REVIEWS

RADIATION PROTECTION AND RECOVERY. Edited by Alexander Hollaender. Pergamon Press, London. 1960. Pp. 392, with 56 figures. 70s.

As Hollaender points out in the introduction, "this volume contains discussions of the biological, physiological, and biochemical methods that have been developed for protecting living organisms against radiation damage". Of special interest to geneticists are the chapters on the protection and recovery of the cell by Whiting, on the modification of chromosome aberrations by Wolff, the protection and recovery mechanisms in seeds by Davidson and genetical protection against ionising radiation by Conger.

Of more general interest, but with genetic implications, are the chapters on protection and recovery in bacteria and fungi by Stapleton, protection of whole-body radiation injury with bone marrow therapy by Smith and Congdon, delayed somatic effects by Odell, Cosgrove and Upton, the effect of radiation on antibody formation by Makinodan and Gengozian, and photoreactivation by Jagger.

Factors which may modify damage induced by ionising radiation include the stage of nuclear development, mechanical disturbance, radiation intensity, ion density, water content of the cells, temperature, oxygen tension and chemical agents. These agents may act by modifying the initial chromosome breaks, or, more often, by hastening or delaying the restitution of the induced breaks in the chromosomes. Most of the chemical protective agents appear to function by reducing oxygen tension.

Protective agents which function at the cell or nuclear level also function at the organism level, as would be expected on a genetic basis. Similar reactions to the various protective agents are found in all organisms from bacteria to mammals. These similarities also extended to the macromolecular level *in vitro*, as shown by Alexander in the opening chapter.

The rapid extension of the field of radiation biology makes it very difficult to keep up with the publications in more than a limited area of research. These review monographs serve a very useful purpose in reviewing the literature and providing a general summary of work in allied fields. The authors of this monograph have done an excellent job.

KARL SAX.

ERBLICHE SCHÄDEN DURCH IONISIERENDE STRAHLEN. By Richard Focke. VEB Georg Thieme, Leipzig. 1959. Pp. 78. DM 10.45.

In the Atomic Age it is essential that everyone should understand the genetic hazards of ionising radiation. Even if we abolish atomic weapons the industrial use of atomic energy also presents problems. The author has dealt with these hazards in a concise and simple manner. The various types of ionising radiations and their biological effects are described. The various factors which may modify radiation sensitivity are listed briefly under physiological, environmental and genetic variation, but one of the most important factors, chromosome size, is not included.

Major attention is given to the induction and transmission of deleterious mutations induced in man by ionising radiation. Included are the types of

mutation, their genetic transmission to future generations, their deleterious and lethal effects and their persistence in human populations. The deleterious effects on domestic plants and animals are also discussed.

The hazards are great, but so also are other aspects of our modern civilisation—automobiles, air pollution and the stress of urban life. An atomic war could wipe out the human race, but the highly resistant viruses and bacteria and the plants and animals with small chromosomes would survive. Might they not provide the foundation for a new evolutionary cycle which eventually would produce a more rational human population less likely to destroy itself by its own inventions?

KARL SAX.

RECENT ADVANCES IN HUMAN GENETICS. Edited by L. S. Penrose and Helen Lang Brown. J. A. Churchill, London. 1961. Pp. 194. 27s. 6d.

The "Recent Advances" series so well known in medicine offer unique opportunities to authors. They need only write about subjects with which they are familiar and they may assume that their readers know at least the rudiments of their subject. Subjects can be selected where real advances have been made and an authoritative review is timely. This little volume makes good use of these advantages.

L. S. Penrose, the editor, contributes the chapter on mutation, reviewing the rationale of estimates in man and tabulating a selection of estimates. Possibly some of the paragraph headings suggest that more is known than the contents merit, as for example, the one entitled "The Incidence of Spontaneous Chromosomal Aberrations in Man". Only for mongolism are data available which enable more than a shrewd guess at frequency to be made. There is a mistake in table 7 in the section which considers the association of paternal age with mutation. The figures for Northern Ireland are not those given by the author quoted.

Penrose has also contributed the chapter on "Genetics of Growth and Development of the Foetus" which reviews the evidence for the inherited influences on gestation time, birth weight and peri-natal mortality although most of this work is not new. He also mentions briefly some aspects of the factors related to the ætiology of congenital malformations in man. Table 19, page 68, has suffered some malformation which makes it unintelligible.

D. G. Harnden has managed to compress into twenty pages a remarkably comprehensive review of the developments of work on human chromosomes in the last few years. Some of the priorities for first reporting of abnormal karyotypes given here may be disputed by other workers but this is just the chapter to be enjoyed by those interested, even if not involved, in chromosome work.

O. J. Miller's chapter on "Developmental Sex Anomalies" is too compressed to permit of adequate clinical descriptions and perhaps tends to present an over-simplified picture of a very complex subject. "The Abnormal Hæmoglobins" by P. S. Gerald, "The Inheritance of Dermal Ridge Patterns" by Sarah B. Holt and C. A. B. Smith's contribution on statistical methods are all authoritative and stimulating.

Many human geneticists will be very grateful for Renwick's chapter on "Elucidation of Gene Order" (perhaps a rather grandiose term). Particularly useful is the discussion of the criteria of efficiency of markers and