

UNDERSTANDING EVOLUTION. E. P. Volpe. Wm. C. Brown, 2nd Edition, 1970. Pp. 175. \$2.75.

The stated aim of this short book is to present "a simple, concise account of the scope and significance of evolution for the college student seeking a liberal education". Slightly more than half of the text deals with matters which are directly genetical in content and the remainder covers related topics like adaptive radiation, the origin of life and the evolution of man.

There are many parts of the volume which are lucidly and accurately presented with attractive and informative illustrations (for example the treatment of adaptive radiation), but this book is unsatisfactory in some respects.

The clarity of the initial discussion of heritable and non-heritable variation and of some later parts of the book is reduced by the extensive use of an example of variation (extra legs in frogs) in which the nature of the factors responsible is unknown. In Chapter I recessive genes are mentioned although the treatment of mendelian genetics is found only in the next chapter. In fig. 1.4 the difference between what should be clearly distinguishable as different alleles is minimal. In the chapter on mutation it would not be easy for the innocent eye to follow the discussion of X-linked lethals in man as the mechanism of sex determination is not explained. On pp. 70 and 167 there are numerical errors. Some of these are perhaps relatively minor points although one might hope that criticism of this sort need not be made of a second edition. More substantial critical comment is called for in connection with the discussion of selection which concentrates almost exclusively upon linear selection and single locus heterosis with highly unfit homozygotes. With the evidence available today it would be easy to provide a much more accurate (but still simple) picture of the nature of gene-pools and particularly of genetic polymorphisms than the author has done. It is surprising that while there is a chapter entitled "Non-adaptive evolution" there is not one on adaptation (surely a topic of central importance for a book with "Understanding Evolution" as its title!).

Dr Volpe has worked extensively on problems in evolutionary genetics and his grasp of his subject is clearly evident in many sections of the text. It is, then, unfortunate that his book is marred by these defects which could easily be remedied.

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BARLEY GENETICS II. PROCEEDINGS OF THE SECOND INTERNATIONAL BARLEY GENETICS SYMPOSIUM. Edited by Robert A. Nilan. Washington State University Press, 1971. Paperback, pp. 622.

Some years ago I had the privilege of studying genetics at a research station devoted to a single crop, all aspects of which were covered to some extent, from evolutionary origins to processing. I was frequently asked if one genus provided too confining a milieu in which to work: no better reply could be given than referring the questioner to this account of the Symposium held at Pullman in July 1969.

Under 14 headings Robert Nilan has ably assembled 69 papers, less than half of which originated in the United States. The contents are sufficiently

diverse, one would think, to attract young biologists once again towards the genetics of an agricultural plant. Current trends are well represented: the section on germplasm sources, for example, is largely devoted to isozyme polymorphisms, whilst electron microscopy of epidermal wax conformations in a mutant series (von Wettstein-Knowles), provides a novel approach to mechanisms conditioned by gene action.

On the other hand, readers conversant with barley breeding will not be surprised to learn that the largest section is that on genetics of disease and insect resistance. For decades the utilisation of resistance genes has been a major preoccupation of many breeders, but here host-parasite co-evolution provides a refreshing aspect of such work.

The presence of a section for the genetics of feeding quality, albeit comprising a single presentation on "Hiproly" high lysine barley (Munck, Karlsson and Hagberg), is surely significant. It complements a set of papers on malting quality, and though malting barley is probably declining in importance the advent of studies on completely new protein, enzyme and starch types indicates a future for research on specialised grains.

Looking ahead to the 1975 Symposium it is apparent that the group of current papers on hybrid barley already foreshadows a powerful influence. By that time considerable numbers of F_1 hybrids will have been synthesised by several systems, and we can expect our knowledge of heterosis in inbreeders to have increased considerably. Furthermore, the "spin-off" from mechanisms developed primarily for hybrids will have been felt, so there could well be more contributions such as that by Ramage on the use of trisomics for chromosome mapping. We can also anticipate following up of subjects presented for the first time at a barley meeting. Mitochondrial heterosis (McDaniel) and Schooler's cytoplasmic male-sterility are just two themes that have led to some exasperation elsewhere, perhaps because of unfamiliarity with technique, and which we hope to see resolved.

The scope of this report is wide, and its contents absorbing. Without thorough familiarisation with this work *Barley Genetics III* will assume a daunting prospect.

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Rothwell Plant Breeders Ltd., Rothwell, Lincs.

A FIRST COURSE IN STATISTICS. F. N. David. Charles Griffin & Co., 1971. Pp. 228. £1.90.

This is an excellent book to place in the hands of students who are about to encounter statistics for the first time. It will be particularly useful for first- and second-year students at colleges and universities who are taking courses in environmental biology, for most of the worked examples are taken from this general field and they are very realistic and representative of the statistical problems that arise.

The general approach is to use the standard tests of significance based on the normal distribution: the χ^2 -, t - and F -tests as described by Sir Ronald Fisher in *Statistical Methods for Research Workers*. It is a pity that the analysis of variance is not taken beyond the simple one-way classification, for the analysis of several factors and their interactions is often appropriate to the results of very simple biological experiments. However, the book is obviously intended to be nothing but a "first course" and the basic tests of