

Early development and gene activity

Gene Activity in Early Development. Second edition. By Eric H. Davidson. Pp. xvi+452. (Academic: London and New York, 1977.) £11.30.

THIS is an enlarged and completely rewritten edition of Dr Davidson's successful 1968 book of the same title. It is the only comprehensive review, at the molecular level, of early animal development, and provides a scholarly and unbiased account of the field as it now stands. It will be invaluable to research scientists and advanced students interested in this field.

The book consists of eight chapters, covering the following topics; the constancy of the genome; the initiation of genomic control and of cell differences; the changing populations of proteins and RNAs in embryos; cytoplasmic determinants, and oogenesis. Each chapter is preceded by a summary of the principal facts. Within most chapters, results are presented according to taxonomic groups. This is a wise decision, because there are remarkable differences in the morphological and molecular characteristics of development of different animals, a situation which has made it impossible so far to identify any universal mechanism of development applicable to all animals. One chapter provides a very helpful explanation of renaturation and molecular hybridisation experiments, such as have been used in much of the author's own work. One of the particularly good characteristics of the first edition which has been retained is the survey of classical embryological literature. This is especially valuable since most of those engaged in the molecular analysis of early development have no familiarity with, or convenient access to, early literature of this type. A detailed and very representative bibliography of original papers and their titles, up to the middle of 1976, is provided.

The general theme which lies behind most of the work reviewed in this book is the importance of gene activity in development. The author's view is that during oogenesis (egg formation) gene products are accumulated. Soon after fertilisation, they are moved to different positions in the egg, and as a result, they (or other molecules formed by their activity) cause activation of different genes in different cells. These activated genes start to make their own products during gastrulation and at later stages. This represents a fairly conventional view of early development, having been favoured by many

writers since the end of the last century. Certainly the detailed evidence summarised in this book does a lot to bolster one's confidence in this hypothesis.

It is currently fashionable to devote much attention to cell surface molecules, and those who fall into this class may feel that this aspect of the molecular repertoire of cells is lightly represented. There is no evidence at present, however, that any of these molecules are causally connected with development. An area of relevant information which is not covered in this book concerns the molecular differences between highly specialised adult cells. It is possible that a detailed molecular description of differences between adult cells may lead more directly to an understanding of early developmental processes than a des-

cription of molecular changes which take place in embryos themselves.

As is evident from reading this book, two factors restrict progress in this field. One is the lack of a detailed description of the activity of single known genes; the other is the absence of a way of distinguishing genes and gene products which are important in development from those which merely accompany this process in a non-causal way. Procedures are becoming available by which these kinds of information can be obtained; but for many years to come, this book is likely to be a standard reference work for all those interested in early development and gene activity.

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Tilting at windmills

Ecological Sanity. By George Claus and Karen Bolander. Pp. xv+592. (David McKay: New York, 1977.) \$16.95.

It is difficult to understand why the David McKay Company of New York have bothered to publish this book in 1977. They very honestly admit in a note at the front that the research (*sic*) on which it was based was completed in 1972, and that it was delayed by "production difficulties beyond our control or that of the authors". The authors' Preface has a dateline "Vienna 1972". The publishers state that they are "confident that the continued significance of this book will be apparent to the reader". Unfortunately this does not apply to this reviewer.

Ecological Sanity sets out to give a critical examination of the statements made by the so-called "Ecological Lobby", particularly in the United States. The lobby is accused of putting forward statements which cannot be supported by sound research, and for making premature Doomsday announcements. This is all set out at great length, for the book is not far short of 300,000 words. Had it appeared in 1972 it might have been of some interest, although even by then many other authors had already produced more effective criticisms of the errors put forward by the more extreme environmentalists who had assumed the title of "the ecologists". It is true that some of these extremists are still unrepentant, although many have either recanted or disappeared from the scene. Claus and Bolander are, for the most part, tilting at windmills, for the situation is very different

from that which obtained five years ago. A far greater number of people, particularly those in authority, are able to view the scene more rationally. Thus, the World Health Organisation still recommends DDT for malaria control in appropriate situations, although the dangers of misuse are fully recognised. The more absurd statements of the lobby have been recognised as such; their other efforts to keep the rest of us on our toes, is probably a good thing.

There has, of course, been controversy about pesticides, particularly the organochlorine insecticides. The 275 pages of small print (almost half the book) on this subject is particularly unsatisfactory. It is true that, in the late 1960s and early 1970s, some environmentalists extrapolated unjustifiably from the results of research. There has, however, been a great deal more work done in the past five years. Some of this disproves conclusions based on extrapolations, some supports conclusions hitherto unproven. This omission of what is now the major part of the relevant research means that the book is of interest only to the historian of the bye-ways of science.

Yet there is still a need for us to be reminded of the need for ecological sanity, even if this book does little to achieve this objective. Environmental dangers still exist, and it is as bad to exaggerate their importance as to refuse to recognise their existence. Resources will always be limited, and environmental protection will always be subject to compromise. This is unfortunately not as glamorous as extremism from the "right" or from the "left".

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