balance a higher power cost against lower capital outlay. The *Atlas*, which quotes power consumptions but makes no reference to initial plant cost, does not help him in this respect.

Established experts in the design of air separation plants will find the Russian designs of considerable interest, despite the absence of information as to the reasons for the selection of particular cycles, techniques or items of equipment. They may well conclude that there is little to choose between the states of knowledge in this field in Russia and in other countries. N. BOOTH

Luminescence

l'Électron et la Lumière Matière et Photoluminescence. Par G. Monod-Herzen. Pp. viii + 278. (Paris: Dunod, 1965.) 39 francs.

THIS volume is divided into two distinct sections. The first deals with the relationship between electromagnetic radiation and the electron, and the second with the general phenomena of photo-luminescence.

In the first section, a chapter is devoted to a description of the electron and its properties while at rest, while moving with linear velocity and while being accelerated.

A second chapter deals with the emission of radiation as a result of electron impact on matter, distinguishing between phenomena resulting from primary and secondary processes. Here weight is given to the emission of X-radiations. This naturally leads on to a discussion of the behaviour of electrons in atoms and a brief survey of atomic spectroscopy. This section is brought to a close by a short, but comprehensive, reminder of the main features of molecular spectroscopy.

The second section of the book, which is the larger one, commences with a chapter which explains simply the processes which lead to luminescence and phosphorescence. A brief mention is made of excitation leading to ionization and incandescence.

The remainder of this section deals with luminescence phenomena exhibited by atoms and by molecules in the gas, liquid, glassy and crystalline phases. There is some mention of experimental methods for studying these phenomena but the principal emphasis is on the descriptive understanding of the underlying mechanisms. There is a particularly good account of luminescence in the crystalline phase, and the effect of impurities and imperfections.

This volume can be recommended as a good readable work, splendidly illustrated with well-chosen diagrams and with the necessary mathematical treatments, which have been kept to a minimum. There are very few references so that the book, while a very good introduction to the field, would not be appropriate to the advanced reader who wished to follow up specific points in more detail.

J. C. ROBB

Vision in Vertebrates

By Katharine Tansley. Pp. vii + 132 + 16 plates. (London: Science Paperbacks and Chapman and Hall, Ltd., 1965.) 12*s*. 6*d*. net.

SO many books on vision have been published recently that the need for a further one may be questioned. This small book on *Vision in Vertebrates* fills a gap left by other authors who have concentrated on the vision of the human being, although paradoxically much of our knowledge about the physiology of human vision has been derived from investigations on other vertebrates.

Many interesting contrasts and comparisons of anatomical features between a wide variety of vertebrate eyes are given, along with a full list of sources. Sufficient description of the function of each part of the eye is given to enable the non-specialized reader to understand the possible significances of these anatomical differences. Some excellent photomicrographs are included to illustrate the histological structure, although detailed labelling of the structures would help the reader unfamiliar with microscopic sections.

In a work of this nature it is almost inevitable that teleological arguments will be used to reason from structural differences to function. While this approach does help to add interest and coherence to the assembly of species differences, it may lead in many cases to misleading and improbable conclusions. For example, it is a well-established principle of physical optics that the maximum resolving power of an optical system is determined only by the absolute size of the pupil and not by the focal length of the eye.

This lucid book provides a useful and stimulating introduction to the startling variations of adaptation which the vertebrate eye has undergone in order to match each animal to its visual environment. F. W. CAMPBELL

Recent Progress in Hormone Research

Edited by Gregory Pincus. (Proceedings of the 1964 Laurentian Hormone Conference.) Pp. viii + 679. (New York: Academic Press, Inc.; London: Academic Press, Inc. (London), Ltd., 1965.) 192*s*.

THIS is the most recent volume of an annual publication which has come to play an important part in the literature of endocrinology. The value of the series lies in fulfilment of two major functions. First, it contains texts of the papers delivered at the Laurentian Hormone Conference by international authorities invited to review recent progress and present-day thinking in their particular fields. Secondly, discussions at the conference are edited and presented in detail, complete with references. These often bring new ideas introduced in the papers into interesting perspective, and sometimes include explanations of difficulties concerning those ideas which colleagues have found puzzling. In some cases such presentation may one day prove invaluable to the historian.

The topics on which papers were invited at this conference, held in September 1964, were: (1) recent advances in thyroid chemistry and physiology; (2) hormones in normal and pathological physiology; (3) pituitary hormones; (4) steroid sex hormones; (5) comparative endocrinology; and (6) neurohumors.

The standard set by papers at these conferences is high, and it is somewhat invidious to select any for special mention; but among those in this volume are several which were found particularly memorable, either on account of exceptional lucidity of presentation or because of the thought-stimulating nature of their subject-matter. W. S. Peart reviews the functions of renin and angiotensin, and although a later review by this author has since appeared, this paper contains material not duplicated elsewhere and was followed by a valuable discussion of the interaction of the renal hormone system with aldosterone secretion and sodium balance in man. C. Gemzell gives an account of his experience with the use of human gonadotrophins to induce ovulation, and K. J. Ryan and O. W. Smith discuss the biogenesis of steroid hormones in the human ovary. J. J. Christian, J. A. Lloyd and D. E. Davis review experimental work, and observations on animals in the wild, concerning the role of endocrines in the self-regulation of mammalian populations. This has fascinating implications in the field of human social history and seems certain to provoke a great deal of further work. J. Axelrod reviews the metabolism, storage and release of catecholamines, and finally E. W. Sutherland, I. Øye and R. W. Butcher discuss the role of cyclic adenosine monophosphate as a secondary hormone 'messenger' in the action of adrenaline, suggesting that it may also be involved in the action of other hormones.

These and the many other worth-while papers included (a total of fourteen) make the volume, which is handsomely produced, worth its price to almost any biological library. It is a pity that it will probably prove too expensive for most private buyers. J. A. PARSONS