Reviews

FUNDAMENTAL GERIATRIC RESEARCH

Physiological and Pathological Ageing. By V. Korenchevsky, M.D. Edited by Geoffrey H. Bourne, D.Sc., D.Phil., F.Z.S. (Pp. 514. Sw. Fr. 85.) Basel, Switzerland, and New York: S. Karger. 1961.

As the reviewer of this book spent three of the most intellectually rewarding years of his career as research worker and collaborator with the late Dr. Korenchevsky in the Department of Experimental Endocrinology at the Lister Institute he approaches this monumental work with some reverence. Korenchevsky was founder of the British Society for Research in Ageing and the Oxford Gerontological Unit, and Professor Geoffrey Bourne, of Oxford, has achieved his task of editing these numerous contributions of Korenchevsky with much distinction. Whether Bourne's key sentence in the preface—namely, "Studies on gerontology can be expected to shed light on a tremendous range of diseases which cripple, invalid and kill from middle-age onwards"—is too optimistic a claim must await a further decade or more. To what extent is it possible to differentiate, as Korenchevsky attempted to do, between the pathological and physiological aspects of ageing is also a problem which requires further elucidation. Part of the summary on "Longevity" reaches a sombre conclusion, which seems to re-echo the late Lord Horder's clinical convictions: "According to Korenchevsky's classification, only heredity definitely belongs to the group of basic primary causes of human ageing, while all the others which have been studied in this chapter form a part of the group of secondary causes of ageing."

The reviewer is a trifle sceptical about the fundamental scientific value of geriatric clinical studies as distinct from studies in general medicine in all age groups, the reasons for such an attitude being, perhaps, made manifest in the report of the clinical section of the Third Meeting of the International Association of Gerontology (*Lancet*, September 30, 1961, p. 764), which includes a report that "the average age at which coitus ceased to take place was 68 for married men and 58 for bachelors." I therefore find myself much more intrigued by the scientific, experimental, and histological studies in laboratory animals reported with the authority and painstaking thoroughness for which Korenchevsky was so highly regarded.

The chapter on ageing of cells, including studies of tissue cultures, is fascinating. Regressive cellular changes of age were found to be associated with hyperplasia, metaplasia, and neoplasia. The section on auto-intoxication and ageing seems to lack specificity and exactitude, as is suggested by a summary to the effect that over-feeding, toxicity of metabolites, intestinal putrefaction, and "toxicity of some hormones" tend to produce "auto-intoxication." In contrast in the middle of this section there is reference to Korenchevsky's 1956 paper on the atrophy of the adrenals, spleen, and thyroids, as well as degenerative cardiac and skeletal muscle changes resulting from excess of cortisone in rats.

The second half of the book deals with the endocrine glands in relation to ageing and is both intriguing and perplexing. It is not necessarily logical to compare or apply the changes found after castration in animals—namely, decrease in weight of the liver, kidneys, and heart, and increase in weight of the adrenals, hypophysis, and thyroids—to changes found in old age, whether in animals or man. In fact, the author indicates many differences and anomalies, and this partly explains the clear-cut results of testosterone in castrated male rats and the controversial results of testosterone and, still more so, of testicular grafts in old age. The same is true of ovariectomy. There is no doubt that research in this field requires a great deal more of the kind of sound experimental work carried out by Korenchevsky and his associates, as well as objective and controlled clinical and hormone studies. The complicated nature of these problems is shown in the chapter on the adrenals, where the histology of the adrenals in old animals is shown to vary with the species. Atrophy in old age may be associated with hypertrophy, hyperplasia, and metaplasia. Hormone studies in man depend on further elucidation by chromatography and fractionation.

Though this book provokes thought rather than solves problems—and sometimes even fails to define precisely the fundamentals of the problems that face the experimentalist and clinician—it is, nevertheless, a monumental achievement in a difficult field and, incidentally, an eloquent tribute to the patient and exhaustive experimental work of the indefatigable Korenchevsky.

S. LEONARD SIMPSON.

PROSTHETIC CARDIAC VALVES

Prosthetic Valves for Cardiac Surgery. Edited by K. Alvin Merendino, M.D., and assisted by Andrew G. Morrow, M.D., C. Walton Lillehei, M.D., William H. Muller, Jr., M.D. Foreword by James Watt, M.D. (Pp. 586+xxix; illustrated. 66s.) Springfield, Illinois: Charles C. Thomas. Oxford: Blackwell Scientific Publications. 1961.

This book is the record of a conference organized by the Surgery Study Section of the United States Public Health Service and sponsored by the National Heart Institute of Bethesda. The conference was held in Chicago in September, 1960. It is a successor to a conference held in 1957 on extracorporeal circulation, the proceedings of which were also published as a very successful book.

It can be said at once that this book is a notable achievement and is indispensable to all who have anything to do with cardiac surgery and cardiology. It is a notable achievement to publish such a large and comprehensive volume in such a short time; and its standard of production is excellent. It is also notable in that it contains so many communications with reports of additional valuable discussion about the papers.

Many operations have been done to relieve valve disease, and with great success. However, as experience has been extended it has become clear that in some 10 to 15% of cases of mitral valve disease the valve mechanism has been so destroyed that reconstruction is impossible and that replacement of the valve by a prosthesis is alone likely to succeed in curing the patient. For aortic valve disease the percentage of cases in which valve substitution is either desirable or unavoidable is much higher. This applies especially to cases of severe calcific aortic stenosis and to pure aortic regurgitation in which plastic modifications of the patient's own valve may fail completely.

