technique of labelling with radioactive chromium and the preservation of red cells for indefinite periods in the frozen state. Authoritative and up-to-date accounts are included, therefore, of these new techniques. Other new sections cover the effect of purine nucleosides on blood storage, hypo-gammaglobulinæmia, transfusion in injured patients, plasma substitutes, auto-antibodies in acquired hæmolytic anæmia, patterns of destruction of incompatible red cells, and citrate and potassium toxicity. The chapters on the blood of new-born infants and hæmolytic disease of the new-born will be of particular interest and value to pædiatricians, and detailed accounts are given of ABO hæmolytic disease and of the techniques of simple and exchange transfusion. The book concludes with a comprehensive and up-to-date list of references extending to forty-nine pages.

This second edition will enhance still further the reputation established by the first edition in 1951 and can be strongly recommended as an essential work for clinicians, pathologists and research graduates concerned with blood grouping and blood transfusion. It is too detailed and advanced for general use by undergraduates, but these also would obtain much vital information from a study of those sections concerned with clinical aspects, such as transfusion in hæmorrhage, anæmia and disorders of blood clotting, and the ill-effects of transfusion.

G. H. TOVEY

NUCLEAR SCIENCE

Annual Review of Nuclear Science

Edited by James G. Beckerley, in association with Martin D. Kamen and Leonard I. Schiff. Vol. 6. Pp. viii + 471. (Palo Alto, Calif.: Annual Reviews, Inc., 1956.) 7 dollars.

THIS latest volume of the series maintains the high standard of the preceding ones. Thirteen review articles by experts in the fields range from cosmic rays to radiobiology. For the non-specialist about half the articles may prove heavy going. These are usually the articles where the authors attempt to review exhaustively all the literature of the past year or two. The reviews which attempt to see a problem whole, and to assess our present knowledge of it, are much more satisfactory.

The present state of our knowledge of time variations of primary cosmic rays is summarized by Sarabhai and Nerurkar. This is a most interesting branch of cosmic-ray studies because of its possible connexion with the origin of the cosmic rays—still one of the outstanding astrophysical puzzles. Polarization of fast nucleons, by Wolfenstein, reviews the theory and illustrates this with the experimental data recently assembled for nucleon energies between 100 and 400 MeV. Coulomb excitation of heavy nuclei by relatively low-energy charged particles has been one of the really new advances in low-energy nuclear physics. This field is summarized by Heydenburg and Temmer, who have contributed so largely to the experimental work on this subject. The properties of medium weight nuclei between neutron numbers 22 and 90 are reviewed by Way, Kundu, McGinnis and van Lieshout. This is the group under Dr. Way whose tireless efforts at compiling nuclear data keep every nuclear physicist in her debt. The range of nuclei they discuss is that interesting region where the nuclei are too heavy to be simple structures

and too light to act in a simple way collectively. The isotope shift in atomic spectra is discussed briefly by Mack and Arroe and the method of extracting nuclear masses from reaction data is described by Mattauch, Waldmann, Bieri and Everling. A technical article on recent advances in low-level counting by Anderson and Hayes describes in particular the large liquid scintillator systems devised to detect the neutrino. For the chemists the concept of generalized acidity in radiochemical separations has become of great importance in connexion with the atomic energy field. This subject is reviewed by Horne, Coryell and Goldring. How oxygen isotopes can be used as tracers in chemical studies is described by Taube. Reactor physicists will be most interested in a review of the crucial field of radiation effects in solids by Brooks and in a compilation of the nuclear reactors being built or thought of throughout the world for power generation. The latter article by Davidson, Loeb and Young treats some twenty-seven types in some detail but may well be out of date even now. Two radiobiology articles complete the volume: cellular radiobiology by Gray, and vertebrate radiobiology by O'Brien. Radiobiology is undoubtedly a subject in which all scientists need to be better informed.

E. B. PAUL

LIVER-FLUKE SNAILS IN BRITAIN

Liver-Fluke Snails in Britain

By Dr. Alan Mozley. Pp. xii + 55. (London: H. K. Lewis and Co., Ltd., 1957.) 9s. net.

TO those already familiar with Dr. Mozley's other books in this series the present volume will need little introduction or explanation. The book is concerned with the location, identification and control of *Lymnaea truncatula* in Britain. The author describes several walks through unidentified areas of England, Scotland and Wales during the course of which an account is given of the sites in which the snails are found. In his preface Dr. Mozley states that the book is intended for veterinarians, advisers and farmers. He follows this by a statement of the admirable principle that neither scientists nor technologists should feel it undignified to write in ordinary language. Unfortunately, Dr. Mozley has gone to the opposite extreme and fallen into the trap of 'talking down' to his readers.

The remarks on identification of the snails suggest that there is no possibility of confusion with other species, but unfortunately this is not the case, and in view of this fact it is a pity that the instructions relating to the preservation of specimens for identification do not include some elementary information on the fixation of material for anatomical examination by experts. Some of the half-tone illustrations of habitats are reasonably good, since such sites are notoriously difficult subjects for black-and-white photography.

I find it difficult to share Dr. Mozley's optimistic outlook on the ease with which snail eradication will be achieved. There is no doubt that the sites he describes as centres of snail development are the most important from the aspect of fluke transmission, but there is little doubt that there is a usually undetected reservoir snail population from which these foci will rapidly be repopulated under suitable conditions.

C. A. WRIGHT