

the fundamental aspects of developmental biology. There is a danger, of course, that the beginning student (who is admirably catered for with two introductory review chapters) may not realise that what is being presented is a particular point of view. The preface makes this quite clear but I would have liked to see, perhaps in the bibliography which is given at the end of each chapter, some reference to opposing viewpoints to counter the somewhat dogmatic tone of parts of the text. I doubt, for example, if all would agree that "the only reasonable interpretation" of Dr Mintz's experiments on allophenic mice is the one that she has suggested; and the treatment of morphogenetic fields is curiously old fashioned. These are, however, minor criticisms of a book which can be recommended to both undergraduate and postgraduate students and which will be invaluable as a source book of provocative and pungent statements for those who organise seminars and set examination papers.

J. M. ASHWORTH

Bird Biology

Avian Biology. Edited by Donald S. Farner and James R. King. Taxonomic Editor: Kenneth C. Parkes. Vol. 2. Pp. xxiii+612. (Academic: New York and London, December 1972.) \$32.

SOME ten years ago, A. J. Marshall edited two volumes on the biology and physiology of birds. This volume is the second in a series of three which provide an updated and much needed replacement for Marshall's work. There are new editors, almost all new authors, a different organisation, and more complete coverage.

The volume at hand (volume 2) has three chapters dealing with feathers; the remaining six deal with specific physiological systems such as respiration and circulation. This selection can best be evaluated in the context of the complete series. Volume 1 (already published) has four chapters of more or less classical ornithology and seven oriented towards ecology. Volume 3 (to be published) will deal with reproduction and endocrine systems (four chapters), and with senses and behaviour (another four chapters).

Does this cover the area of avian biology? One could instead ask, what are the most characteristic aspects of bird biology? It seems that these are (1) birds are warm blooded and have feathers, (2) they fly and migrate over long distances, and (3) they have a characteristic mode of reproduction. Some of these subjects are well covered; feathers have three chapters of volume 2, and reproduction will come in volume 3. But there are no individual chapters on bird flight, on migration,

or on thermoregulation. I find a lack of balance here, for endocrinology will have three chapters, and substantial sections on endocrinological control will appear in two more.

Volume 2 contains nine chapters which, as can be expected, are of uneven quality. Most presentations are good and a few are outstanding. Some could be criticised. Chapter 2 ("Patterns of Molting") is from the beginning steeped in terminology which is poorly or not at all defined, and is difficult to follow for a non-specialist. Chapter 7 ("Nutrition") is, as the author states, restricted mainly to the domestic chicken. True enough, most nutritional studies on birds are on chickens, but nevertheless I see no need for the extensive discussions of animal husbandry and the many tables on the nutritional value of commercial feed ingredients. A stronger editorial hand would have been helpful for this chapter, and for the following one ("Intermediary Metabolism"), which seems to be well organised and contains much information but suffers from lack of perspective. With these items to criticise, we are left with a volume that contains mostly good and excellent papers.

There are separate indices for author names, for bird names and for subjects. The publisher deserves praise for making these very helpful tools available to the worker who uses the volumes for constant reference.

KNUT SCHMIDT-NIELSEN

Elementary Particles

Particle Physics: An Introduction. By M. Leon. Pp. xii+268. (Academic: New York and London, March 1973.) \$14.50.

PARTICLE physics is a very difficult subject to teach at introductory level. It has a vast glossary of jargon and there is a large set of intriguing and profound data. But the theoretical framework, which will one day unify the subject, is still lying about as a kit of parts. The kit may be almost complete, but no one has been able to put it together.

This book treats the main theoretical components in an admirably concise way. There are reasonably thorough treatments of scattering theory and quantum-field theory, with brief discussions of quantum electrodynamics, hadron dynamics and weak interactions. Particle properties are presented, with emphasis on symmetries, including SU(3). Such recent developments as dual models, or unified weak and electromagnetic theories, are quite rightly omitted.

Although the preface claims that this text is useful for "seniors and graduate students", the material is too advanced for most undergraduates. This is

probably inevitable in a book which covers so much of the theoretical kit. A sensible starting point for undergraduates is the much more experimental book of I. S. Hughes (Penguin library of physical sciences). For first-year postgraduates, however, this book promises to be extremely useful.

DAVID J. MILLER

Neonatal Anatomy

Functional Anatomy of the Newborn. By Edmund S. Crelin. Pp. xii+87. (Yale University: New Haven and London, February 1973.) £3.50 cloth; £1.75 paper.

THIS somewhat dry and colourless book is an attempt by an anatomist to provide "a concise guide to be used by all personnel involved in one form or another with the newborn infant, including students". The author is a consultant to the Newborn Special Care Unit at Yale and assists in the evaluation of newborn infants with birth defects.

This book has a mere seventy-one pages of text and only three illustrations. These are line drawings by the author, one illustrating all the ossified parts of the skeleton in the full term newborn infant, the second a sort of see-through, half frontal, topographic anatomy of the full-term newborn infant, and the third a mid-sagittal section.

There is no subdivision into chapters or sections, but sequential descriptions of various tissues or organs. The order is based on that of the larger atlas produced by the author a few years ago.

There are some potentially useful statistics in the text, but it is difficult to see of what practical value much of the information can be to the practising paediatrician, pathologist or obstetrician. Thus, the opening section on body weight, size and proportions states that "the average full-term infant (8½ months) weighs about 3,300 gm (7 lb) and the average crown-heel length is about 50 cm (20 inches)", whereas "a premature newborn infant (7 months) weighing only 1,200 gm (3 lb) would have a crown-heel length of about 38 cm (16 inches)". No information is given for any other gestational age. How much more useful would have been a table or graph showing the increase in weight and length with gestation.

Throughout the book there is very little reference to the functional anatomy at various stages of gestation.

Occasional sections do have a few useful details, with some of the implied clinical applications. Thus the development of the lung and its structure is done in some detail and includes comment on surfactant; and the cardiovascular system is also covered in some