

bombs emitting a far lower intensity of radiation. Caesium-137, which emits a rather softer radiation of 660-keV. energy, is just becoming available from fission separation plants and will supply all conceivable needs of therapy in a decade or so. Iodine selectively absorbed can be used in large doses for therapy, and so can phosphorus; gold in colloid form has been injected locally, and a new technique involves the irradiation of intravenously injected boron in a slow-neutron beam emerging from a reactor.

Vol. 10, on the use of nuclear radiations in medicine, is one of the most remarkable volumes from the Geneva Conference, and one of the most inspiring.

T. E. ALLIBONE

SCIENCE IN PROGRESS

Science in Progress

Edited by George A. Baitzell. Ninth Series. (The Society of the Sigma Xi devoted to the Encouragement of Research in Science. Sigma Xi National Lectureships 1953 and 1954.) Pp. xviii+343. (New Haven, Conn.: Yale University Press; London: Oxford University Press, 1955.) 6.50 dollars; 52s. net.

THIS new volume, the ninth in the series of "Science in Progress" publications, which began with Vol. 1 in 1939, continues the firmly established function of the series: the presentation in permanent form of authoritative reports of research in both pure and applied sciences. George A. Baitzell has produced an engaging and varied mixture of topics. It would be unfair to say that the accounts are couched in popular language; but generally they are not loaded with heavy technicalities.

A reader with a grammar school knowledge of chemistry and biology will find Kenneth V. Thimann's paper on the physiology of growth tissues easy to understand; but a specialized knowledge of mathematical aerodynamics is necessary to comprehend fully the second part of D. B. Steinman's account of the stability of suspension bridges. The first part of this chapter makes exciting reading. It tells of the unexpected destruction of suspension bridges which were able to absorb energy from winds of quite moderate velocity and sustain themselves in oscillation. An example occurred in late 1940 when the Tacoma Narrows Bridge at Paget Sound, new only four months previously and built at a cost of six and a half million dollars, was destroyed. The oscillations of the bridge increased to destructive amplitude until the main span broke up and dropped into the water 208 ft. below. The problem concerning this has been solved both theoretically and practically.

In a forty-page chapter, Lawrence M. Snyder, professor of genetics in the University of Oklahoma, gives a summary of the present knowledge of human heredity, with special reference to clinical problems, some of which are of rare occurrence. This is followed by a discussion by Curt Stern, of the University of California, on the cellular physiology of differentiation by means of which an embryonic cell is transformed gradually and in the end, usually irreversibly, into a differentiated cell. His investigations, which were suggested by the arrangement of bristles on the fruit-fly, carry the knowledge of this topic further

forward; but in general the nature of the mechanisms of differentiation is still obscure.

E. J. Krans, of Oregon State College, is the author of a chapter, easy to read but thoroughly sound, on the significance of ergocrines in agricultural practice. In this well-illustrated chapter the author considers the effects of the synthetic plant-hormone substances both as plant-growth stimulants and as herbicides. The processes of visual excitation provide an instance of a biological problem which is investigated on the molecular level. George Wald, of Harvard University, has given a thorough, clear and authoritative account of the biochemical and physical properties of retinal molecules and their function in seeing.

Lee E. Farr, of the Brookhaven National Laboratory, presents a paper on the impact of nuclear science on medicine. This is by no means well-trodden ground, for, among other important matters, he gives accounts of the effects of radiation on immunity mechanisms, the use of carbon isotopes for exploring the methods by which amino-acids are converted to protein in living tissues, and the radiation of brain tissue. Felix Bloch, of Stanford University, gives an account of the apparatus and methods used for investigating nuclear magnetism, which is a model of clarity and simplicity in exposition. In particular, the technique is applied to a detailed study of molecular structure.

Two other chapters maintain the high quality of the others: transistor physics, by William Shockley (Bell Telephone Laboratories); and colour and chemical construction, by Wallace R. Brode (National Bureau of Standards, Washington, D.C.). Although these two subjects have been covered adequately in papers and articles published in Britain, the American method of presenting the material should prove to be instructive.

The book is a handsome volume, well printed and illustrated, on good paper, and worthy bound.

W. L. SUMNER

THE NATURAL HISTORY OF SPACE PERCEPTION

The Child's Conception of Space

By Jean Piaget and Bärbel Inhelder. Translated from the French by F. J. Langdon and J. L. Lunzer. (International Library of Psychology, Philosophy and Scientific Method.) Pp. xii+490. (London: Routledge and Kegan Paul, Ltd., 1956.) 42s. net.

THIS is an important book, probably the most notable of the long series of similar studies on child development which have come from Prof. Jean Piaget's laboratory. In it the developing powers of the child to manipulate and talk about objects in space are explored and systematically described. It is typical of Piaget's approach that the course of the investigation seems to have been, in part at least, determined by purely logical considerations. Thus the reader moves from topological space through projective space into Euclidean space. Consequently, the whole account has an orderliness that is often missing from child studies carried out elsewhere. On the other hand, the empiricist might complain that Piaget and Inhelder's data are used for illustrating rather than proving an essentially deductive set of theories and that the order is imposed, not discovered.