

of milk products and the use of micro-organisms in the industrial production of solvents, antibiotics and pharmacologically active compounds. The treatment of the subject is rather unbalanced in places; for example, the theory, technique and uses of electron microscopy are dealt with in about 300 words along with 2 figures, and bacterial growth factors in about the same space, whereas there are considerable direct quotations from original papers by Gram, Fleming and Florey, together with a long account of the Pasteur/Liebig controversy about fermentation.

In a field where good text-books already exist, the value of a new book depends on whether it has a valuable, new approach to the subject or is significantly more up-to-date than its predecessors and whether it is accurate. Although this book does contain some accounts of recent work, and perhaps has greater emphasis on industrial processes than previous books, these advantages are far outweighed by the many misleading statements, inaccuracies and omissions. It is possible to give only a few examples. The book contains no account of the glyoxylate cycle while referring readers to reviews (1951-52 vintage) which support the presence of a dicarboxylic acid cycle in bacteria. The sections on transformation, transduction and mating (called recombination by the author) are very misleading, and neither the concept of the episome nor the process of lysogenic conversion is mentioned. Similarly, the account of bacterial cell walls is completely inaccurate. No mention is made of the presence in walls of D-amino-acids, nor of N-acetyl glucosamine. N-acetyl muramic acid is stated to account for all the amino sugar of the wall and is given a structure (p. 69) which is completely incorrect. In the section on antibiotics no mention is made of the cephalosporins, and most penicillin-resistant staphylococci are incorrectly stated to be resistant by reason of some unknown mechanism rather than by the possession of penicillinase.

The book is full of confusing argument—for example: "... any present evidence for a nucleus in bacteria must of necessity be somewhat indirect. . . . First, bacteria possess DNA. . . . Second, bacteria do possess hereditary character. Hence, even though we may be unable to see a nucleus . . . there is no doubt but that a nucleus does exist". The style of the book is repetitious and chatty, and large passages in the book give the impression of being direct transcriptions of tape-recorded lectures.

M. H. RICHMOND

BIOLOGICAL EFFECTS OF IONIZING RADIATIONS

The Initial Effects of Ionizing Radiations on Cells

A Symposium held in Moscow, October, 1960, supported by UNESCO and the IAEA, and sponsored by the Academy of Sciences of the U.S.S.R. Edited by R. J. C. Harris. Pp. xii+367. (London: Academic Press, Inc. (London), Ltd.; New York: Academic Press, Inc., 1961.) 75s.

THIS volume is a report of a symposium held in Moscow in 1960, and was published in 1961. That it is reviewed at this late date is due mainly to the timeliness of the subject matter.

Radiobiology has in its brief existence already reached the stage at which the volume of literature produced, the inter-disciplinary nature of the subject, and the single-mindedness of its research workers make it essential that attention should be directed again to work which has already been done and to theories which have already been postulated. In the collected papers of the symposium, beginning and ending with stimulating papers by Alexander and Bacq, ideas are put forward on the role of nuclear as opposed to cytoplasmic sites for the initial

lesion of radiation injury; on the relative roles of injury and repair; on the ubiquitous role of oxygen in radiation lesions, and the systems in which oxygen seems to play little or no part. There emerges a pattern of biological response to even smaller doses, especially in relation to neuromuscular response. The work on the central nervous system is described by the Soviet workers in more detail and allowing for a better assessment than was possible from the Geneva conference on "The Peaceful Uses of Atomic Energy" in 1958. Enough detail is given here to trigger off a full-scale study of this sort of functional response to radiation damage, which is inevitably going to be a more sensitive indication than morphological changes at present used as the main criterion of damage. Increasing investigations of functional derangements in systems by radiation exposure may well lead to a change in our concept of radiation sensitivity.

The presentation of the papers and discussion in the volume are good; misprints should be unnecessary in a book which has taken this long to produce. An interesting aspect of the discussion is a complete lack of East-West division, even when such controversial subjects as the genetic effects of radiation and their relation to dose and dose-rate, or the role of the nervous system in radiation injury are discussed.

Looking through the list of contributors to the volume, one is impressed at the galaxy assembled between the covers. These people give evidence of their thoroughness, originality and stimulation in the presentations and discussions—and most of them have maintained their promise since. Perhaps it is not a bad thing to review a book several years after its appearance, when it can be seen in perspective as a brick which has helped to build up the subject in subsequent years. PATRICIA J. LINDOP

A RUSSIAN VIEW OF FERRITES AT MICROWAVE FREQUENCIES

Ferrites at Microwave Frequencies

By A. G. Gurevich. Authorized translation from the Russian by A. Tybulewicz. Pp. viii+332. (London: Heywood and Co., Ltd., 1963.) 140s.

A STUDY of ferrites at microwave frequencies was first initiated about thirteen years ago. The material treated in this work covers the first nine years of this period, which includes part of a very progressive period between 1954 and 1961. Interest in ferrimagnetics at microwave frequencies can conveniently be divided into two main areas: a study of the principles and properties of microwave devices and a study of the physical behaviour of ferrimagnetics. The author and his colleagues have made very significant contributions to the latter field and it is, therefore, not surprising that the most informative sections of the book are those concerned with physical processes. There is comparatively little information on devices, and the book will have only a slight appeal to the microwave engineer. Unfortunately, a complementary Russian work dealing with devices has not so far been translated.

The work is in three parts dealing, in effect, with magnetic properties of ferrites, wave-guides containing ferrites and non-linear processes. It is assumed in the first section that the reader is already familiar with the origin of magnetism in ferrites. The statement that "Ferromagnetic resonance can be explained quite simply on the basis of quantum mechanics" is perhaps somewhat terse. By compensation, the treatment of spin waves is very well presented, and included is a useful survey of Walker's theory of magnetostatic modes. The title of the first chapter "Isotropic Ferrites Magnetized to Saturation" is perhaps somewhat misleading. A magnetized ferrite