

REVIEWS

THE NUMBERS OF MAN AND ANIMALS. J. B. Cragg and N. W. Pirie, F.R.S. 1955. Edinburgh: Oliver and Boyd. Pp. i-vii, 1-152. 15s.

This book is a record of the Symposium held on 24th and 25th September 1954, by the Institute of Biology. Several aspects of the control and biological importance of population size are considered. Particular emphasis is given to the human population and to the dangers of its present rate of increase.

The book is a short reference work rather than a treatise on populations. Although the speakers were well chosen, there is no one theme running through the work. Instead there are a number of separate short stories with no very close connection between them. One point of agreement seems to be that the size of the human population must be controlled in the near future. Little is known concerning the factors which regulate the numbers of animals (and presumably plants). For Man, the limiting factors suggested were famine, disease and war. However, Chitty in his contribution indicated that in some animals there may be a decrease in fertility and length of life arising from physiological derangements in overcrowded conditions. Unfortunately, except for Penroses's paper on Man, the bearing of genetics on population dynamics is relegated to the discussions. The book is well edited, the most serious criticism being that many papers lack useful summaries.

The book contains no new or startling conclusions. It is, however, a convenient survey of some aspects of population dynamics and should be read and consulted by those concerned with the ecology, and the welfare and future of mankind.

P. M. SHEPPARD.

TRAITÉ DE GÉNÉTIQUE. Tome 1. Le mécanisme de l'hérédité. Génétique formelle. Tome 2. La génétique des populations. By Ph. L'Héritier. Presses Universitaires de France. 1954. Pp. 518. 2.400 fr.

For the reviewer L'Héritier's two volumes have the usual easy charm of French books. The first volume is a workmanlike survey of modern genetical concepts as relating to the higher plants and animals. After a short historical introduction (by a lapse of the pen Johannsen acquires Swedish nationality) an outline is given of Mendel's Laws in their modern form. The quantitative aspects of linkage are treated much better than in most textbooks. Two chapters are then devoted to chromosome mechanics, aberrations and variations of chromosome number, leading to a discussion of hybridity, and chromosomal taxonomy. The last chapter deals with mutations, mutagenic agents and the physical nature of the gene.

The second volume is a fairly elementary introduction to the mathematical aspects of population genetics in the sense of the theory of natural selection. The inbreeding coefficient is introduced, but we are also given the matrix method of determining the speed of approach to homozygosity in a system of regular inbreeding. The effects of selection, mutation, and assortative mating are derived. A good deal of the discussion is based on Wright's equation $\Delta p = pqdw/2\bar{w}dp$. However, L'Héritier gives an original discussion of the case of selection on a totally X-linked gene. Also he constructs an example (which seems to be inspired by the fate of the dinosaurs) to show how, *ceteris paribus*, natural selection could carry a species to extinction. The process requires a gene which gives superiority in

mortal combat but diminishes fertility. Some experimental researches on natural selection are noted but not described in detail. Genetic drift is discussed at some length. Fisher's proof of the ultimate extinction of a gene of neutral survival value is sketched and his result for the chance of survival in a finite population of an advantageous gene is given without developing the theory of gene diffusion. Otherwise Sewall Wright's methods are used. The book ends with a brief exposition of the Neo-Darwinian view of the origin of species and races. Taken in all this book is distinctly easier to follow than Malecot's, being in this respect similar to C. C. Li's though restricted to a smaller range of mathematical topics. It should provide French readers with a quite stimulating introduction to evolutionary theory and the mathematical challenge which that theory presents.

A. R. G. OWEN.

THE MECHANISM OF EVOLUTION. By W. H. Dowdeswell. Heinemann. 1955. Pp. ix+99. 6s.

The Scholarship Series aims to offer "lengthy essays on selected topics not adequately treated in textbooks" and which are still rapidly advancing. Mr Dowdeswell's book has the distinction which we would expect from its author and can be read with pleasure and profit by an audience much senior to that for which it is primarily intended. The writing is clear, the examples fascinating and the development of the argument is skilfully carried through.

After a brief account of Lamarck's speculations, he sketches Darwin's views on the efficacy of natural selection operating on variation and shows how Darwin was led to postulate a high rate of induced mutation in order to extricate himself from the difficulty into which he was led by a belief in blending inheritance. Dowdeswell then defines the programme which Neo-Darwinism sets itself, as consisting in the determination of the sources of variation, and a quantitative approach to the study of natural selection as happening now. Assuming Mendel's Laws he reviews genetic variation in many aspects and leads to the conclusion that normally we have opportunity to observe only micro-evolutionary change. He next considers natural selection and adaptation, with examples from modern field work in many different species.

Mr Dowdeswell is concerned also with showing how such field studies can be carried out with profit to evolutionary science by schools or other groups of natural historians. He stresses the importance of design if the data are to be precisely evaluated. Data on dispersal, survival rates and population size are particularly important, and he sketches various methods elaborated by the distinguished group of investigators to which he belongs.

A. R. G. OWEN.

DAS LEBEN DER GEWÄCHSE, EIN LEHRBUCH DER BOTANIK. Band I : Die Pflanze als Individuum. Fr. Oehlkers. Berlin : Springer. 1956. Pp. 463, 523 text figures. DM. 39.60.

This first volume considers the plant as an individual as opposed to the plant in the world to which the second volume will be devoted. The planning of the book goes back, according to the author, to 1935. In fact it seems to go back much further. Its proportions are surprisingly little changed to accommodate the new learning to which the author has for