

therapy. In itself this reflects the care with which the conference organizers chose the speakers and topics. The material is well presented, and the diagrams and photographs are particularly well done.

G. W. DOLPHIN.

## History of Glasgow Ophthalmic

**The Glasgow Ophthalmic Institution. 1868-1968.** By W. J. B. Riddell, F.R.S.Ed., M.D. Glasg., M.B., Ch.B., F.R.F.P.S.Glasg., D.O.M.S.Eng. (Pp. 31; illustrated. No price given.) Published by the Board of Management for Glasgow Royal Infirmary and Associated Hospitals. 1968.

The Glasgow Ophthalmic Institution was founded in 1868 by Dr. J. R. Wolfe, who is best known for his invention of the whole-skin graft bearing his name. To mark its centenary Professor Riddell has written a booklet on its history, and what an interesting tale it proves to be. By 1888 the Ophthalmic Institution contained 35 beds, an operating theatre, and all necessary accommodation for the matron, nurses, and servants. A course of instruction for medical students was given in the summer and winter session. In 1893 the Institution was amalgamated with the Royal Infirmary and reached its zenith during the tenure of Dr. Maitland Ramsay (1898-1920) as surgeon. His enthusiasm and publications attracted the attention of his ophthalmic contemporaries everywhere. By 1920 the building was quite inadequate for the work undertaken, as testified in the formal notes of many distinguished visitors, but because of the self-sacrifice and single-mindedness of H. Wright Thomson, J. N. Tennent, Janet Steel, and Miss C. J. McKellar, to name a few, a vast amount of clinical work was undertaken in cramped and appalling conditions.

I attended the Glasgow Ophthalmic Institution as a postgraduate student during 1943 when a serving naval officer and felt then as I do now that the staff, by its extraordinary devotion in difficult circumstances, almost qualified for inclusion in the communion of saints. Twenty-five years later Professor Riddell writes: "Several months ago the Regional Hospital Board resolved that new inpatient accommodation must be found as a matter of urgency." Surgeons in English ophthalmic hospitals who are in danger of losing their boards of governors should take note of the priority they are likely to command in the event of a change in administration.

STEPHEN MILLER.

## Theoretical and Experimental Biology

**The Movement of Molecules across Cell Membranes.** By W. D. Stein. (Pp. 369 + xvii; illustrated. £7.) New York and London: Academic Press. 1967.

In this work an attempt is made to consider the movement of substances across cell membranes at the molecular level. Diffusion of ions may be automatic or may be linked to chemical reactions—and different transports

and their different chemical reactions may again be linked.

The author gives an exhaustive account of theories and facts about the nature of the cell membranes, and describes a number of "models" which could back up the theories or explain the facts. He is no longer satisfied with general statements such as "diffusion through pores" or "transport by shuttling carriers" and demands that the components of the pores will have to be specified and their composition and the location in the membrane be determined. Carriers, too, must be identified, and the vague term of "shuttling" must be replaced by a description of the movement of the shuttling components. Research on transport across cell membranes awaits the methods which have explained the function of an enzyme as the interaction between its active site and the substrate. This should result in the recognition of substrate-induced conformational changes in isolated transport systems.

This book straddles many fields of science and is equally suitable for postgraduate students and senior research workers.

H. LEHMANN.

## Theory of Homeostasis

**Stimulus and Response. The Law of Initial Value.** By Joseph Wilder, M.D. (Pp. 352 + viii. 84s.) Bristol: John Wright. 1967.

This is a scholarly book, but it is not easy to read. Its style is reflective and cautious, but it is to be hoped that it will not prove too heavy to stimulate the general reader. The mode of presentation is understandable, for the work is a plea by the author for a more widespread recognition of the law of initial value which he formulated in 1930. Thus it is in effect an enumeration of many examples in all biological fields in which the law, developed by studies in the field of neuropharmacology, has also been found to apply. Wilder's law is based on the concept of Xavier Bichat that life consists of the sum of functions by which death is resisted, and Wilder shows by examples that his law is more comprehensive than any of the homeostatic or cybernetic theories yet put forward and thus more universally valuable.

The law of initial value is empirical but has been developed from experimental observations. It is general, since it applies to stimulus and response; a ubiquitous biological phenomenon. It is quantitative, for it measures the relationship between stimuli and responses. It is statistical, for it has nothing to say about the causal relationship between stimulus and response. It is holistic, because it applies to all functions of the organism, every initial value being determined and maintained by the whole organism. In summary, the law of initial value states that the extent and direction of the response of a physiological function at rest to a standard stimulus given for a standard time depends in great measure upon the initial level at which it lies on the scale over which the function operates. The author, however, is cautious, for he also says that his law is but an experimental design which will show its real value only when constants for single functions and stimuli have been worked out empirically or mathematically. One cannot but feel that weighty evidence in support of

a law formulated in 1930 enunciated with such caution is unlikely to appeal to the present generation of readers. Exciting advances in knowledge in the biological field are now being made by analysing the biochemical and biophysical changes which bring about responses to stimuli rather than by describing the responses themselves.

This is not to say that Wilder's constant reminder of the necessity of taking the initial base-line state of the organism (indeed, each of its functions) into account when the effect of a stimulus upon it is measured is unimportant. On the contrary, it is most important, and he has done a great service to biologists and his book will serve as a valuable source of reference for years to come.

A. G. M. WEDDELL.

## Mechanisms of Carcinogenesis

**Gene Control in the Living Cell.** By J. A. V. Butler, F.R.S. (Pp. 164; illustrated. £1 16s.) London: George Allen & Unwin Ltd. 1968.

This book is written from the personal viewpoint of a physical chemist who has contributed a great deal in the field of cancer research. It is intended to be understandable to non-specialists as well as to experts, and to provide an account of recent developments in man's understanding of the molecular processes involved in the control of growth and differentiation at the cellular and subcellular levels. The author does not claim to have discussed the various topics exhaustively. Indeed, much of the value and interest of the book stems from his skill in selection of material. Useful guides to further reading are provided in relation to contents of several of the chapters.

The first six chapters of the monograph are concerned with genes and control mechanisms involving genes, and the remaining eight chapters with different aspects of cancer in relation to genes. Especially valuable are chapters on hormones and gene control, differentiation, and immune mechanism. The whole book, which is interesting, well written, and easy to read and understand, is the answer to the prayer of those who are in danger of giving up hope of ever understanding recent developments in molecular biology. Despite this, and unlike so many other books concerned with mechanisms of carcinogenesis, there is no hint of over-simplification of the problems to be faced in the future. The book is well illustrated with diagrams and most reasonably priced.

FRANCIS J. C. ROE.

## Significance of Prostaglandins

**Prostaglandins.** By U. S. von Euler and Rune Eliasson. (Pp. 164+x; illustrated. £4 4s.) New York and London: Academic Press. 1967.

The effects of human semen on the female sex organs must have been a subject of speculation by man ever since he developed an inquiring mind. In 1930 it was found