

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

over thirty years continually and largely contributed. It is startling to find the vast text of descriptive systematic morphology interrupted by condensed notes on the principles of genetics and physiology. These notes, we observe, even when as on p. 343 they are "ausserordentlich bedeutungsvoll", have to appear in the small type which breaks the continuity of every page. The instructive series of photographs and diagrams of mitosis and meiosis which would have improved any textbook of genetics or cytology are here separated from all that is relevant and buried between phyllotaxy and flagellates. The same applies to the chemistry of respiration or pigmentation. The list of chromosome numbers is surprising from a leading cytologist for, although they are only slightly incorrect, their effect as a whole is misleading. It is painful to see so much good material losing its value by its proportions and arrangement.

C. D. DARLINGTON.

PORTRAITS FROM MEMORY. R. B. Goldschmidt. University of Washington Press, Seattle. July 1956. Pp. 181. \$3.50.

In the rapid, or we may say hurried, development of science during the last 100 years the records of the men who have been responsible have been treated with too little respect. The destruction of Darwin's manuscripts is typical of the loss we have suffered. In these circumstances Professor Goldschmidt has done a service in rescuing from oblivion his recollections of the men who made the richest period of German science. He describes what he rightly calls the Heroes of German Zoology, the men who worked out the meaning of the cell, the functions of the nucleus and also the pattern of animal development. They worked mostly in the universities of the recently independent south German states enjoying, between 1871 and 1914, the prosperity of the new empire.

As sometimes happens the author has in this case tended to underestimate the importance of his subject. In dealing with the contributions of some workers he has been explicit but with others quite vague. He whets our appetite without by any means satisfying it. Yet there is a danger that the large published works of 70 or 80 years ago to which Goldschmidt refers as "famous" or "classical" may become "once famous" and thus indeed cease to be classical. Within this great bulk are concealed the origins of the chromosomes theory, of the notions of the gene, of segregation and of crossing over, origins future generations will labour greatly to discover.

A few small difficulties are worth pointing out. Kammerer surely did not reveal his pathological mind by committing suicide. By doing so five weeks after his exposure he showed himself relatively normal; much more so than when, for example, he invented the story of reciprocal crosses with reciprocal ratios ($3 : 1$ and $1 : 3$) in the F_1 . What Goldschmidt says is a valuable addition to the study of this episode and of scientific fraud in general. It is a study which, unfortunately, becomes not less but more important as science grows and flourishes.

Again, English readers may be distracted by some uses of words. Professor Goldschmidt is writing for an American audience. "Professor" therefore often means any university teacher. "Protector" is used for patron, "sanitation" for disinfestation, "auditing" for attending a class. "Anglo-Saxon" is also to be taken in a derivative sense.