REVIEWS

HEREDITY AND DEVELOPMENT (Second edition). J. A. Moore. Oxford University Press, 1972. Pp. 292. READINGS IN HEREDITY AND DEVELOPMENT. Ed. J. A. Moore. Oxford University Press, 1972. Pp. xviii+329. Each £1.90 (paperback).

These books are intended for first-year university students. Those who teach introductory courses in genetics usually have pronounced views about the best approach, adopting either an historical one, starting with Mendel's experiments, or one based on molecular biology, starting with DNA and micro-organisms. Dr Moore is a firm believer in the historical approach. He gives, for example, the dates of birth for most people mentioned in the two books. It would be interesting to know why Darwin and Crick are honoured in this way yet Mendel and Jacob are not.

The textbook, *Heredity and Development*, begins with a 12-page chapter on pangenesis. This is followed by a well-illustrated chapter of 30 pages which takes nuclear cytology up to 1900. However, the choice of Flemming's original drawings to illustrate mitosis in the salamander and those by Boveri to illustrate meiosis in *Ascaris* are not likely to help the average student to understand the processes of cell division. Omission of clear diagrams of "what happens, when" during cell division is serious in an elementary textbook.

The next six chapters give straightforward accounts of Mendelism, the classical genetics of *Drosophila*, the relation between chromosomes and genes, human genetics, and an introduction to DNA and RNA. After reading these chapters a student would be able to describe the genetic system of *Drosophila* in some detail but would have little idea of what the genetic systems of micro-organisms were like.

The last quarter of the book deals with development. Two chapters give a clear and excellently illustrated account of the development of *Rana pipiens* from fertilisation to early tadpole. The third chapter, again with an historical approach, considers the problems and mechanisms of morphogenesis in amphibia. The final chapter deals with nuclear-cytoplasmic interactions in the early stages of development. Students reading this section would be surprised to learn that there is considerable differentiation amongst the cells and tissues both of adult animals and of fully grown plants.

As *Heredity and Development* is reasonably sized as an elementary textbook, yet contains much historical material, subjects one usually expects to find in such a book have had to be omitted. These include quantitative, population and ecological genetics. Evolutionary concepts are discussed only briefly as is cytoplasmic inheritance. This is dismissed (p. 116) in a single paragraph that ends with the statement: "The chromosomes form the physical basis of 99.9+ per cent. of inheritance". In this reviewer's opinion the omissions from the book are not outweighed by the advantages that stem from the inclusion of the historical and embryological material.

Readings in Heredity and Development is meant as a companion to the textbook. The editor has chosen review papers which cover the growth of genetics and developmental biology as fields of study. Thus the book differs from Peters' (1959) collection of reports of original research in genetics. The two anthologies differ in another respect; 12 of the 26 papers reprinted

by Moore were published before 1900. Only one (that by Mendel) of the 28 papers in Peters was not first published in this century. Thus the two collections are complementary and, taken together, could give the discerning undergraduate considerable insight into the historical and conceptual development of the study of inheritance.

REFERENCE

PETERS, J. A. 1959. *Classic Papers in Genetics*. Prentice-Hall, Englewood Cliffs, N.J.

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THE SCIENCE OF GENETICS: AN INTRODUCTION TO HEREDITY (2nd Edition).
George W. Burns. Collier-Macmillan Ltd., London, 1971. Pp. vii+470. Published
May 1972. £4.85.

As little as ten years ago it was permissible to term oneself "a geneticist"; today such a simple label is not sufficient and must be qualified by a prefix; cytogeneticist, microbial geneticist, etc. This specialisation, which derives from research interests, extends into the instruction of students and we train them to fit neatly into these various categories. I recommend this book to those who remember with regret when it was enough to be a geneticist and who would like to awake in their students some appreciation of the range and potential of the subject.

It is essentially an elementary text, suitable only for first and second year students. However, with this limitation, it is extremely good, covers a lot of ground and makes the subject come alive. The presentation follows what may be termed "the traditional sequence", starting with mono and dihybrid ratios, probability and cytology, taking the student up to population genetics in the first thirteen chapters. The majority of contemporary texts assume that this approach is old-fashioned and dull; they accordingly follow the "in the beginning was DNA" sequence. However, allele ratios, linkage analysis and the interpretation of cytological preparations are, in my opinion, more basic elements of the fabric of genetics than, for example, the *in vivo* synthesis of DNA. For this reason I prefer the traditional sequence and its emphasis on genetic analysis. In any event this book is far from dull, though leaf characters in *Coleus* make a welcome change from round versus wrinkled peas. Dr Burns holds the readers interest by using examples which are familiar (*e.g.* *Coleus*) or relevant (*e.g.* human diseases).

The chapters on probability, statistical methods and population genetics are well written and take the reader painlessly through the required mathematics. As is usual in American textbooks, there are numerous problems at the end of each chapter for the student to monitor his understanding of the material.

The next five chapters cover the molecular and biochemical aspects of genetics. The treatment appears superficial at first reading but on reflection is quite adequate for first year work. Perhaps unusually for a book of this kind, the unanswered problems in this and other areas are clearly stated. Thus, in discussing linkage and recombination the author sets out the