RUSSIAN CANCER RESEARCH

The Virology and Immunology of Cancer

By L. A. Zilber and G. I. Abelev. Translated from the Russian and edited by Ruth Schachter. Pp. xii+474. (Pergamon Press: London and New York, September 1968.) 165*s*.

"UNUSUAL circumstances," said the senior author, "made it possible for me to make a detailed study of the almost endless literature dealing with the problem before experiments were begun, . . . "

In 1945 Zilber proposed two independent stages in the induction of cancer, the transformation of cells by viruses to give tumour cells, followed by the multiplication of those cells. The first section (173 pages) reviews the literature and describes the studies of Zilber and other Russian groups between 1945 and 1964—especially the discovery that mammalian cells could be transformed by Rous sarcoma viruses, and the search for antigenic differences between normal and virus-transformed tissues. Zilber discards "polyaetiological" theories and prefers "virological". He accepts the thesis first advanced by Kisilev in 1962 that carcinogens (of whatever type) bind and inactivate repressors, liberating viral DNA which accompanies structural genes of the cell's genome. One of the results of this derepression is the appearance in the tumour cells of "previously repressed proteins"—the so-called "tumour-specific antigens".

Zilber was primarily an experimenter of great enthusiasm and ingenuity (for example, his attempts to produce rabbit antibodies to tumour-specific antigens by making the animal tolerant to the host's normal antigens), and he believed strongly that the aim of any working hypothesis is solely the "stimulation of experimental studies".

Part two (pages 177 366) by G. I. Abelev is a review of the status of tumour immunology to 1965. Problems of histocompatibility antigens, immuno-selection and tumour progression constitute the introduction—where so often they are disregarded. The application of the anaphylaxis–desensitization method is described in detail; the difficulties of preparing specific antisera are discussed and then the results of using a number of different techniques in the investigation of the antigenic structure of normal and tumour tissues. The author's approach is cautious and critical and he provides—what is again so often lacking—an appendix (32 pages) on the exact methods used to obtain his results.

There are 65 pages of references, and a poor index—which usually fails to differentiate between a couple of words in a single sentence somewhere and a whole section somewhere else.

The translator is obviously unfamiliar with tumour viruses and immunology, but we should be grateful to her and to the publishers for this opportunity to learn more about the views, and experimental approaches, of our Russian colleagues.

R. J. C. HARRIS

PROTEIN CHEMISTRY

The Primary Structure of Proteins

Principles and Practice for the Determination of Amino-acid Sequence. By Walter A. Schroeder. (Modern Perspectives in Biology.) Pp. xiv+210. (Harper and Row: New York and London, 1968.) 121*s*.

MY main quarrel with this book is that a lovely title, *The Primary Structure of Proteins*, has been wasted. The credo of molecular biology puts the amino-acid sequence of a protein at the very centre of the genotype–phenotype relationship: DNA structure (genotype) determines RNA structure; RNA structure determines primary structure of protein; primary structure determines tertiary structure (folding of the peptide chain); tertiary structure determines biological activity (phenotype). Every biologist will be tempted, therefore, to reach for this slim volume, and the vast majority will be disappointed that it has little to offer them. It may be unfair to blame the author, as he has clearly indicated his intentions in the subtitle. But I was deceived by the main title into expecting something more.

Those who still contemplate spending six pounds should be warned to read the preface next. Dr Schroeder defines still further the limitations of his material: "The discussion . . . is not an encyclopaedic review of methods . . .", "experimental details are not given extensively . . .", "some historical background is provided", "I have not mentioned, except in passing, the implications of the data in enzymology, biochemistry, biology and related fields". I would like to add to this series of disclaimers that the book lists only a few of the amino-acid sequences already determined, and nowhere discusses conclusions about the heredity or biological activity of the proteins. In fact, the author fails to answer the question in his first sentence, "Of what value is a knowledge of the amino-acid sequence of a protein?".

The reader therefore needs other sources of information to fill these considerable holes, so we must ask to what extent such sources will overlap Schroeder's material. What he does provide is a description of the techniques of protein chemistry at a level slightly above that required for an understanding in principle, but slightly below that required for application in practice. This book fills this narrow gap between the treatment given in many textbooks of biochemistry and that in more comprehensive texts (for example, *Techniques in Protein Chemistry*, by J. Leggett Bailey (Elsevier, 1967), or *Methods in Enzymology*, Vol. 11, edited by C. H. W. Hirs (Academic Press, 1967)).

Within these limits, the book is concise, precise, intelligently arranged and nicely illustrated. Schroeder is not afraid to make value judgments which are generally fair, cogent and supported by many years of experience in the field. His admitted partiality for ion-exchange chromatography lends colour to his descriptions of these techniques and of the strategic problems in his own studies of haemoglobin. A corresponding weakness in descriptions of paper chromatography or electrophoresis is equally clear, but the discriminating reader will forgive this in appreciation of the author's personal enthusiasms. A final, very brief chapter on chemical modifications of ribonuclease gives tantalizing glimpses of the book that might have been.

The price, unfortunately, must limit this book largely to libraries, and even many of these may prefer more advanced and comprehensive texts as a better investment.

BRIAN S. HARTLEY

NEUROSCIENCES RESEARCH

Neurosciences Research

Vol. 1. By S. Ehrenpreis and Othmar C. Solnitzky. Pp. xi+367+16 plates. (Academic Press: New York and London, August 1968.) 154*s* 4*d*.

THIS is the first volume of a new serial publication. Each chapter in these volumes will aim to give a broad perspective and a critical evaluation of an important area of research in the neurosciences.

The material in the first volume covers an extremely diverse range of topics. The first three chapters are devoted to neurochemical topics. Giacobini gives an excellent and comprehensive review of the microchemical techniques which are now available for the study of the chemical constituents of single neurones. Such techniques will undoubtedly have a profound influence on the develop-