

to autoradiography with tritium-labelled compounds by J. H. Taylor; however, important results on the damage to cells by so-called 'tracer' doses in experimental animals have appeared in the Press since the article was written. L. E. Lipetz provides a chapter on mechanisms for the transfer of information from the light image to the optic nerve in the horseshoe crab and D. Gitlin and C. A. Janeway deal with isotopic studies on the distribution and metabolism of plasma proteins.

In general, the authors have presented their subjects clearly and concisely, and the volume should provide a useful introduction to the various topics covered.

N. M. BLACKETT

### Radioactive Wastes

Their Treatment and Disposal. General Editor: J. C. Collins. Pp. xxi+239. (London: E. and F. N. Spon, Ltd., 1960.) 55s.

MR. COLLINS has brought together ten chapters, each written by an expert in his own field, which, together under one cover, form a logical and thorough treatment of a relatively new subject. Introductory chapters on the nature of radioactivity and sources of radioactive waste put the general problem in perspective. R. F. Farr's contribution on the hazards of radiation is a masterly summary. It takes account of dose-rate, total dose, external and internal irradiation, biological effectiveness of different radiations, the concentration of ingested isotopes in specific organs, and then shows how these factors are allowed for quantitatively in fixing maximum permissible levels of radioactive species in the body, in air, in drinking water, and on contaminated surfaces.

The law about disposal of radioactivity in Britain is summarized. The last five chapters describe techniques for meeting in practice the stringent standards which have been set for safe disposal of gaseous, liquid and solid radioactive wastes.

This is a technical book, full of factual information, but its very full glossary and index to abbreviations, combined with its logical style, should make it attractive to a very wide readership. It will be valuable to all those people who have responsibilities for public health, the husbanding of natural resources, nuclear power programmes and industrial use of radioactive materials. One feels that the book will be enjoyed also by those who read *Nature*, because they enjoy dipping into branches of science other than their own, and one hopes that through them this book may lead to well-informed discussion of a subject of importance to the general public.

K. D. B. JOHNSON

### Digest of Literature on Dielectrics

Vol. 23, 1959. Edited by Louis J. Frisco and Thomas D. Callinan. (Publication No. 799.) Pp. xiv+423. (Washington, D.C.: National Academy of Sciences—National Research Council, 1960.) 8 dollars.

THE latest volume of this series comes up to the expected high level. The number of publications on the subject within a year is surprisingly large. There are 2,214 abstracts, and the origin of the papers is truly international.

In the measurement field, frequencies greater than 100 Mc./s. are coming into the forefront, and at the highest frequencies optical techniques attract increasing attention. A good deal of work is reported on dielectric properties and molecular structure.

The chapter on conduction contains experimental results which are interpreted in terms of band theory, but conduction in good dielectrics still remains a difficult subject.

Breakdown in solids, liquids and gases has been reviewed systematically this year. At present there is interest in pre-breakdown currents, and relatively much work is reported on non-uniform fields.

In ferro-electricity and piezo-electricity one is impressed with the wide range of techniques used and the large Russian effort on the subject. The so-called relaxation dielectrics are attracting attention. The digest includes an impressive chapter on magnetism, with 528 references. Developments in this subject include new theoretical work on exchange forces and statistical mechanics and experimental work on thin films and devices.

The last third of the book is devoted to the technological application of insulating materials, and contains references to the patent literature. There is much interest in insulation for high temperatures.

In conclusion, the digest contains a complete bibliography of the subject, and the authors succeed in giving a fair critical appraisal of the papers abstracted.

VERA DANIEL

### Atlas of $\gamma$ -Ray Spectra from Radiative Capture of Thermal Neutrons

By L. V. Groshev, V. N. Lutsenko, A. M. Demidov and V. I. Pelekhov. Translated from the Russian by J. B. Sykes. (International Series of Monographs on Nuclear Energy. Division 4: Isotopes and Radiation, Vol. 1.) Pp. iv+198. (London and New York: Pergamon Press, 1959.) 140s. net.

THE *Atlas*, which was first published in English in 1959, was the first attempt at an exhaustive compilation of information on thermal neutron capture  $\gamma$ -rays to be published in book form, though a rather similar compilation, not quite so comprehensive, was published as a Chalk River Report, *AECL.669*, by Bartholomew and Higgs in 1958. The work of the Russian group led by Groshev, in the field of neutron capture  $\gamma$ -rays, is too well known to require comment, and the *Atlas* contains much of their own work and that of the Chalk River Group, together with the relevant work published elsewhere up to and including 1958. The bibliography contains 97 entries.

The information presented begins with tables of stable isotopes giving isotopic abundances, thermal neutron capture cross-sections, spins and parities of target and product nuclei, and binding energies and half-lives of the product nuclei. The tables contain references to the original literature. Following the tables are the capture  $\gamma$ -ray spectra, together with further tables of intensities as measured by various authors, assignment, where possible, of the  $\gamma$ -rays to the appropriate compound nuclei, and also, where possible, energy-level diagrams.

This impressive compilation is invaluable both to the nuclear physicist and to the reactor engineer who is concerned with shielding problems. The only criticism of the book which I feel is justified concerns the technical matter of the reproduction of the figures. This appears to have been done rather hurriedly so that some of the curves are distorted and occasionally the lettering is difficult to read. Such technical defects seem out of place in a book costing £7.

E. R. RAE