

cornea, the uveal tract and the lens, and then with refraction and presbyopia, spatial and temporal resolution (that is, visual acuity and critical flicker fusion frequency), spectral sensitivity and colour vision, and with the increase of illumination required to perform a visual task as age increases.

The pupil of the eye, under given conditions, becomes smaller as the eye becomes older. The crystalline lens of the eye also becomes yellower, a problem to which the author has made important contributions. Thus the amount of light reaching the retina decreases, and its spectral composition changes, with increasing age. Apart from this, the lens loses its elasticity, causing the well-known condition of presbyopia or 'old sight'. This of course can be corrected by the use of suitable spectacles, but even so the performance of the eye decreases with age. Dr. Weale shows that to a large extent this can be explained by the decreasing amount of light reaching the retina. The problem is by no means simple. Its discussion involves consideration of the directional properties of the retina (Stiles-Crawford effect). For the rod receptors the effective retinal illumination is roughly proportional to the area of the pupil, even when account is taken of the fact that the thickness of the lens is greater at its centre than at its periphery and that light losses are correspondingly greater at the centre. But for the cones, the retinal receptors used for accurate vision in daylight, this is definitely not the case; so that the effective retinal illumination cannot be calculated on the simple basis of the '*f*/number' of the dioptric system of the eye.

The particular question whether the decreased light sensitivity of the eye with increasing age can be entirely explained in this way, that is on the assumption that the properties of the retina and visual nervous system remain unchanged, does not seem to be quite settled. The question derives part of its interest from the fact that the eye can respond to only a few light quanta absorbed by the retinal receptors. Thus its sensitivity comes close to—but almost certainly does not reach—the ultimate limit of one quantum which is set by the physical properties of light. It would appear that this extraordinary efficiency of the retina can be preserved to a remarkable extent throughout life. This problem is dealt with in the book by implication rather than explicitly.

The book is well produced and contains 118 illustrations, in line and in half-tone. There is an index.

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THE THYROID GLAND

The Thyroid Gland

By Rosalind Pitt-Rivers and W. R. Trotter. Vol. 1, Pp. xi + 442. 97s. 6d.; Vol. 2. Pp. xi + 325. 75s.; per set of 2 volumes 165s. (London: Butterworth and Co. (Publishers), Ltd., 1964.)

THE initial great advances in understanding the function of the thyroid were made in the last decade of the nineteenth century when the nature of myxœdema was explained and the high content of iodine was discovered. Since then the gland has continued to receive much attention. It is the subject of regular international conferences, flourishing societies are devoted to its investigation in Britain and the United States and many books have been published summarizing the progress of our knowledge. This is a reflexion of the considerable advances that have been made both in purely scientific and in clinical investigations. This book, in two volumes, provides a detailed and up-to-date record of much of this work. It includes contributions from thirty-six authors distinguished in different fields. Naturally the style and depth of cover vary widely from chapter to chapter, but the editors have succeeded

admirably in producing for the most part a well-balanced and authoritative survey.

The first volume deals with basic scientific work and is concerned chiefly with the structure and function of the normal gland. The chapters provide critical surveys of recent research. They are almost all clearly written and of a high standard as might be anticipated from the reputation of the contributors. The most outstanding recent advances have been in the biochemical field and rightly these aspects have been given most space. However, other considerations have not been neglected and there are chapters on cytology with considerable attention directed to electron microscopic investigations, on comparative aspects, on the development of the human thyroid and on the function of the thyroid in relation to mammalian reproduction. In addition, there is an enjoyable succinct historical introduction.

The second volume is devoted mainly to diseases of the thyroid and thus has a more immediate appeal to clinicians. It opens with a detailed discussion of the control of thyroid function which is basic to the understanding of many clinical disorders. Accounts follow of the different types of goitre, hypothyroidism, thyrotoxicosis and its complications, cancer, pathology, genetics and immunology of thyroid disease. The standard seems more variable than in the first volume. Thyrotoxicosis is at present the great challenge to clinical investigators in the thyroid field and it is perhaps disappointing that this puzzling disorder is not considered in much greater detail. Its aetiology is still obscure, but much recent knowledge has been gained particularly regarding the occurrence and nature of the long-acting thyroid stimulator found in the blood of many patients suffering from this disease. In a future edition the editors might well consider inviting a contribution on this important work. The treatment of thyrotoxicosis is also not given sufficient attention. More detailed accounts and discussion of drug therapy, partial thyroidectomy and the therapeutic use of iodine-131 would be welcome. In particular, radioactive iodine has been used extensively in the treatment of thyrotoxicosis for the past fifteen years and the time is now opportune for a critical review of its advantages and disadvantages. On the other hand, there are admirable accounts of hypothyroidism in all its aspects.

There can be little doubt that these two volumes provide the most reliable and detailed source of information about the thyroid gland. The first volume in particular, has no rivals in the aspects with which it deals. The second does not quite reach the same high standard in some parts. The price is high for a work that inevitably will soon be out of date in several important respects—indeed this is already now the case at the time of review. Nevertheless these volumes must certainly be available to any scientific worker or clinician interested in the thyroid gland.

A REVISED MONOGRAPH ON WOOL

Wool, Its Chemistry and Physics

By Peter Alexander and Robert F. Hudson. Second edition by Dr. Christopher Earland. Pp. xi + 417. (London: Chapman and Hall, Ltd., 1963.) 75s. net.

THE first edition of *Wool, Its Chemistry and Physics* appeared in 1954 and provided a valuable introduction to, and survey of, the scientific investigation of wool keratin. As a result of the considerable research activity of the past ten years, some of the theories and explanations originally advanced required revision to give an up-to-date account of the subject. This necessary task has been undertaken by Dr. C. Earland, reader in textile industries at the Bradford Institute of Technology, who has been closely associated with the original authors. In his