

tracer work, such as isotope effects and radiation damage, are mentioned, and there is a chapter dealing with the various modifications of the isotope dilution method. The last, and best, half of the book describes individual instances of the use of isotopes in the solution of important problems in numerous areas of biology. Famous experiments in such fields as metabolism, protein synthesis, chemical genetics, and the dynamic state of body constituents are discussed; however, the brevity often precludes an appreciation of the fine points of these experiments.

A Tracer Experiment by Martin D. Kamin, is written for the bright high school student or the adult with an interest in modern biology. The approach is very elementary, but the account moves quickly and requires considerable thought in places. Kamin begins with a brief statement of what a research question should be. Definitions of atoms and molecules are followed by a discussion of atomic structure and a short history of the discovery of radiation. The nature of electricity is illustrated with a detailed description of Millikan's "oil drop" experiment. The last part of the book deals with the tracer experiment of the title: The incorporation of labeled carbon dioxide into acetic acid by *Clostridium thermoaceticum*. Readers may feel let-down by the absence of a clear-cut conclusion, but the lack serves to accentuate the moral that "scientific knowledge is a thing of change." This book is well written and serves its purpose admirably.

ALLEN M. GOLD

Department of Biochemistry,
Columbia University

Desert Animals

The Lives of Desert Animals in Joshua Tree National Monument. Alden H. Miller and Robert C. Stebbins. University of California Press, Berkeley, 1964. vi + 452 pp. Illus. \$10.

This is another of the famed faunal reports from the Museum of Vertebrate Zoology of the University of California where Alden Miller is director and Robert Stebbins is curator of herpetology. The authors were attracted to this desert region in south-

ern California by their desire to study, as naturalists, the daily lives of vertebrate animals and to ascertain how they balance their activities with their physiologic requirements. Many laboratory studies, made on different desert species and entailing temperature, water, and metabolism, have served as a basis for interpretation of the field observations.

The initial sections of the book constitute an ecological discussion of the broad problems of desert existence to which the animals must adjust—for example, with respect to water, the shortage, vacillating supply, and thus the need for conservation; temperature extremes; limited concealment from predators; protection from the "elements" owing to the sparseness of vegetation; and respiratory problems caused by dust, sand, and loose substrate. Behavioral ways of solving the problems are discussed. The environment of the Joshua Tree Monument is then treated, largely in terms of plant belts and habitats. A fold-out map (Fig. 6) shows (by the use of different colors) the extent of the Piñon, Yucca, and Creosote bush belts. A faunal analysis shows, in tabular form, the occurrence of the species and races in the plant belts in the Monument and in the faunal areas within the Monument and in surrounding regions. The species composition, racial affinities, endemic races, intergradation, and relation of faunal elements to the vegetation belts receive attention.

The species accounts constitute the greater part of the book. For each kind there is a brief description and a statement of range and occurrence in the Monument, followed by general observations and a discussion of interrelationships, ecology, behavior, and adjustments. A tremendous amount of factual material is presented, but it is not just raw data; interpretations are made in terms of the objects of the study. Thus treated are 166 kinds of birds, 42 mammals, 36 reptiles, and 5 amphibians. Of these, 141 are residents. Literature citations cover six pages. There is a terminal index by subject and kind of animal.

The authors have not been unmindful of the growing popularity of desert regions for recreational uses. The book is superbly illustrated by Gene M. Christman. Of the 149 illustrations, 74 are photographs, 58 are black

and white drawings, 9 are maps and diagrams, and 8 are colored plates. All but one of the last are of paintings.

Thus, this book has information for the specialist and for the layman. There are factual data for the zoogeographer, systematist, and ecologist. Of appeal to the general public is the list of animals that are found in the Monument, along with information on recognition and occurrence and on how the residents survive in the severe desert environment.

WILLIAM H. BEHLE

Department of Zoology and
Entomology, University of Utah

New Books

General

The Ambidextrous Universe. Martin Gardner. Basic Books, New York, 1964. 304 pp. Illus. \$5.95.

Animal Chemistry or Organic Chemistry in Its Application to Physiology and Pathology. Justus Liebig. William Gregory and John W. Webster, Eds. Johnson Reprint Corp., New York, 1964 (a facsimile reprint of the Cambridge edition, 1842). 407 pp. \$14.50.

Archimedes in the Middle Ages. vol. 1, *The Arabo-Latin Tradition.* Marshall Clagett. Univ. of Wisconsin Press, Madison, 1964. 752 pp. Illus. \$12.

Asimov's Biographical Encyclopedia of Science and Technology. The living stories of more than 1000 great scientists from the age of Greece to the space age, chronologically arranged. Isaac Asimov. Doubleday, Garden City, N.Y., 1964. 672 pp. Illus. \$8.95.

John James Audubon. Alice Ford. Univ. of Oklahoma Press, Norman, 1964. 502 pp. Illus. \$7.95.

Audubon's Wildlife. Edwin Way Teale. Viking Press, New York, 1964. 264 pp. Illus. \$15.

The Beginnings of Modern Science. From 1450 to 1800. René Taton, Ed. Translated from the French edition (Paris, 1958) by A. J. Pomerans. Basic Books, New York, 1964. 687 pp. Illus. \$17.50.

Beneficial Insects. Lester A. Swan. Harper and Row, New York, 1964. 447 pp. Illus. \$7.95.

The Beyond Within: The LSD Story. Sidney Cohen. Atheneum, New York, 1964. 284 pp. Illus. \$5.

The Biochemical Approach to Life. F. R. Jevons. Basic Books, New York, 1964. 184 pp. Illus. \$4.50.

The Bountiful Sea. Seabrook Hull. Prentice-Hall, Englewood Cliffs, N.J., 1964. 352 pp. Illus. \$6.95.

Broken Peace Pipes. A 400-year history of the American Indian. Irvin M.

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