elucidation of the effect of ultra-violet on nucleic acids is essential. K. C. Smith provides a critical account of our present knowledge of their photochemistry and clearly indicates those areas which stand in need of investigation. The final chapter, by A. M. Chase, is devoted to bioluminescence, and here the biochemistry of the reaction in a varied collection of organisms is described.

Prof. A. C. Giese is to be congratulated on bringing together such an excellent and well-balanced selection of articles. The standard of writing and clarity of exposition are consistently high. The treatment throughout is at an advanced level and the volumes should be of interest to research workers in neighbouring fields, university teachers and senior students. The high price will unfortunately prevent many who might like to possess the volumes from purchasing them, but they should be found on the shelves of most institutional libraries.

EDITH HARRISON

THE THYROID

The Thyroid

Edited by J. Brach Hazard and David E. Smith. (International Academy of Pathology. Monographs in Pathology, No. 5.) Pp. xii + 288. (Baltimore, Md.: The Williams and Wilkins Co., 1964. Distributed in the United Kingdom by E. and S. Livingstone, Ltd., Edinburgh.) 108s.

FEW organs of the human body have been the subject of such detailed and effective investigation during the past 20 years as the thyroid gland. In particular, the use of radioactive isotopes of iodine has greatly facilitated a wide range of biochemical investigation, and has made possible very many measurements of the kinetics of iodine metabolism in the thyroid gland or in different body tissues in health and in disease. The applications of radioiodine are so varied and by now so familiar that it is particularly refreshing to see a work devoted mainly to other aspects of thyroid function and pathology, of which the examination does not depend on kinetic or metabolic tracer studies, but in which progress has been equally outstanding.

For example, the examination of auto-immune processes in thyroid disease has thrown light, not only on the forms of local or general 'thyroiditis' in which they are consistently involved, and on the development of thyroid deficiency without glandular enlargement, but also on auto-immune phenomena generally in human disease. Similarly, studies of the normal pituitary control of thyroid function have failed to explain conditions of thyroid over-activity as pathological exaggerations of the normal mechanism, and the demonstration of an abnormal and long-acting stimulator replacing and over-riding the normal hormonal control is one which may have wider implications than in thyroid disease alone.

The International Academy of Pathology's monograph is based on communications presented by a number of authors at a meeting on "The Pathologic Physiology and Anatomy of the Thyroid" held in Cincinnati in 1963. The review is thus a selective one, and deals with a number of important and developing subjects, with good co-ordination of treatment and little unnecessary overlap between the work of different contributors. An excellent group of four papers deals with aspects of thyroiditis: the histological patterns associated with different clinical forms of the condition, by Woolner; the experimental production of comparable lesions, by Witebsky; the techniques of antibody identification, by Beutner; and the types of immune phenomena occurring in thyroid disease by Senhauser, based on collaborative work with Roitt and Doniach. Beierwaltes gives a useful survey of genetic factors in thyroid abnormalities, and Brown Dobyns has discussed the pituitary and other stimulator processes involved in thyroid function and disease, including the

still somewhat nebulous "exophthalmos producing factor". Prominence of the eyes can be due to so many different causes in different circumstances that it remains difficult to be sure of the relevance to the human condition of biological assay methods. Revealing data are given by Klinck on the distribution of normal thyroid tissue outside the anatomical gland in man, and the same subject is referred to by Gorbman in his chapter on "Comparative Pathology", which describes also the response of the gland to radiation—a subject dealt with in detail by Vickery, who discusses autoradiographic methods and artefacts with authority.

Although the papers have been developed and extended since their oral presentation, the date of the original meeting is still reflected in the references cited, of which only about 10 per cent are more recent than 1961, with only 3 per cent since 1962. Reviews do not therefore refer to recent findings such as the curious associations of amyloid-producing medullary carcinomata with pheochromocytoma, neuroma and a familial incidence of similar conditions, or the newer work on the chemistry of the thyroid-stimulating hormone and the long-acting stimulator, and the inter-relations between the circulating levels of these substances in thyroid disease.

The format and clarity of publication and illustration are excellent, with the one unfortunate exception that the very clear maps of the geographical distribution of goitre prepared by Kelly and Snedden and published in the World Health Organization monograph on *Endemic Goitre*, with goitre belts clearly shown by red hatching on grey indications of mountain areas, have been reproduced in monochrome in an otherwise admirable chapter on "Geographic Pathology of Thyroid Disease" by Scrimshaw, so that it is no longer possible to distinguish the limits or even the presence of goitre areas hatched in black on the black of mountainous regions.

The work remains an important and authoritative review of many normal and pathological aspects of thyroid function, and of techniques required in their study, and will be of value and stimulus to many whose interests are in the control of organ function and the genesis of disease.

E. ERIC POCHIN

THE EXPANDING EYE

Development of the Eye

By G. V. Lopashov and O. G. Stroevea. Translated from the Russian. Pp. 177. (Jerusalem: Israel Program for Scientific Translations; London: Oldbourne Press, 1964.) 72s.

IF there is a flaw in the last movement of the "Fifth Symphony", it is that Beethoven gave it too many endings: this book has too many beginnings. But once it reaches page 44 it cracks ahead, and it would be a grave error if one were to imagine that this is Mann's or Barber's book on ocular embryology brought up to date. In fact, the authors disclaim to have written an ordinary textbook although their book is both this and a monograph.

As a text-book it forms an approximate introduction to the subject. The student who uses it must pray that he will not be asked a question on the layers of His and Chiewitz, nor on the development of the vitreous (other students may be pardoned for whispering prayers regarding the latter question!). As a monograph it offers a newly refreshing, if mechanistic, outlook on the development of the eye. Organizers have gone out of fashion, although "inducing agents" are still with it: there is no index to help you remember where exactly they are defined. But the basic idea underlying Lopashov and Stroevea's view of the expanding ocular universe is that a shove here, a little pressure there will do the trick. What makes the tissues shove, what press? Ah—that would be telling. . . . The approach enables one to understand why the embry-