

force, the nature of electricity, light, the atom, quanta, the nucleus, wave mechanics, complementarity, the chemical bond, mesons, and fields; next, he works up to the molecules of living systems, proteins, nucleic acids, DNA, RNA, and the origin of life and terminates with evolution and the emergence of man. A vast expanse of man's recent achievements is briefly scanned here, but the concepts are so clearly stated and so logically tied together that even the reader who is fully enlightened in these fields will enjoy the perspective and integration which the author achieves. Besides, one not familiar with these topics will probably derive little benefit from them. The book can only add, one may venture to say, insight and pleasure for students of science who need an inspiring overview of the terrain covered thus far on the shining frontiers of science, more or less in our own life span. The clarity with which well-known modern concepts are laid bare and related, with each other and with their historical antecedents, and the span of horizon covered, render the book worthwhile to any student of science, regardless of his specialization.

Its appearance as a paperback in the PSSC Science Series renders it possible for every student of science to add the book to his library; this he should quickly do, for it is a grand vision that he will gain, even if many of the facets are already known to him.

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## Sigma Xi-RESA Lectures

**Science in Progress**, vol. 12. Wallace R. Brode, Ed. Yale University Press, New Haven, Conn., 1962. xii + 331 pp. Illus. \$7.50.

For a quarter of a century it has been the privilege of scientists and of those interested in science to have available, at two-year intervals, excellent summary accounts of the progress of science. The Sigma Xi National Lectures, and more recently the Sigma Xi-RESA National Lectures, have appeared in the successive volumes of *Science in Progress*. Volume 12 in the series is edited by Wallace Brode and contains the lectures presented in 1959 and 1960. It maintains the high standards achieved by the previous volumes.

George C. Kennedy discusses the

origin of continents, mountains, and oceans, and he concludes that older theories must be discarded in favor of the view of phase transition. A chemical contrast at the Mohorovicic discontinuity is considered unnecessary.

William J. Luyten outlines stellar evolution and presents evidence that white dwarfs are nearing the end of the line to obscurity and oblivion. The end of the road is the black dwarf, small and degenerate and no longer giving off light. It may well be that our own sun will some day follow this path.

John Verhoogen describes temperatures within the earth; he outlines earth's thermal history and supports Ringwood's theory of formation of the metallic core by chemical reduction of the original meteoritic matter.

Paul Delahay builds his lecture around the cultural aspects of science and discusses such areas as intellectual curiosity versus utilitarian ends, the ways of scientific research, and the evaluation of scientific achievement.

Harold G. Cassidy diagnoses the problem of ineffective communication between scientists and humanists and gives concrete examples. Cassidy then proceeds to offer a prescription for treating the underlying causes. Members of university communities may well take his prescription to heart.

R. F. Dawson discusses the technical problems of the biosynthesis of alkaloids, especially nicotine, from the universal metabolites nicotinic acid and ornithine, and points out their potential importance in elucidating unresolved areas of general biochemistry.

J. Herbert Taylor presents an excellent account of chromosome reproduction and discusses the possibilities of breaking the genetic code. The code has, of course, been broken since the lecture was delivered, but the lecture itself furnishes a fine groundwork for understanding the subsequent developments.

Emil Witschi reviews the extensive researches, including his own important contributions, on sex reversal in man and other animals.

Robert C. Elderfield presents an interesting account of the alkaloids of certain Australian trees and of their effects on blood pressure.

Ralph H. Wetmore provides a new approach to morphogenesis in plants; Wetmore recognizes that embryonic development does not proceed by a single rigid pattern, but that alternative orderly patterns may occur side by side within the same genetic milieu.

Harry F. Harlow reviews in considerable detail the development of learning in the rhesus monkey and concludes that the monkey possesses capacities far in excess of those of any animal below the level of primates.

The volume concludes with a discussion by Barnett F. Dodge of the problem of applied versus basic research. Dodge uses as his vehicle of discussion the production of fresh water from saline waters.

The volume as a whole is a most worthy addition to a set of excellent summaries of progress in scientific research.

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## On Writing About Science

**The Genetic Code**. Isaac Asimov. Orion Press, New York, 1962. xiv + 173 pp. Illus. \$3.95; New American Library, New York, 1963. 187 pp. Paper, 60¢.

**The Human Body**. Its structure and operation. Isaac Asimov. Houghton Mifflin, Boston, 1963. xii + 340 pp. Illus. \$5.95.

Isaac Asimov is the Lenny Bernstein of scientists who write. Bernstein conducts, composes, amuses, and teaches. Asimov writes, both fact and fiction, and he has written for scientists, students, adults, and children, in nearly 50 books to date. And only heaven knows how he does it.

But however he does it, he does it beautifully. Both of these new books are popular science of a high caliber for intelligent nonscientists. For one important thing, Asimov writes a good sentence—a simple sentence. This goes a long way toward keeping the eye and mind of any good reader.

For another, both books are extremely well constructed and organized. They go from a start to a finish, without needless side trips or see-sawing. Many a noble effort fails mainly for lack of organization, which is hard work.

To the critic, *The Genetic Code* is the more interesting of these books, for the job of telling the citizen about molecular biology is one of the hardest that has faced science reporters. To the average person, the cell is even a greater mystery than the atom. With his simplicity and discipline, Asimov is at his best in expounding this subject's