existence of unknown quantities of redundant information. However, as a starting point, these estimates should provide a useful basis for further thought.

Although many controversial points are raised and some debatable assumptions have had to be made, the discussion is well balanced; where information (in the ordinary sense) is lacking, due allowance is made. By pointing out, in the appropriate places, that our knowledge is fragmentary, for example, little is known about the egg cortex, subjects for further research are suggested.

When refuting Elsasser's statement (p. 215) "that the great majority of germ cells produced by a healthy organism are viable", the author is possibly equally open to criticism in concluding "that in most animals a completely normal germ cell is rather an exception than the rule". One further minor criticism concerns the misleading impression given on p. 30 where it is stated that in mammals the egg is extruded into the abdominal cavity. Mention of the oviduct would have eliminated the ambiguity. To make these two points is in no way meant to detract from the general excellence of the discussion.

The book is amply illustrated with 44 text-figures and 4 plates, including 5 electron micrographs, which show the value of electron microscopy in the analysis of the fine structure of the egg. There is a good bibliography, containing nearly 400 references. Author, taxonomic and subject indexes complete the work.

Written in a clear style, this informative and stimulating book will appeal especially to those interested in embryology, genetics and theoretical biology; it is confidently recommended.

C. E. Adams

BIRDS OF THE AFRICAN CONTINENT

Birds of the Southern Third of Africa

By C. W. Mackworth-Praed and Captain C. H. B. Grant. (African Handbook of Birds, Series 2, Vol. 1.) Pp. xxiv + 688 + 38 plates. (London: Longmans Green and Co., Ltd., 1962.) 50*s*. net.

THE two volumes (now in their second edition) of the first series of the *African Handbook* covered eastern and north-eastern Africa, from the Sahara to the Zambesi; the second series covers the continent south of the Congo–Zambesi divide, and on the western side includes most of Angola. This first volume deals with all the non-passerine birds and the first four passerine families. Captain Grant died in 1958; but the greater part of the work had been completed by then.

Their basic taxonomic studies had been published in detail by the authors in scientific journals over many years; the essential facts are now presented in didactic and summary form. Distinguishing characters and distribution are particularly stressed. The information on habits is often extremely brief, as in many instances little is available; the authors' avowed intention is to provide a sound basis of identification for the further field observations for which there remains so much scope. For that purpose this volume, with its companion to follow, should prove most useful and convenient. In addition to coloured plates by various artists, and some photographs, marginal drawings and little distribution maps are again a welcome feature.

In general, we have a picture of the bird life of a large area, partly tropical and largely warm temperate in climate, presenting a considerable range of environments. There are mountains rising to 6,000 ft. or more, many important rivers, and a long coastline; there is not much dense forest and only one 'true' desert; woodland of different kinds, grassland, and semi-desert make up the greater part. Some habitats have been altered or destroyed by man, deforestation often being followed by erosion; elsewhere shade and water have been created where they did not exist before. This is a 'wintering' ground (in the southern summer) for many migrants from Europe and Asia; it is inhabited during part of the year by species that spend the other part in equatorial Africa; and it is the permanent home of many that are either sedentary or migrate only within the area. The breadth of the representation of different groups may be judged from the fact that the first two species to come under notice are the ostrich and the only native penguin.

Landsborough Thomson

ASPECTS OF SOLID-STATE PHYSICS

Solid State Physics

Advances in Research and Applications, Vol. 11. Edited by Frederick Seitz and David Turnbull. Pp. xvi + 438. (New York: Academic Press, Inc.; London: Academic Press, Inc. (London), Ltd., 1960.) 12.50 dollars; 89*s*. 6*d*.

A FURTHER volume of *Solid State Physics* provides us with another five authoritative review articles on various aspects of the subject: two on specially important materials (grey tin and cadmium sulphide) and three on techniques which have wide application (high pressures, piezo-resistance effects in semiconductors and cyclotron resonance).

The article on the semiconducting properties of grey tin by G. A. Busch and R. Kern is like an ingenious puzzle which must be both set and solved by the players. The game is to assign the characteristic parameters—energy gap, effective mass, etc.—so as to fit best the experimental results. What makes the game especially piquant here is the paucity of the experimental results. R. H. Bube's essay on ionization energies associated with imperfections in CdS-type materials displays (in contrast) an indigestible feast of experimental results.

Perhaps the most appealing article of the collection is C. A. Swenson's account of high-pressure physics since 1945. Like low-temperature physics, high-pressure physics is a dying subject—not indeed because it is no longer being practised, but because it is being so widely practised that the element of 'craft' has passed over to technology. This article may thus prove to be a memorable 'obituary' which will be used and enjoyed for many years.

An instructive lesson on the power of resonance techniques can be obtained by comparing the article by B. Lax and J. G. Mavroides on cyclotron resonance with that of R. W. Keyes on piezo-resistance in semiconductors. The latter, 'classical' technique yields at the best vague information about band structure. The former, however, has given an astonishing amount of new knowledge in a short space of time: the authors have no difficulty in showing that it is the most important and promising technique available.

This volume of *Solid State Physics* includes a cumulative subject-index of Volumes 1–10.

R. O. Davies