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REVIEWS

QUANTITATIVE INHERITANCE, POLYMORPHISMS, SELECTION AND ENVIRONMENT. Bolognia, 1973. pp. 154. A report of the International meeting held at the University of Bolognia, 1972.

This booklet consists of 9 papers by various invited speakers, together with verbatim reports of their discussions. Despite the all-embracing title of the meeting, the objectives, according to Professor Scossiroli's opening address, were to " improve our knowledge of plant breeding " and to aid " the correct planning of soil protection programmes ". The topics presented bore little relation to these objectives, however, and were restricted only in the choice of organism considered—*Drosophila* and grasses.

The papers range over selection experiments for quantitative traits in *Drosophila* (2), experimental and observational studies of enzyme polymorphisms in *Drosophila* (2); genetical and environmental variation in grasses as manifested through cloning (4), the development of super genes (1).

Professor Thoday presents the arguments in favour of the hypothesis that the response to selection in his *vg* and *dp* selection experiments involved few genes of which some must have arisen through intragenic recombination. One is left with the feeling that, though plausible, a hypothesis based on recombination between closely linked genes would be equally acceptable.

Two papers, for which Professor Pallenzona was senior author, would have benefited greatly by the use of some genetical models and appropriate statistics. The first, concerning selection for sexual dimorphism in wing length, presents an extremely confused and complex interpretation of their data. In fact, some simple genetic algebra shows the situation to be largely simple and conventional. The second paper concerns the effects of three successive generations of clonal propagation in *Phleum*, plants being raised in one of two altitudinal environments A and B. Propagules from any one mother plant might proceed through all transfers in A, or B (AAA, BBB) or, for example, pass from A to B and back to A (ABA). All 8 possible combinations were used for each of 80 " mother " plants. Although mean height was mainly determined by the final environment, the variance was largely conditioned by the environment of the first propagation—a strange result which provoked some concern in the discussion. The methods of analysis employed however seemed quite inappropriate for such an orthogonal set of treatments.

Professor Scossiroli reports the results of extensive investigations into the genetical and environmental components of variation realised when grass genotypes were clonally propagated in different environments. He also describes an interesting situation involving plants " moving " as a result of competition. Also in this section on grasses Dr Breese reviews the genetical architecture of perennial and annual *Lolium* species and discusses any differences in relation to the selective pressures acting upon them.

Professor Beardmore illustrates clearly how the effect of frequency dependent selection can be modified by density and environment and

presents evidence for the possible role of gene duplication at the esterase loci in *Drosophila*.

One might have expected from such a collection of distinguished quantitative and population geneticists a more vigorous appraisal of the present state of knowledge in the subject and some realistic suggestions for new approaches to old problems. In fact little originality was revealed and one was left feeling somewhat depressed about the state of the subject in general. The discussion at the end of the meeting did little to relieve this depression.

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PRACTICAL GENETICS. Edited by P. M. Sheppard. Blackwell Scientific Publications, 1973. Pp. 337; plates, 10; figs., 29; tables, 64. £8·50.

The most difficult and perhaps the most valuable part of any genetics course is that concerned with the organisation of *successful* and informative practical classes. The difficulty and the value both arise from the use and culture of living strains of experimental organisms. Exercises with mutant strains of bacteria, fungi, flies and higher plants require much more skill and a great deal more effort to carry through with large classes than do demonstrations with permanent slides, mature corn cobs and plastic beads. *Practical Genetics* seeks to alleviate some of the frustrations and failures which so frequently bedevil undergraduate laboratory courses. There are seven self-contained chapters, written by well-known and experienced people who aim to make their practical expertise and knowledge more widely available. Each of the chapters is presented according to the style of the individual authors with no attempt at uniformity of production. Chapters vary considerably in length (23-60 pages), arrangement and quality. The one thing they do all have in common is a short list of references at the end. Some of the papers will be a great asset to teachers (at all levels) without specialised knowledge who wish to arouse interest and enthusiasm among their students.

Croft and Jinks in chapter five have a comprehensive and expert contribution on *Genetical Experiments with Fungi*. They give a few valuable pages to methods and media and then present detailed schedules for 18 different experiments all known to work well under class conditions. These range from relatively simple situations like heterokaryosis, through to more complex analyses using the parasexual cycle (Aspergillus), intragenic recombination (Aspergillus) and interallelic complementation in ad$^-$ strains of yeast. As promised in their introduction they fully illustrate the versatility of fungi as experimental organisms. *Drosophila* of course rightfully receives a lot of attention. In the first chapter Barnes and Kearsey introduce us to the husbandry of the organism, and outline experiments to demonstrate the principles of genetics—segregation, independent segregation, linkage and mapping. Some of these experiments are elementary, of course, but also fundamental. The authors' treatment of them is meticulously thorough, including a full statement of the procedures for detailed statistical analysis of segregation ratios. Chapter three is also largely taken up by *Drosophila*, as the chosen organism for experiments on *Quantitative Genetics*. Lawrence and