

BOOK REVIEWS

BIOLOGISCH-CHEMISCHER STRAHLENSCHUTZ. EINE ÜBERSICHT in TABELLEN. Von R. Huber und E. Spode. Akademie-Verlag, Berlin 1962. Price: 124 DM.

The menace of nuclear war and the enhanced risk of radiation accidents by the increasing use of nuclear energy have drawn attention to the possibilities of chemical and biologic protection against radiation injury. The research activity in this field has been extensive and an enormous number of papers have been published although the absence of a bibliography covering the whole field seems conspicuous.

Reports reviewing the literature dealing with attempts to alter the response of animals to ionizing radiation were published as early as 1949, and in 1951 and 1953 by SELLE et coll. from the University of California, Los Angeles. HUBER and SPODE have now, with German thoroughness, prepared a survey in tabular form of the works on biologic and chemical radio-protection covering a time period from 1945 to 1959/1960. The large amount of work within this field is illustrated by the number of references, close on 1 600. By far the greatest number of investigations have been carried out on the effects of SH compounds and related substances. Bone marrow transplantations play a dominant role among the many attempts to obtain therapy against acute radiation injury. Other substances surveyed include hormones, amino acids, amines, heterocyclic compounds and proteins, alcohols, carbohydrates and organic acids and vitamins and related compounds. Attention is also paid to the influences on the vegetative as well as the central and peripheral nervous system, parabiosis and transfusion, antibiotics and sulphonamides, cyan compounds and other enzyme toxins, and antihistamines. The survey appears to be almost complete and will be of great value as a reference to those working in the field of chemical and radiobiologic protectors.

The use of a special device with sharp-edged rings that cut the leaves detracts from the loose leaf system which in itself seems an excellent idea. It is to be hoped that a different kind of cover will be used in the next edition. The price of DM 124 appears to be rather high.

Arne Nelson

THE TOXICOLOGY OF RADIOACTIVE SUBSTANCES. Vol. 1. STRONTIUM, CAESIUM, RUTHENIUM, RADON. Editors: Letavet and E. B. Kurlyandskaya. Translation from the Russian edited by E. Lloyd. 236 pages, 113 figures and 67 tables. Pergamon Press, Oxford 1962. Price: 80 Sh.

Access to the comprehensive Russian scientific literature has to a great extent been hampered by the language barrier. The increasing number of translations into English has now made this volume available to Western readers who are presented with an account of Russian progress in the study of the effects of isotopes of strontium, caesium, ruthenium and radon in experimental animals.

The Russian original was published in 1957 and the work reported was carried out from 1951 to 1953. The interpretation of some of the results have been modified by the editors of the English edition in the light of later investigations. Most of the experimental results are, however, still valid and of great interest in spite of the long time-lapse between the appearance of the Russian and English versions.

There are four main sections: (1) Absorption, distribution and excretion, (2) Radiotoxic effects in high dose experiments, (3) Radiotoxic effect of radioactive ruthenium, caesium and strontium in continuous experiments, (4) Stimulation of the excretion of radioactive strontium and caesium from the organism.

KURLYANDSKAYA emphasizes the importance of studying the reactions of the organism during the continuous internal administration of small doses of radioactive substances. The papers included are therefore mainly concerned with the biologic effects of radioisotopes under continuous intake (2 to 3 years). BURYKINA reports a much higher resorption of ruthenium 106 from the gastrointestinal tract, 100 to 200 times higher than that given by certain early American investigators. This difference is probably due to the particular chemical forms used, which, especially in the case of ruthenium, will complicate the metabolism. KUBANOVSKAYA and USHADOVA have studied the transfer of Sr 89 and Sr 90 from mother to foetus in rats and have established that the accumulation of strontium in the foetus is mainly due to the isotope received during pregnancy. This has been confirmed by the reviewer and his co-worker in an investigation in mice which also showed that the foetal uptake coincides with the ossification of the foetal skeleton, and begins approximately at the 14th day of gestation. The strontium deposition in the females prior to gestation is of minor importance. It is stated that a subcutaneous dose of Ru 106 gave a more marked distribution of the leukopoiesis and erythropoiesis than Sr 89, Sr 90 and Cs 134. An investigation of the chronic effect of these isotopes administered per os in rabbits revealed, however, that radiostrontium caused more extensive damage to the erythropoiesis than was evident after Cs 134 and Ru 106.

The last part of the book deals with the search for agents that stimulate the excretion of radioactive substances. All the classic methods have been tried with only slight effects.

The book constitutes an excellent review of the extensive work in the U.S.S.R. on the biologic effects of radioactive isotopes. The pictorial material is not uniform, however. The legends give no information on staining methods or magnification and the few autoradiograms are primitive compared with the standards set by the autoradiograms of ULLBERG and co-workers in this country; any statistical treatment is conspicuously absent.

Arne Nelson

FILM DOSIMETRIE. GRUNDLAGEN UND METHODEN DER PHOTOGRAPHISCHEN VERFAHREN ZUR STRAHLENDOSISMESSUNG. Von Klaus Becker. 176 Seiten, 93 Abbildungen. Springer, Berlin 1962. Price: 24 DM.

A short introduction on the various kinds of radiation and the fundamental concepts of dosimetry is followed by a more detailed account of photographic processes, the properties of different emulsions and developers, and densitometry. The main part of the book is devoted to the various methods of photographic dosimetry. Emphasis is laid on radiation protection measurements while other uses are touched upon more lightly. The difficulties and sources of error, especially when measuring radiation of unknown quality or mixed radiations (e. g. gamma rays and neutrons), are discussed in detail and advice given on the precautions that should be observed. Theoretical foundations as well as practical information on film badge design, and the organisation of a radiation protection service, are considered and discussed in detail.

The book ends with a long and useful list of references. It is however a pity that many papers bear only a code reference consisting of a few letters and figures so that their tracking is difficult without access to a specialized library; an indication of the institutes of origin would have been helpful.

The reviewer considers the book to be of great value to all those working theoretically or practically in the field covered.

Sven Benner