

Massive Radiation Techniques

By Sidney Jefferson. Pp viii + 324. (London: George Newnes Ltd., 1964.) 70s.

THE development of nuclear reactors during the past two decades has made possible the large-scale production of very strong radioactive sources. One result of this has been that some of the useful effects of ionizing radiation found in research laboratories can now be applied on the grand scale to a variety of technological problems. *Massive Radiation Techniques* surveys such applications in a number of industries with particular reference to their commercial viability. In some of them, for example the preservation of food and the sterilization of medical equipment, irradiation has to compete with well-established methods. In others, such as insect pest control by sterile male release, sterilization by gamma-irradiation may be the only feasible method. This is illustrated by the carefully planned operation of rearing, sterilizing and releasing 2.5 billion screw-worm flies in the south-eastern states of the United States which resulted in the virtual eradication of this livestock pest from the selected area in 1959.

The non-specialist will find that the lucid introductory section on the interaction of ionizing radiations with matter will make few demands on his previous knowledge while the final chapter on dosimetry will provide him with a short but adequate account of methods at present in use and the dose ranges over which they are best used.

The most widely used sources in large-scale irradiations are ^{60}Co and electron accelerators and the engineering problems associated with their use, including automatic feed systems for packaging materials, are illustrated by examples of installations which have been operating for some years. Other topics covered at length include the biological effects of massive radiation doses in relation to agricultural problems and plant breeding and the use of radiation in the chemical industry.

The text is very free from errors and the numerous figures are with few exceptions clear and well prepared. The extensive bibliography which accompanies each chapter will be welcomed by the serious student.

This is a book which should stimulate ideas among industrialists and also provide a basis for planning the exploitation of useful radiation effects. R. J. MUNSON

Automatic Methods in Volumetric Analysis

By D. C. M. Squirrell. Pp. x + 201. (London: Hilger and Watts, Ltd., 1964.) 42s. net.

NINE-TENTHS of *Automatic Methods in Volumetric Analysis* is devoted to the description of automatic methods of end-point detection in volumetric analysis and as such is a bench working manual of considerable value. It is complementary in content to the work by J. F. Phillips, entitled *Automatic Titrators*.

The subject-matter is subdivided into four major parts: titrations to present end-points; full-scale recording potentiometric methods; full-scale titrations in non-aqueous media; and some other instrumental titration methods. Each part is headed by a section entitled "Principles and Instrumentation", which is followed by detailed description of a number of methods to illustrate the points elaborated. Many of these have been drawn directly from the author's own experience and are products of his fruitful association with Dr. Haslam. The methods described have been chosen to cover a wide field of general analytical interest and include determinations of total nitrogen in organic matter, water by Karl Fisher reagent, halides, sulphates and metals by ethylenediamine tetraacetic acid.

Much of the apparatus described has been assembled from a variety of component parts, some home-made, and many others are commercially available units. In some examples sufficiently detailed diagrams and circuitry are given to enable the reader to design and build similar equipment for a particular method.

Further stages in the development of completely automatic analytical systems are only briefly described, but an understanding of the basic principles elaborated in this book is a necessary prerequisite to such developments.

Minor editorial faults, which serve as irritants, exist in the text, for example, the calculation of titrant volumes from recorder chart inches, titration times or syringe plunger movement are stated and re-stated in full. A uniform presentation of reagents used in the various methods is also required.

The book is, however, an invaluable collection of techniques and instrumental methods and as such is worth its place on any analytical laboratory bookshelf.

R. SAWYER

Genetics in the Atomic Age

Second edition. By Charlotte Auerbach. Pp. vii + 111. (Edinburgh and London: Oliver and Boyd, 1965.) 7s. 6d.

THIS is the sort of book which ought to be freely available in common-rooms, school libraries and reading rooms, wherever people, especially young people, with enquiring minds might be likely to pick it up and thumb through it. It is small, short and inexpensive: the sketches by Miss I. G. Auerbach invite perusal: the text is entirely readable, without technical terms or quantitative expressions: and a curious glance stands a good chance of being followed by a thorough reading. The result would be many more people with an interest in the genetic future of man, and the knowledge needed to form a rational view of the dangers of exposing his germ-plasm to ionizing radiations.

Since the first edition in 1956, Dr. Auerbach has revised and brought the book up to date. The first few chapters deal with what mutations are, how they affect the organism and the species, and how they are inherited. Then comes a discussion of the ways in which ionizing radiations act on genes and chromosomes. In the last chapter the application of this knowledge to man in relation to his genetic future is set forth with the clarity, reasonableness and force for which the author is already well known.

For those whose point of view is already formed and who are trying to reduce mankind's present genetic exposure to radiation, the book offers authoritative support and invaluable ammunition for argument.

ALMA HOWARD

Analytical Chemistry of Molybdenum

By A. I. Busev. Translated from the Russian by J. Schmorak. (Analytical Chemistry of Elements Series.) Pp. vi + 247. (Jerusalem: Israel Program for Scientific Translations; London: Oldbourne Press, 1964.) 96s.

A. I. BUSEV has set out to give a critical survey of the whole of the analytical chemistry of molybdenum. He has used his own experience as much as possible to decide the relative merits of the methods, and has, I think, succeeded very largely in 'separating the sheep from the goats'. After a comprehensive account of the chemical and analytical properties of molybdenum, chapters follow on the detection and isolation of the metal. Further chapters on gravimetric, titrimetric, photometric and other methods for the determination of molybdenum take up the second half of the book. There is a very extensive combined bibliography and author index. The omission of any reference to Granger's aqueous *n*-butanol dithiol method for the photometric determination of molybdenum (*Analyst*, 83, 609; 1958) is, therefore, surprising. Not unnaturally, the author appears to be strongest on the Russian literature and this does have its advantages.

One cannot detect that the book is a translation, so well has it been done, and the text is remarkably free from errors. It is very well produced, and should be of considerable value to anyone whose work involves molybdenum.

E. J. DIXON