domains, of such men as Linnæus and Darwin. There is no doubt that Dr. Zimmermann brings out successfully the gradual development in Darwin's mind of the theory of descent and of the struggle for existence; but could it not have been done more smoothly and just as convincingly in a more connected narrative and in less than twenty-three pages?

On the whole, that dealing with the post-Darwinian period is the least impressive part of the book. Referring, as it must, to almost every aspect of biological science, it is too much crowded with detail to give that broad conception of the forward march during this modern era that would have been specially valuable.

F. E. Fritsch

PROGRESS IN NUCLEAR PHYSICS

Progress in Nuclear Physics

Vol. 2. Editor: O. R. Frisch. (Progress Series.) Pp. viii+295. (London: Pergamon Press, Ltd., 1952.) 63*s*. net.

THE second volume of "Progress in Nuclear Physics" contains an authoritative series of articles on the electron optical properties of magnetic beta-ray spectrometers, by N. F. Verster; nuclear paramagnetic resonance, by R. V. Pound; luminescent materials for scintillation counters, by G. F. J. Garlick; the neutron–proton interaction, by G. L. Squires; nuclear fission, by W. J. Whitehouse; the low-lying excited states of light nuclei, by W. E. Burcham; the nuclear shell model, by B. H. Flowers; and ionization by fast particles, by T. E. Cranshaw. These articles are well written by leading workers in their respective fields.

The review by R. V. Pound describes the magnetic resonance experimental methods for measuring nuclear magnetic moments, the interaction of nuclear moments with the surrounding media and the g-values describing the relation between magnetic moments and cylinder momentum. An account is given of the theory of these phenomena.

The scintillation counter has now become one of the most widely used tools of nuclear physics, and Mr. Garlick's review gives an account of their construction and application to the detection of neutrons, cosmic-ray particles, fission fragments, gamma-ray energies and X-rays.

The interaction of the neutron and proton is determined by the all-important nuclear forces. Mr. Squires gives a good account of the contribution of experiments on the scattering of neutrons by protons, protons by protons and the photo-disintegration of the deuteron to the study of this interaction. The experimental data are not yet good enough to come to any firm conclusion about the potentials describing the interaction, and this subject is still being pursued energetically by most laboratories equipped with large cyclotrons.

A vast amount of data has been published since the Second World War on the important subject of nuclear fission, and Mr. Whitehouse's review is very useful and timely in bringing all this together. A brief account of the theory of fission and the experimental techniques is followed by experimental data on fission cross-sections and thresholds; fission yields for particles of different energies; and studies of the energy distribution and properties of fission fragments. An account is also given of the phenomenon of delayed neutron emission, which is so important to reactor design and spontaneous fission-rates.

Prof. Burcham gives a brief theoretical description of nuclear spectra in the light elements in terms of the characteristic of nuclear forces. A brief account of the experimental methods used in low-energy nuclear physics is followed by an account of important experimental phenomena such as the energy-levels of mirror nuclei and their interpretation in terms of spin and parity.

Mr. Flowers gives an account of the evidence for the shell model in terms of spin-orbit forces. Mr. Cranshaw describes the theory of loss of energy by ionization of high-energy particles and compares this with experiments with cosmic-ray particles.

J. D. Cockcroft

SUGAR TECHNOLOGY

Principles of Sugar Technology

Edited by Pieter Honig. Pp. xxii+767. (Amsterdam and New York: Elsevier Publishing Company, Inc.; London: Cleaver-Hume Press, Ltd., 1953.) 95*s*.

MANY up-to-date handbooks on sugar technology already exist which might be supposed to cover the needs of the sugar industry, but the one now under review fills a new niche. The editor, Dr. Pieter Honig, at present research director to the West Indies Sugar Corporation of New York, is rather better known for his earlier work at the renowned Proefstation voor de Java Suikerindustrie (Java Sugar Experimental Station), Pasuruan. He has enlisted the assistance of some former colleagues and a number of other leading authorities to write the eighteen chapters of this volume. The endeavour has been made to link physical and chemical properties of sucrose, reducing sugars and non-sugars with the processes involved in sugar manufacture and to assess the degree to which theory underlies actual practice. A second volume is proposed which will be concerned with evaporation, crystallization, heat transfer, drying and cooling. The volume is divided into Part 1, which deals more with chemistry and physics, and Part 2, which is concerned with purification of sugar solutions.

Taking these in reverse order, for the latter part is of direct practical importance, it can be said that the three chapters on clarification (chemical technology, fundamental reactions and process technology) are uniformly of high standard, and the references in the bibliography at the end of the chapters, as is the case throughout the volume, are extensive and well up to date. Some overlapping occurs, as is usual with a number of authors. The succeeding chapters deal with sulphitation, carbonatation (by Dr. Honig), middle juice carbonatation and ion exchange, and are also to be commended.

Part 1 is open to some criticism; it includes matter which could well have been omitted. For example, in Chapter 2 the tables of physical constants occupy about 42 out of 52 pages and are already available in standard text-books—Spencer-Meade, Brown and Zerban, Circular *C*.440 of the National Bureau of Standards. The physical properties of sucrose are given in bare detail without much discussion of their significance, and the subject of optical rotation is discussed in one page. No reference is made to the recent work on solubility of sucrose by