

The best known example is from industrial areas. However, some species have melanic forms that live on peat bogs, in dark shady pine forests, or even, perhaps, in areas where the trees are blackened by frequent burning. The great contribution of Kettlewell and his colleagues has been to show that, in many of these situations, predators discriminate between the phenotypes favouring and simultaneously improving crypsis. Such polymorphisms have probably been in existence for a very long time, and it would be of interest to know whether any of these alleles has migrated into industrial areas.

Little is known about the interaction between melanism genes and the remainder of the genome. Lepidoptera are poikilothermic, and the colour of a moth must have major effects upon its thermal balance. Behavioural differences between phenotypes have been found in the selection of habitats and mates. The dominance relationships seem to depend upon the genetic background of the individual. Studies have been made of all of these situations in non-Lepidopteran species, and it would have been valuable if this work had been reported in the text and related to the problem of melanism.

A weakness in the book is its superficial treatment of the theoretical aspects of population genetics. The author takes a gratuitous sideswipe at "armchair biometricians". They could be forgiven for replying in kind about "moth-trap statisticians" who suggest experiments using artificial populations of melanic *Panaxia dominula* to study differences in behaviour between melanics and typicals, and to investigate the responses of insectivores (*sic*) to them.

Despite its limitations, this book is essential reading for all who profess an interest in field biology. The price is high, and one cannot imagine undergraduates buying it, but they ought to read it. Kettlewell comments that many students cannot think of suitable research projects for themselves. This book indicates many avenues of research that should be explored, even despite the recent tendency of some (who should know better) to jeer at the middle-class English interest in butterflies and snails. One chooses the organism to fit the problem, and melanism is a case in point.

DAVID T. PARKIN

Department of Genetics, University of Nottingham

THE BIOCHEMISTRY OF CYTODIFFERENTIATION. D. E. S. Truman. First Edition, Blackwell Scientific Publications, Oxford. Pp. 116+51 text-figures, 13 text-tables, 2 plate-figures. £2.00 paperback and £3.50 cloth back.

The stated aim of the author of this slim volume has been to provide an introductory review of differentiation and development for the biochemist and of the biochemistry of gene expression in its broadest sense for zoologists and geneticists. In 105 pages of text he has set out, in what is for the most part clear readable form, the features of development and the currently accepted mechanisms for the regulation of gene expression at the molecular level.

The early chapters dealing with the morphological and physiological variation characteristic of differentiation will assist the biochemist to grasp

the breadth and complexity of the subject. The three following, on the control of metabolism and of gene activity, are designed to aid the cell biologist in comprehending the molecular basis of the events he studies. There then follows a chapter dealing with the changes that take place at the morphological and biochemical level in selected tissues during development; the examples, which include erythrocytes, liver cells, lens tissue, muscle, mammary gland and pancreas, have been chosen with care and will stimulate the interest of the reader. The book ends with a discursive chapter which draws conclusions and considers several models proposed to account for the differential expression of genetic information during development.

The overall effect has in some measure been spoiled by a lapse in organisation possibly in the pursuit of readability as well as a few omissions and errors. It is unfortunate that more care was not taken in chapter 3 (Regulation of Cellular Activity) to distinguish clearly between control achieved by the regulation of enzyme synthesis and that accomplished by a modulation of the activity of preformed enzyme. In addition, the attribution to enzyme specificity of a role in regulation is to stretch the concept of control beyond reasonable limits. The simple bacterial model for the regulation of gene expression certainly deserved mention but it is to be regretted that a consideration of other bacterial mechanisms for the control of gene expression have not been discussed in the context of differentiation; for example, during sporulation and bacteriophage infection, changes in the transcription machinery influence gene expression in a qualitative manner superficially reminiscent of differentiation. There is conflict between the definition of the operon implied in figure 28 and that given in the text and the glossary; the regulator gene is not usually regarded as a component of this unit of regulation. The diagram of the key steps in carbohydrate metabolism (figure 8) is spoiled by errors (hexokinase is not reversible whereas phosphoglycomutase is) and omissions (pyruvate kinase is not included in the diagram though it is assumed in the text, page 24). It is unlikely that the reader will gain much insight into changes in the RNA complement of the cell from figures 15 and 16 without more assistance from the text; in fact, little would have been lost had they been omitted altogether.

At a fraction under 2p per page of text, this publication would appear on the costly side. Nevertheless, it is easy to read and frequent reference to relevant reviews encourages the reader whose appetite has been whetted to dig deeper into the literature. It is a useful introductory book to stimulate interest in a specialised field which is and will continue to be of great importance in current research.

A. J. SMITH

*Department of Biochemistry and Agricultural Biochemistry,
University College of Wales, Aberystwyth*

COMPUTER SIMULATION IN GENETICS. Jack L. Crosby. John Wiley & Sons Ltd., London and New York. Pp. xiii + 477 + 69 text-figures. £9.

I realised too late that I should not have agreed to review this book. I have run many genetic computer simulation programs and I have always found it very difficult to borrow bits of other people's programs or even to understand my own a year later.