

The genetical interest of cancer, and the importance of genetical principles for the study of cancer, thus emerge as beyond question. At the same time the genetical approach is but one of the many which are brought together in a treatment distinguished for the breadth of its view. Few experimental biologists can fail to derive stimulation from Huxley's presentation ; and indeed perhaps the best comment by way of summing up is to say that at least one reader is left with no doubt of the profit which, paraphrasing the words of the preface, biological science will derive from incorporating the cancer problem in its purview. KENNETH MATHER.

THE SPECIES PROBLEM. Edited by E. Mayr. Pub. No. 50 American Ass. Adv. of Science, Washington: Bailey Bros. and Swinfen Ltd., London. 1957. Pp. 395. 80s.

The classification of living organisms into species was developed originally for the convenience of identification. For this purpose the procedure for classifying was, and still is, a problem in itself. With the advent of Darwinism and, more recently, of genetics, it was natural to attempt to reconcile these units of identification with the units of variation and of evolution. Thus arose a new problem of a more profound and formidable character. A symposium to consider the problem was held at the meeting of the American Association for the Advancement of Science in Atlanta in 1955, the proceedings of which are recorded in this book.

The problem is defined and presented in an introduction by Professor Mayr. Contributions follow by Americans eminent in a wide variety of fields, genetics (H. L. Carson and T. M. Sonneborn), physiology (C. Ladd Prosser), embryology (J. A. Moore), palæontology (J. Imbrie) and systematics (V. Grant and J. L. Brooks). Professor Mayr sums up in the final paper.

There is, in general, agreement that the concept of the species in the modern, "biological", sense is meaningful and worthwhile. On theoretical grounds the species concept has been enriched, and has benefited from, the infusion of genetic principles relating to gene flow and to genetic diversity as a basis for adaptive specialisation. In practice, as is made clear, there are difficulties of application, in particular to organisms reproducing asexually. The opinion of the majority of the contributors, and of Professor Mayr, that the benefits outweigh the difficulties, will not surprise and indeed will be endorsed by most biologists. Agreeable a feature though this may be it is perhaps not sufficient to encourage spending £4. There are, however, two other good reasons for recommending this book. Firstly, the papers are admirable, up-to-date summaries of results from an unusually wide range of investigations, each with an approach of its own, and each making its own special contribution to the same central problem. The result is thus to enlarge and extend one's appreciation of the concept of species and speciation. Secondly, Professor Sonneborn's article, dealing chiefly with *Paramecium*, is outstanding for its comprehensive analysis of natural populations considered from the standpoint both of individuals and of genetic systems. H. REES.

INSIDE THE LIVING CELL. By J. A. V. Butler. London: Allen & Unwin. 1959. Pp. 174, with 16 plates. 21s.

Professor Butler is a distinguished chemist who has worked on biological problems and in this book he discusses many of the topics which are important centres of biological research to-day. His subject matter ranges

from the structure and chemistry of cells to free will and the behaviour of the human brain. There are, among others, chapters on vitamins, hormones and antibodies; genes, viruses and cancer; photosynthesis, muscle and nerves; tools, language and death. The book is written in a pleasant style, but there is no pretence at making difficult things simple. It is, of course, easy to quarrel with the presentation in such a book, but biologists who are not too learned will find it refreshing to read about transforming principles before conventional mutations: to have recombination in phage discussed without its jargon; to have their frustration over pedigrees expressed so well.

The book is unfortunately marred by quite a lot of errors. Some of them ought to have been corrected in proof reading, but some are errors of fact. The most serious is perhaps the description of meiosis which gives a wrong impression of the mechanism. Another criticism which biologists will make is that natural selection is mentioned only in connection with ageing. Its significance for the other topics discussed is left out altogether. Nevertheless this is a good book of a kind which we badly need, for it tells us what biologists are actually doing now and not what they were doing fifty years ago as so many books do.

F. A. L. CLOWES.

SUBCELLULAR PARTICLES: Fifth Annual Symposium Publication of Society of General Physiologists. Teru Hayashi (Ed.). New York: Ronald Press Co. 1959. Pp. 213. \$6.

Electron microscopy has made it possible to identify all the presumed types of genetic particle in the cell, to study their modes of development, possible relations and chemical activities. The eleven papers in this symposium open the new fields of enquiry; they raise important questions and offer solutions of great genetic interest. Two of these are worth noting here.

The first refers to the question as to whether any given class of particles like the mitochondria, are physiologically versatile or genetically diverse. This question, opened by de Duve's discussion of lysosomes, will clearly dominate enquiry for some time to come. The second refers to the question as to whether one or several systems or channels exist through which RNA and DNA are propagated in the cell. Taylor and Wood's evidence of two systems of RNA (with slow and quick turnover) breaks new ground here.

Other valuable papers are by Novikoff, Green, Allfrey and Mirsky. Altogether the symposium is well designed. Summaries for all papers would have been useful: they serve both the author and the reader.

C. D. DARLINGTON.

AN INTRODUCTION TO MEDICAL GENETICS. 2nd edition. By J. A. Fraser Roberts. Oxford University Press. 1959. Pp. 263. 35s.

BLOOD GROUPS (a Symposium). *Brit. Med. Bull.*, 15 (2). May 1959. Pp. 174. 20s.

SYMPOSIUM ON NUCLEAR SEX. Ed. by D. Robertson Smith and W. M. Davidson. Heinemann. 1958. Pp. 188. 21s.

The present three volumes demonstrate the range and character of the genetics which concerns, or may be thought to concern, those who teach and practice medicine. They also demonstrate the speed at which this range and character are changing.

Dr Fraser Roberts' work was designed, he explains, to show how genetic principles can be applied to medicine by *deductive* processes. The *Blood*