wish to have these books available on a shelf of resources to be used by teacher and/or students.

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## Classifieds

**BIOLOGY TEACHER:** The Oregon Episcopal School, a K-12 college preparatory independent day/boarding school in the Pacific Northwest, seeks a high-energy lead HS biology teacher. The science curriculum is lab/field-oriented, focuses on student research, with biology offered after chemistry/physics. We have a strong budget and are planning new science facilities. A standard teaching load is four classes of 15 students plus an additional duty. Salaries and benefits are competitive. To apply, submit letter of intent and resume to Bill Lamb, Science Department Head, Oregon Episcopal School, 6300 SW Nicol Road, Portland, OR 97223, [lambb@usl.oes.edu](mailto:lambb@usl.oes.edu). OES is an equal opportunity employer.