

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

Jinks have produced a clear exposition on how to demonstrate and analyse continuous variation. As in chapter one the emphasis is firmly placed on carefully designed experiments, properly analysed, which lead on to the illustration and deduction of important principles in the teaching laboratory. Sandwiched in between these two works on flies is a long treatise by Antonovics on *Teaching Basic Genetics in Higher Organisms*. The brief here is evidently different to that of the other contributions, and is largely concerned with drawing our attention to the alternatives to flies and fungi. Contrary to a promise in the introduction we have to plough our way through a miscellaneous list of higher organisms which can be used to show the basic genetic phenomena. Experiments as such are not outlined, but instead a wealth of information is catalogued on the different types of organisms available for crosses, together with lists and sources of their respective mutants and varieties. To study the laws of inheritance in garden peas for example, we can choose from an enumeration of almost three hundred varieties. The information in this chapter is undoubtedly valuable but some may find the style, in parts, somewhat pedantic. *Cytogenetics* by Walker is the only chapter dealing with chromosomes. It consists by and large of a list of schedules for the fixing and staining of material to show chromosomes in mitotic and meiotic divisions. No experiments are described and no procedures for analysis appear at all. The word chiasmata is mentioned once, in passing. There is a paragraph on B chromosomes, but the only comment about them experimentally, is that they "can be readily seen using the appropriate schedules". Walker has stressed the importance of having practical methods for the display of chromosomes at all levels of teaching. *Cytogenetics* means more than that, even to the undergraduate. Clowes deals rather excellently with *Bacterial and Bacteriophage Genetics*. He describes much in the manner of his earlier book (Clowes and Hayes 1968) a series of experiments to illustrate genetic concepts most suitably demonstrated with bacteria and phages. Experimental requirements and procedures are spelled out so explicitly and confidently that one feels sure they must have all worked well in the past and could all be relied upon to work well again. The last brief chapter *Population and Ecological Genetics* is by the editor. Evidently experiments to demonstrate the distribution of genes in populations and the action of natural and artificial selection require a fair amount of ingenuity to construct on a class basis. *Drosophila* are resorted to yet again, but here they are resourcefully supplemented with coloured beads and "artificial caterpillars".

One can learn much from this book about the scope of practical genetics, and it would require a decade at least for one individual to devise the numerous experiments that are described. It deserves to be widely consulted.

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GENETICS FOR MEDICAL STUDENTS. E. B. Ford. 7th edition. Chapman and Hall, 1973. Pp. 240. £2.95.

Medical students must have changed considerably during the 30 years since this book first appeared. Those to whom I lecture on elementary genetics