

may be possible to identify a speaker by his speech pattern. Machines that will synthesize speech are discussed briefly.

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LIFE AND THE PHYSICAL SCIENCES, Harold J. Morowitz, 128 pp., \$1.28, Holt, Rinehart and Winston, Inc., New York, 1963.

The subtitle, *Introduction to Biophysics*, does not do justice to this little paperback—another example of the revolution in publications for science students. First of all, it is really an excellent survey of the physical basis of organisms and life itself. Secondly, biophysics here is used to include some broad concepts of chemistry. The book is well illustrated and the writing clear and lucid. Mathematics is held to a minimum. Highly recommended for all high school and college biology student reading.

COSMIC RAYS, A. W. Wolfendale, 222 pp., \$10.00, Philosophical Library, Inc., New York, 1963.

This book was written at this time because the amount of knowledge relative to cosmic radiation has expanded rapidly in recent years due to the accumulation of new facts and increased understanding of basic phenomena. It is primarily directed to the undergraduate but should be valuable also to the specialist and others who are interested in the subject. The book should be of special interest to the young student interested in physics because there are many problems remaining unsolved due to the limited amount of information available.

Some branches of the subject are treated lightly because at the time of the writing, they were in a state of rapid change. However, background knowledge is given to enable the student to follow the more advanced texts in the subject.

Virgil Heniser
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ELECTRON TUBES AT WORK, James B. Owens and Paul Sanborn, 557 pp., \$6.95, Doubleday, New York, 1964.

The two authors present an unusual approach to programmed instruction in basic electronics which is ideally suited to the biological researcher in need of a basic understanding of electronics. The book is not a typical text but rather a tool with which the reader must show self-discipline in following the discussions of the various electronic circuits. The introductory chapter provides a conventional review of the physical laws of electronics that is clear, uncluttered, and refreshingly to the point.

Starting with Chapter Two, the authors open an entirely new world of information presentation that perhaps might well be used in all academic areas. The reader is immediately confronted with a text that does not read in the conventional manner. The text is so derived that one is given basic information which is then followed with a question and a choice of three answers. The three answers are then examined in a separate section of the text according to one's choice. If a wrong answer is selected by the reader, he is immediately given a short discussion of why he is wrong; if on the other hand the selected answer is correct, a review of why it is correct is presented. The depth of the text is sufficient that the student leaves the book with a body of working knowledge in electronic circuits as they are in today's modern instrumented laboratory.

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ATOMS, CRYSTALS, MOLECULES, Ainslie H. Drummond, Jr., 63 pp., \$1.50, American Education Publications, Columbus, Ohio, 1962.

This small paperback is another in a series developed to give students a more thorough understanding of the areas of science included in the grades seven-twelve curriculum. Its use will contribute much in making future work in chemistry more significant and meaningful. It begins with the discovery of the electron near the end of the Nineteenth Century and traces modern thought about atomic structure and chemical bonding to date. Almost every page contains one or more diagrams illustrating the subject being discussed. Every teacher concerned with presenting the physical sciences to students should be familiar with this book and encourage its use by interested students. Its nominal price makes its use within reach of all students in a given class.

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PHYSICAL CHEMISTRY, George H. Duffey, 527 pp., \$8.75, Mc-Graw-Hill Book Company, Inc., New York, 1962.

One of the good features of the book is the many examples of worked out problems. Although it is written for students who have had calculus, the problems at the ends of the chapters are kept at about the same level of difficulty as the discussion itself. The subject matter is divided into three major areas. The first section is devoted to the fundamental concepts of atomic and molecular theory, the next uses these theories in explaining thermodynamic quantities