

This is odd. But, in general, the review is instructive for it relates structural to functional anomalies even if, as is inevitable in a young subject, the approach is correlative rather than explanatory.

The last and longest of the surveys, by W. Straub and M. Severin, reads like a retino-biography. Its very title, 'Retina (1952-1959)', promises a catholicity of approach that it fails to fulfil, and a thoroughness of execution that it achieves. Its introduction deals with retinal anatomy, skirts over retinal chemistry, dives into vegetative physiology, skates over objective and subjective tests, delves into ophthalmodynamometry, immerses itself into electroretinography—which it fails to distinguish from action-potential physiology—and concludes with two pages on 'sundry matters'. Not a line too soon. The authors are more at home in listing vascular diseases and retinopathies, congenital and hereditary anomalies, although their general lack of criticism is not restricted to the section on senile effects. 'Retinal detachments' conclude this well-documented survey. But would it not have been just as useful to confine the review to the extensive bibliography with full titles (translated into one of the major Western languages where necessary)?

R. A. WEALE

ANIMAL PATHOLOGY

Pathology of Domestic Animals

Vol. 2. By K. V. F. Jubb and Peter C. Kennedy. Pp. xv+613. (New York: Academic Press, Inc.; London: Academic Press, Inc. (London), Ltd., 1963.) 17s. 6d.

THIS volume completes a comprehensive account of the *Pathology of Domestic Animals*. As in the first volume, the authors present a vast amount of detailed information as a logical and coherent story of disease processes in the different organ systems. A good deal of relatively new information culled from the literature has been brought together in book form for the first time. The pathology of the domestic animals covers such a very wide field with the complication of species variations, as well as the large number of conditions common to all, that to attempt to embrace this in a two-volume work is indeed ambitious. However, the authors, in the main, have succeeded admirably in their task.

The first two chapters describe the lesions (macroscopic and microscopic) to be found throughout the alimentary tract. These are followed by chapters which deal with hepatic and pancreatic pathology. There is a short chapter on the peritoneum, retroperitoneum and mesentery followed by a lengthy account of the diseases of the urinary system. Pathological processes in the central nervous system, the musculature and the skin receive their full share of attention and, for the first time, the pathology of the diseases of the organs of special senses, the eye and ear, are comprehensively discussed. The literature on existing information on the normal structures of the ear of animals is widely scattered and a valuable feature of the chapter on auditory defects is the brief annotation of the work on this subject. These two chapters on eye and ear have been prepared in collaboration with Dr. L. Z. Saunders and are especially worthy of note.

This book is more discursive than the first volume and includes rather more clinical information. No doubt this will sustain the student's interest and also be useful to the non-veterinary reader, but it could, with advantage, have been reduced. The chapter on skin diseases is disappointing. There is a long chronicle of the changes which occur in a wide range of conditions, but little attempt is made to relate these changes to the basic physiology of the skin. In recent years there has been much progress in the biological sciences in relation to dermatology and it is a pity that some of this information has not found its way into this section.

Parts of the chapter on liver disease may be confusing to students because the authors take as the basis of hepatic structure the unit of Rappaport. This unit is orientated to the portal vessels and their bile ducts so that on this basis the familiar centrilobular necrosis becomes periacinar necrosis. The discussion on fatty deposition in hepatic cells fails to distinguish clearly between micellar fat and globular fat and, although there is a useful account of the agents which damage mitochondria, the importance of deranged phospholipid metabolism is not stressed. It is probably lack of phospholipid synthesis which is the most frequent cause of hepatic cell damage and hence a prime cause of fatty deposition in the cell.

Although throughout the book the bibliography is extensive and international, there is, at times, surprisingly little reference to geographical pathology. Variations in the disease picture in different areas of the world do not receive sufficient attention, for example, the regional differences of 'blue tongue' and the peculiar geographical distribution of tonsillar carcinoma of the dog. There is some disparity between the space devoted to the various vesicular diseases of animals. The pathogenesis and pathology of a major epizootic disease such as foot-and-mouth disease should have been given more attention. A section devoted to the pathogenesis of the viral exanthemata in general would have been useful and, although Fenner's work on mouse pox is included in the references, some mention of its principles and probable application to other poxes should have found its way into the text.

The two volumes are concerned with macroscopic and microscopic morphological changes. Future editions would be more valuable if attention were directed to the underlying biochemical derangements which produce cellular abnormalities. Such inclusions need not increase the overall size of the work because type examples of basic patterns of disease, used selectively, would avoid some needless repetition.

The binding and printing are excellent. The book is well produced on good quality paper; the lavish illustrations in particular demand praise, they are all remarkably clear and have concise explanatory legends. The authors and publishers are to be congratulated on producing a definitive work on animal pathology, the framework and the substance of which will stand the test of time and become the accepted text of this important subject.

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ELECTRONS AND WAVES

Microwave Tubes and Semiconductor Devices

By G. D. Sims and I. M. Stephenson. Pp. xxii+388. (London and Glasgow: Blackie and Son, Ltd., 1963.) 75s.

MICROWAVE Tubes and Semiconductor Devices is intended for the student of physics or electrical engineering who wants to acquire a comprehensive view of microwave techniques, and also for the teacher who is always in danger of missing something new in this fast-growing field. It may come as a surprise to anybody but a specialist that after less than thirty years from the start the techniques of microwave generation and amplification have developed to such an extent that a book of 388 pages can be little more than a dictionary of ingenious devices and methods.

The main part of the book, 288 pages, and 10 chapters, is devoted to microwave tubes; the last two chapters deal with masers and semiconductor devices. The main part centres on a single physical problem: on the generation or amplification of short electromagnetic waves by means of free electrons. In all devices the electrons act as couplers between electromagnetic fields of different frequencies, drawing power from one and transferring it to the other. Such a unified problem appears to call for a unified treatment, but it is no reflexion on the authors