

unused they may well have contributed to the success of the Government's economic policy.

Prof. Walker's publishers state that he has written this work with the object of interesting the wider public; many professional economists also will find most useful and enlightening its descriptions of the mechanism of controls and its assessment of their effectiveness.

NORMAN CUTHBERT

## THE RAT

### Anatomy of the Rat

By Eunice Chace Greene. (Originally published in 1935 as Volume 27 (New Series) of the Transactions of the American Philosophical Society.) Pp. xi+370 (339 figures). (New York and London: Hafner Publishing Company, 1955.) 25 dollars; £9.

### The Genesis of the Rat Skeleton

A Laboratory Atlas. By Donald G. Walker and Zolton T. Wirtschafter. Pp. vi+59 (53 plates). (Springfield, Ill.: Charles C. Thomas; Oxford: Blackwell Scientific Publications, 1957.) 57s. 6d.

THE "Anatomy of the Rat", by Mrs. E. C. Greene, is essentially an atlas and a text-book in quarto form. The text and illustrations occupy about the same space. When this book appeared in 1935 it provided the most complete account of the anatomy of the rat and was a most valuable supplement to the second edition (1924) of H. H. Donaldson's "The Rat". The latter was a mine of quantitative information, presented in tabular and graphic form, for the weights and dimensions of various parts of the body from birth to maturity. In fact, Donaldson presented more pertinent and accurate data on the rat than was available elsewhere for man. His bibliography extended to about 2,000 references. Since then the number of references has more than doubled, for the Wistar rat was adopted as the favourite child of the experimental psychologists. The rat, particularly the Wistar and the Evans-Long strains, knew on which side his bread was buttered.

"Anatomy of the Rat", long out of print, has been reprinted and is now priced at 25 dollars as compared with 5 dollars in 1935. The minor blemishes of the first edition persist; the usual failure to appreciate the genitive form of Latin and Greek words is as before. The removal of these minor blemishes and a few errors of fact may be looked for when a new edition of the book appears. The only weakness in this best of books is the lack of detailed information on the brain, which has assumed great importance as a result of the work of experimental neurologists such as Lashley in Chicago.

"The Genesis of the Rat Skeleton", by Walker and Wirtschafter, of the University of Oregon Medical School, is an attempt to depict the orderly progression of appearance of centres of ossification by radiographs and photographs of alizarin-stained specimens. Little has been added to the data presented by Donaldson in his second edition of "The Rat" (1924), by R. M. Strong (1925) and by A. B. Dawson (1925-34).

This atlas measures 18 in.  $\times$  12½ in. and presents an elegant format and Hollywood calligraphy which is tiring to the eyes, especially for such new words as "Corocoid" and "sternabræ". The radiographs

and photographs are not satisfying. Radiographs will not stand photographic enlargement to more than three diameters, as the appearance of the emulsion grain obscures the details of the bony structure.

The portrayal and labelling of the centres of ossification in the skull are inadequate. A prior knowledge of the chondrocranium is essential in order to see how the bony centres arrange themselves in relation to the issuing cranial nerves which maintain a foramen between two or three bony anlage in the skull base. Likewise, the membrane bones appear precociously as two-dimensional unilaminar sheets to guarantee the two-dimensional distribution of the overlying nerves. The absence of any anatomical text is a serious objection to this atlas, for an atlas calls for a system.

H. A. HARRIS

## THE HAWFINCH

### The Hawfinch

By Guy Mountfort. (The New Naturalist.) Pp. xii+176+8 plates. (London: William Collins, Sons and Co., Ltd., 1957.) 18s. net.

VERY much can be learnt by concentrating on a single species of bird and studying every aspect of its life, and in Britain there have recently been several admirable monographs giving the results of such work; of these, the present volume is a fine example. Although an enterprising all-round ornithologist with much else to his credit, the author has for long had a particular enthusiasm for the hawfinch. This has been the more repaying in that the species is one of the least familiar of our not uncommon birds—partly because of its wary and elusive habits, and partly because of its very local and rather erratic distribution. Many years of close observation have now enabled Mountfort to present a fascinating picture.

The hawfinch is notable for its large bill, allied with a massive skull and powerful jaw muscles. This arrangement is related to the habit of cracking cherry stones and olive kernels, a feat which the author's collaborators have shown to involve crushing loads ranging from 60 to 159 lb.—and this in a bird weighing a couple of ounces! It is also a strong flier, capable of an almost vertical take-off and of bursts of speed approaching 40 m.p.h.; the wing area is small relatively to weight, and the beats are rapid.

The species succeeds in combining richly coloured plumage, in both sexes, with a perfected habit of stealthy self-effacement. Yet in its own winter flocks and towards other species it is notably aggressive: one of Eric Hosking's photographs, which are among the illustrations, shows a bird leaping forward with snapping bill to put a much larger mistle-thrush to flight. There is also an elaborate courtship ritual, comprising a number of characteristic attitudes—fluffing of throat feathers, a 'penguin' walk, a deep bow of appeasement, an approach with dragging wing-tips, and a bill-touching ceremony. Also described in detail are the various phases of the nesting season, the song and call notes, the diet and feeding habits, together with distribution and migratory movements in Britain and elsewhere. An appendix by John Barlee deals with the flight.

It is unfortunate that, owing to publication costs, a bibliography of 650 titles could only be deposited.

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