

friction may have some effect on the analysis of sound waves that the model described on page 104 differs from that of Lux and others. It may be true that viscosity has nothing to do with resonance, but there is a mechanism due to liquid friction by which analysis can be produced; this process may be supplementary to the factors discussed by Drs. Wilkinson and Gray.

The authors say nothing about the variations in area that occur along the scalæ of the cochlea, and these variations become significant in relation to viscosity effects.

This book should be read by all those interested in the problem of how sounds are analysed, and it gives a concise and adequate description of the various facts and hypotheses concerned in the action of the cochlea.

H. E. ROAF.

Diving in Birds.

The Bird as a Diver: a Contribution to the Natural History of Diving Birds. By Dr. John M. Dewar. Pp. xii+173. (London: H. F. and G. Witherby, 1924.) 10s. 6d. net.

DR. DEWAR has for many years been investigating in a quantitative way the problem of diving in birds, and more particularly the relation between the length of time spent under water and the depth of water. This book is a statement of his evidence and his conclusions.

The most important of these may be briefly summarised. The diving habit has been acquired independently several times over in birds. In spite of this, in five of the six families of birds studied by Dewar, the relation between time and depth is the same. Roughly speaking, it is 20 seconds for the first fathom of water, 10 seconds for each subsequent fathom. As a matter of fact, the data are more accurately represented by an S-shaped curve, with time as the abscissa. This, of course, is the curve of an autocatalytic reaction, and our author believes that the depth-time relation is determined by some autocatalytic reaction in the body. It is, however, equally legitimate (and more likely!) to suppose that there is some initial delay connected with "getting under way" subaqueously, and that below a certain depth each additional foot becomes more and more difficult. This would give a curve which, with the evidence here presented, it would be impossible to distinguish from the regular S-shaped curve of autocatalysis.

The coot alone, of all the birds studied (which included diving ducks, grebes, cormorants, divers, and auks), does not eat its food below water; it therefore has no "bottom time." The rough rule for the coot is 10 seconds for each fathom, including the first, but this species also shows the S-shaped curve.

From a study of the ratio between length of dive and length of pause, rate of increase of pause per fathom of depth, and longest dive, it was possible to grade the diving birds for diving ability. The coot came out lowest, the auk highest, with the others ascending in the order given in the preceding paragraph.

Numerous interesting points are brought out concerning under-water speed, greatest depth of dive (which is probably much less than is generally believed), etc.; but the point which Dewar rightly emphasises as the most interesting is the fact that not merely a similar but an identical time-depth relation has been independently evolved in at least five separate families of birds under the influence of environmental similarity.

Although many will feel that a rather small single problem is here treated at somewhat excessive length, the book is certainly a welcome contribution to a scientific natural history, and shows what useful biological work can be done by the field naturalist who is possessed of the scientific spirit and not of the mere collector's instinct.

J. S. H.

Regional Survey of Cambridge.

The Archæology of the Cambridge Region: a Topographical Study of the Bronze, Early Iron, Roman and Anglo-Saxon Ages, with an Introductory Note on the Neolithic Age. By Dr. Cyril Fox. Pp. xxv+360+37 plates+6 maps. (Cambridge: At the University Press, 1923.) 31s. 6d. net.

MAPS are the mainstay of this attractive volume on the antiquities dating from the later Stone Age to the Domesday Survey in a selected area, having Cambridge for a centre. In a pocket at the end are five tinted reproductions of the 1 in. Ordnance Survey map of nearly 2000 square miles, showing the distribution of population and the natural features by which that was determined in the various periods; there are also sketch-maps in the text showing the relation of this square to eastern England. These limits are chosen not because they constitute a geographical unit, or area isolated by natural barriers, but because they include most of the localities which have furnished the Archæological Museum of the University with material here rendered accessible to students in more than the ordinary sense. The most interesting specimens of the successive periods treated are represented on 37 photographic plates, which have a home-made appearance but are generally adequate, and bring to light a good deal of new material. The text goes further, and describes many finds preserved elsewhere, but all part of the local story. Here, above all, the author's industry and method are revealed and merit general recognition, as the way is now indicated for a