

Great Experiments in Physics

Edited by Prof. Morris H. Shamos. Pp. viii + 370. (New York: Henry Holt and Company, Inc., 1959.) 4.40 dollars.

THIS is a selection of original papers, ranging from Galileo to Compton, each introduced with an account of the writer's work, and annotated in the margin with explanations and references. It is intended as background reading for American college students taking a liberal arts course, and to illustrate the development of the main concepts of physics. Several of the experiments (Coulomb, Cavendish, Millikan) are among those selected by the Physical Science Study Committee's course, and some of the more recent ones feature topics that may possibly come into British school teaching. It is worth while mentioning this, since the author seriously accepts the thesis that the works of Thomson, Rutherford, Chadwick, Bohr, Planck, and Einstein are not, at this level, fancy trimmings to be dealt with superficially, but (in small and carefully selected portions) matter for detailed and serious study as a means of illustrating fundamental principles. There is, of course, a great difference between the response of a mature liberal arts student and that of a hard-pressed examinee schoolboy; but if the pedagogical assumption is sound, then one might feel that material that assists a non-specialist to understand the principles could at least be acceptable in more conventional physics courses. Or, alternatively, that physics ought to be taught as one of the liberal arts?

There are two points that one might criticize in the planning. The quotations from Newton, Planck and Einstein are not records of experiments, and it seems unnecessary to offer them as such. Further, if the full picture of physics was to be presented, there might well have been something about the establishment of the finite speed of light and its measurement, the Michelson-Morley experiment, and G. P. Thomson's work on electron diffraction. In both cases, though, the selection was probably made on the grounds of the availability of material exactly suited to the standard of the course. One lesson can be learned by the young scientist who reads through it—that scientific prowess is not incompatible with the precise use of words and the cultivation of a pleasing literary style.

G. R. NOAKES

Advances in Pest Control Research

Vol. 4. Edited by R. L. Metcalf. Pp. vi + 347. (New York: Interscience Publishers, Inc.; London: Interscience Publishers, Ltd., 1961.) 12.50 dollars; 94s.

SEVEN of the eight reviews in this volume are concerned with insect control. The eighth is by T. F. Hall about the control of American aquatic plants. He illustrates the essentials of pest control, namely, recognition of the pest, a knowledge of its biology, chemistry, habits and habitats, all prerequisites for economic control, whether chemical, biological or cultural. This pattern is less clear in the article by W. M. Rogoff on the control of insects on domestic animals. The pests and their effects are varied and sometimes may even be beneficial at low population-levels and the problem is further complicated by the effects of control chemicals on the hosts. The biochemical and physiological processes which result in the selective toxic action of insecticides are discussed by R. D. O'Brien using

a wider range of types of insecticides than in his recent book on toxic phosphorus esters. Some of the detoxication mechanisms involved are also discussed by K. P. Dubois in his review of the joint action of organophosphorus insecticides on mammals. Inevitably further mention is made in the 658 references on the organophosphorus insecticide, malathion collected by D. Spiller. J. C. Gage outlines assays for, and the inhibition of, cholinesterase and describes how this may be used to estimate residues of organophosphorus insecticides. Recent studies on the toxicity and chemistry of compounds related to insecticides found in pyrethrum flowers are summarized by W. F. Barthel, but developments in the study of micro-organisms described by I. M. Hall suggest that virus and bacteria may eventually be used as widely as chemicals for the control of insects.

In conclusion, this is a useful volume, mainly on insect control, which would have been improved by more references to earlier reviews and by cross-references between articles which could have shortened some articles without loss.

K. A. LORD

Discovery

Developments in Science Examined by Sir Edward Appleton, Prof. D. R. Bates, Sir Edward Bullard, Sir John Cockcroft, Dr. G. E. R. Deacon, Dr. T. F. Gaskell, Sir James Gray, Sir Bernard Lovell, Prof. Gordon Manley, Sir Harrie Massey, Prof. Dudley Stamp, Prof. P. C. Sylvester-Bradley, Sir Alexander Todd, Prof. C. H. Waddington, and Dr. Errol White. Pp. viii + 144. (London: Methuen and Co., 1961. Published for Granada TV Network.) 12s. 6d. net.

SELDOM, within a book of comparable compass, have there appeared contributions by so many distinguished scientists. Their names are sufficient indication of the high standard achieved. In an introduction, Sir Gerald Barry writes: "The 'talks'—if that is the best name for them—in this book have been chosen (as being reasonably representative and diverse) from nearly forty schools' television programmes which Granada TV network over the past year or so has put out for sixth-form science pupils".

Sir Edward Appleton, in the opening talk, "The Art of Scientific Investigation", includes, by way of illustration, the interesting story of the verification of Balfour Stewart's hypothesis concerning daily magnetic variation. Succeeding sections indicate the variety of subjects examined: Sir James Gray writes on the science of life; Prof. C. H. Waddington on evolution, the appearance of design in living things; Sir Alexander Todd on the chemistry of living things. Other articles pay special attention to the Earth: its history by Prof. P. C. Sylvester-Bradley; its past life by Dr. Errol L. White; its minerals by Dr. T. F. Gaskell. Sir Edward Bullard forecasts the tasks for future research workers. Dr. G. E. R. Deacon writes on the oceans and Prof. Gordon Manley on climate. The wise utilization of land is the theme of Prof. L. Dudley Stamp's contribution. The last four talks cover the physical and astronomical sciences. Sir John Cockcroft describes how a nuclear power station works. Sir Harrie Massey discusses the scientific exploration of space, and Prof. D. R. Bates upper atmospheric physics. The series concludes with an article by Sir Bernard Lovell on discovering the universe.

The book is well illustrated and produced, and it should appeal to an even wider public than that of the original television broadcasts.

H. D. ANTHONY