

succeeding Beer and his co-workers, that is, they are based to a considerable extent on hearsay. The author, Mr. Beer, has made available in his book, his own recollections, reinforced by extracts from his diaries and old letters, over the period covering the last few years of the nineteenth century at Kew until a year or so after Courtauld's had set up a plant at Foleshill, then just outside Coventry, in 1905.

The author's laboratory notebooks were handed over to Courtauld's many years ago and have disappeared. I myself do not think that this is very important except in so far as it would lead to greater precision in allocating priorities to ideas and the people responsible for them. After reading the book, one is left with a feeling of respect for Mr. Stearn, "Mr. Stearn's chemist", that is, the author, and their colleagues at having succeeded in developing a technology for producing a fibre from viscose, a liquid material which varied in colour, viscosity and spinnability, according to the source and nature of the wood pulp, the purity of the chemicals available to them and the ambient temperature.

The book is, therefore, a valuable source on the early history of viscose rayon. The information presented is not interpreted, that is, the author makes quite clear when he is quoting from his diary and letters and when he is commenting on other sources of information or hearsay. However, judged from the point of view of the book's stated purpose, it is too long and discursive, containing many interpolations of the author's experiences, particularly in India, after leaving viscose. I consider that the ease of following the development of viscose rayon would have been considerably improved if the author had organized his material better. On the other hand, if he had, the reader might have missed much information about social conditions at the turn of the century and about the experiences of the author, who certainly is in many ways an exceptional man.

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## PROGRESS IN BIOCHEMISTRY AND PHYSIOLOGY

### Annual Review of Biochemistry

Vol. 31. Edited by J. M. Luck and Associate Editors: F. W. Allen and G. Mackinney. Pp. vii + 731. (Palo Alto, California: Annual Reviews, Inc., 1962.) 8.5 dollars.

Advances in Comparative Physiology and Biochemistry Vol. 1. Edited by O. Lowenstein. Pp. xii + 392. (New York: Academic Press, Inc.; London: Academic Press, Inc. (London), Ltd., 1962.) 86s.

VOLUME 31 of *Annual Review of Biochemistry* begins with an autobiographical chapter by Dr. Mansfield Clark, whose studies on hydrogen ions and oxidation-reduction have contributed so much to biochemistry. Most of the 21 reviews in this volume are on subjects usually covered each year, but there is at least one surprise: an article on germ-free animal research (O. Mickelsen). This deals with the subject from its beginnings, which seem to go back to experiments designed to test Pasteur's suggestion that an animal could not live in the germ-free state. The suggestion proved to be wrong, and to-day there are about a dozen centres, most of them in the United States, where colonies of animals are maintained in a germ-free condition, that is, free from all detectable organisms, whether pathogenic or not. Germ-free rats and mice have been shown to have practically normal life-spans, and chickens, monkeys and guinea pigs have also been successfully maintained in a germ-free state for long periods. The technique can be used to throw light on many problems; for example, the effect

of a germ-free upbringing on wound healing or on sensitivity to subsequent infection, or the role of the intestinal flora in animal nutrition, particularly as regards vitamin requirements. Other reviews of general interest deal with polypeptide hormones (K. Hofmann), inborn errors of metabolism (J. Larner), and insect nutrition (H. L. House). There are three chapters on nucleic acids and two on different aspects of immunology.

*Advances in Comparative Physiology and Biochemistry* is a new serial publication. Volume 1 contains reviews on the following subjects: digestive enzymes (E. J. W. Barrington), the amino oxidases of mammalian blood plasma (H. Blaschko), temperature receptors (R. W. Murray), neuromuscular physiology (G. Hoyle), animal luminescence (J. A. C. Nicol), and respiratory mechanisms and their nervous control in fish (G. M. Hughes and G. Shelton). The reviews are illustrated with many figures. Most of the contributions in the present volume come from university departments of zoology in Great Britain. In planning future volumes, the editor will, no doubt, be looking to authors from other departments and other countries to write some of the reviews. This new publication has been planned to keep physiologists and biochemists abreast of present-day work in the comparative branches of their subjects. It has made a good beginning.

D. C. HARRISON

## CANCER CHEMOTHERAPY

### Biological Approaches to Cancer Chemotherapy

A Symposium held at Louvain, June 1960, under the auspices of Unesco and the World Health Organization. Edited by R. J. C. Harris. Pp. x + 431. (London: Academic Press, Inc. (London), Ltd.; New York: Academic Press, Inc., 1961.) 96s.

THE failure of the organizers of the Louvain Symposium to define the meaning of chemotherapy in relation to cancer enabled the contributors to this book to range over a wide variety of biological and biochemical topics related to cancer therapy. This has the advantage that the reader is stimulated by many theoretical approaches to the alleviation or cure of cancer.

Most of the thirty-one contributions are directed towards answering one or more of the following questions. What are the differences between normal and cancerous tissue and which cellular functions are most suitable for therapeutic attack? What considerations affect the design and transport of drugs having a specific effect on malignant cells and can any steps be taken to protect the organism against undesirable side actions? What methods, other than surgery and externally applied radiation, may be used in the treatment of the disease? Because relatively little progress has been made in the chemotherapy of most forms of cancer, the answers to these questions are necessarily speculative. Danielli, in the introductory paper, suggests that the differences in properties between normal and malignant tissue are such that a drug, to be effective, will have to act on two or more of these differences.

Several papers are concerned with aspects of cell or tissue life which are potentially useful as points of chemotherapeutic attack. Thus homeostatic (or feedback) mechanisms, steroid hormone-pyridine nucleotide interaction, the dependence of epithelial tissue (from 5-day-old chick embryos) on the underlying mesenchyme in tissue culture, and lysosomes are subjects for discussion. De Duve speculates on the induced rupture of the lysosome as a method for destroying malignant cells.

It appears from the articles by Bergel and by Larionov that they and their colleagues are concentrating on the problem of how cytotoxic chemicals may be transported specifically to their site of action. Both are synthesizing drugs in which a nitrogen mustard moiety is attached to a