Even allowing for some over-enthusiasm to design and introduce an artificial valve it seems clear that the need for a prosthesis must be accepted. We are still ignorant of the best type of valve, the best materials from which to make it, and the length of time a prosthesis may be expected to function safely in the human heart. This conference was organized with the intention of pooling information on the subject and to lessen unnecessary repetitive studies and experiments.

The conference begins with a presentation by J. C. Davila of the mechanics of the heart valves relevant to the design and construction of prostheses. This is first class. Later in the conference F. C. Cross and his colleagues present an equally valuable consideration of the functional anatomy of the aortic valve. This should not be missed. Various authors discuss the materials that may be used in valve construction and the physical, chemical, and biological factors involved. Attention is very properly drawn to the biological factor that may be overlooked. Methods of testing artificial valves are also presented.

The numerous reports of the behaviour of valves inserted into the dog's heart are amplified by reports on their use in human cases. The results are variable and on the whole are disappointing, especially in regard to substitution of the mitral valve. With some techniques better results have been achieved with substitution of the aortic valve. In spite of the generally poor results the authors' combined presentations impress one with the justification of the attempts so far and with the considerable promise shown for the future. It is not practicable to try and describe details; for these the book itself must be consulted.

Apart from the intrinsic interest and value of the work on valve replacement there is another feature that should not be overlooked. Here we have a whole book devoted to basic laboratory and clinical research on an important and difficult subject. It has arisen from a collation of the results of no fewer than fifty-one research groups in the United States either working directly on valve prostheses or doing closely related work. Great Britain should take notice of this, for our organization and approach to such a subject looks ill by comparison. There are only two references to work done in England. One is to McMillan's cinematographic studies at St. Thomas's Hospital on the movement of the aortic and pulmonary valves; the other is to Brewin's work at Guy's Hospital on aortic valve replacement. Perhaps there are other references that were overlooked. It is certain that without concentrated experimental work from many centres, such as is presented in this book, it is not possible to achieve real advance in a problem as difficult as valve replacement, and any country that fails to attack the problem as vigorously must rely substantially for advances in knowledge and treatment on the efforts of others.

RUSSELL BROCK.

THE DIGESTIVE TRACT

Physiology of the Digestive Tract. By Horace W. Davenport, Ph.D., D.Sc. (Pp. 221; illustrated. 64s.) Chicago: Year Book Medical Publishers Inc. 1961.

An excellent book is always a pleasure to read, but medical books only seldom generate any feeling of warmth. It is therefore a particular pleasure to express my opinion that Dr. H. W. Davenport has written a truly outstanding text to serve as an introduction to the study of the digestive tract.

The book is divided into three main sections, dealing respectively with the major functions of the digestive system—namely, motility, secretion, and digestion and absorption. In each of these sections he adopts the convention of starting at the top and working his way down to the bottom. He remarks: "The usually relentlessly downward gradient of the digestive tract imposes tedious repetitiveness on this method of exposition, but I find the task of adding variety by beginning with an enema and ending with an eructation beyond my powers."

The first section, that on motility, is especially to be commended if only because this important aspect of gastro-intestinal physiology is inadequately dealt with in most textbooks of physiology. In his preface Dr. Davenport pays special thanks to Dr. Charles F. Code, of the Mayo Foundation, whose pioneer work in the study of human gastro-intestinal motility is well known to all of us who take any special interest in the digestive system. It is tempting to suppose that Dr. Code's influence may be partly responsible for the fact that this section contains the modern work done in man by clinical physiologists and research clinicians. I know of no other account which gives such a clear résumé of this developing field of knowledge.

The next section, on secretion, is also excellent, which is not surprising in view of Dr. Davenport's own extensive studies on gastric secretion. The section on digestion and absorption contains the sort of physiological knowledge which is essential for proper understanding of the diseases of the intestine and digestive glands. I was glad to see that the important recent work of Borgström and his colleagues in Sweden is well summarized here.

The book is very well produced with clear type and with 107 truly informative illustrations. For the most part, these illustrations are line-drawings which have been borrowed from important original articles, the references being given in the captions. They have sometimes been redrawn and the final result is always a model of clarity.

References are not included in the course of the book, except for those given in the captions to the figures. However, at the end of the text there is a list of nearly 70 selected references to important monographs, reviews, and original articles, to which the reader can turn if he wishes to pursue his studies further. It was pleasant to see included in this select list works by several contemporary British scientists, such as H. W. Florey, A. C. Frazer, J. N. Hunt, A. H. James, and others.

In brief, Dr. Davenport has produced a textbook which combines the virtues of clarity, brevity, and interest. I am not competent to judge it as a professional physiologist but it seems to me to be ideal reading for young doctors who intend to carry out any clinical research into the gastro-intestinal system.

S. C. TRUELOVE.

NEURAL MECHANISMS OF HEARING

Neural Mechanisms of the Auditory and Vestibular Systems. Edited by Grant L. Rasmussen, Ph.D. and William F. Windle, Ph.D., Sc.D. With a foreword by Richard L. Masland, M.D. (Pp. 422+xiv; illustrated. £6 6s.) Springfield, Illinois: Charles C. Thomas. Oxford: Blackwell Scientific Publications. 1961.

Rasmussen and Windle have edited this collection of papers and discussions which constituted the proceedings of the tenth conference of the National Institute of Neurological Diseases and Blindness, Bethesda.