

Broad visual scope

The Vertebrate Retina: Principles of Structure and Function. (A Series of Books in Biology.) By R. W. Rodieck. Pp. x+1044. (W. H. Freeman: San Francisco, 1973.) \$39.50.

ACCORDING to the author this book is an attempt to explain in a simple way, what is known about the organisation and function of the vertebrate retina. That is a formidable task, to which the author devotes over 900 concisely written pages. The coverage is comprehensive, ranging from basic concepts in light and photochemistry, through visual pigments, anatomy and ultrastructure, development, electrophysiology, and behaviour. The result is a real compendium: information and an entry into the literature can be found for topics as diverse as the retinal structure of deep-sea fishes and the characteristics of human colour vision.

It is very unusual to find a book with this breath of cover written by a single individual. The advantages of having only one author are displayed clearly: the plan is coherent, the style of writing is uniform, and repetitions are avoided. There are, of course, also disadvantages. In particular, the coverage is necessarily uneven since it is difficult or impossible for any one individual to be expert in all the fields that are dealt with. In general, I found the coverage of those topics I know little about impressive and very interesting, whereas in those topics with which I am more familiar the treatment seemed rather oversimplified. The treatment of behavioural work with infraprimates seems particularly inadequate. Colour vision in fishes, for example, is dealt with in six lines, including an endorsement of Walls' statement that the best that can be said is that no fish is known not to have colour vision. In fact, there is a great deal of data on that topic, including determinations of wavelength discrimination and spectral saturation functions, and demonstrations of trichromacy, colour mixture, colour contrast, and constancy. Such data are clearly important in view of the great amount of electrophysiological work in that field. It is possible to single out other topics which receive similarly incomplete treatment, but that would be invidious since the general impression is not of the gaps, but of the striking completeness of the description the book gives of vision at the retinal level.

The book is written in a conservative style, presenting a balanced view of the topics and problems raised. Such speculation as occurs is restrained, and is closely attached to experimental data. The book is therefore probably more suited to readers who already have a

reasonable knowledge of vision than it is to, for example, beginning students. The book is without doubt a valuable addition to the literature, and probably represents the most comprehensive review of the whole field that is available at present. References are included up until 1972, so that some of the material is a little out of date, but that is inevitable in a book devoted to a rapidly developing field.

One unusual feature is the complete translation of Ramon y Cajal's monograph on the retina, originally published in 1893, which is included as an appendix. This is, in fact, the second English translation of this work to appear recently, and we should be grateful that after all these years this fundamental study is becoming readily available to English-speaking readers.

W. R. A. Muntz

Cold avian studies

Bird Migrations: Ecological and Physiological Factors. Edited by B. E. Bykhovskii. Pp. v+298. (Halsted, a division of Wiley: New York and Chichester. Israel Program for Scientific Translations: Jerusalem, April 1974.) £12.00.

THIS book is not, as may be expected, a general textbook, but rather a collection of five papers linked together because the work on which they were based was carried out at Rybachii (formerly Rossitten) in the south-eastern Baltic. Paevskii presents detailed lists of ringing recoveries and species maps, which take up two fifths of the book.

Blyumental considers the development of the autumn migratory state based on physiological examinations of 80,000 birds of 15 species. Lyuleeva discusses the energy requirements of swallows in flight during migration. Two short papers by Dol'nik and Gavrilov are on the calorific equivalent of body weight variations in chaffinches and on energy metabolism during flight in some passerines.

It is certainly very useful for those lacking access to the Soviet literature to have these translations. The only pity is that they have to be so expensive. The hard-back format seems to be an unnecessary luxury.

Many western researchers are unaware of the mass of work on bird migration work that has been going on in the Soviet Union. This collection of papers will open their eyes. An even wider deployment of Soviet workers and funds in this general field is at present under way.

One cannot but have reservations about the methods of Lyuleeva. Apart from allowing birds to starve and die in refrigerators, she devised an experiment of profound nastiness. In order to estimate the amount of energy expended in flight, she caught 30 swallows on their nests, weighed them and released them up to 70 km away. To prevent them taking sustenance on the return journey she sewed their beaks shut. She recaptured and reweighed only 17. Any scientist with a spark of decency will be revolted by such unthinking, useless brutality.

G. V. T. Matthews



Chinese bronze sculpture from the middle Chou period (circa 900-600 BC). The patterns represent hair whorls. From *The Husbandry and Health of the Domestic Buffalo*. Edited by W. Ross Cockrill. Pp. xiv+993. (Her Majesty's Stationery Office: London, 1974.) £8.00; £20.00.