Book Reviews


Interest in sex determination in man and mammals has been much stimulated in recent years by the discovery of sex chromatin, sex chromosome anomalies, the inactive-X hypothesis, and so on. Professor Bacci’s book deals with sex determination not only in mammals but in the whole of the plant and animal kingdom, particularly the animal kingdom. Man and the mammals are only briefly dealt with and hence the book will be of no great interest to clinicians. It will, however, be a valuable source of reference to those engaged in fundamental research on sex determination, and would also be of interest to advanced students of biology.

The author begins with an outline of the basic types of cell division and sexual and asexual reproduction in plants and animals. He next describes the processes leading to exchange of genetic material in bacteria, algae, and fungi, and compares these with sexual processes in higher organisms, pointing out that it would be unwise to assume that genetic exchange in these lower forms constitutes a primitive type of sexual reproduction. Chapter 4 deals with the various genetic types of sex determination, including forms with well-defined sex chromosomes, whether morphologically recognizable or not, and those in which the sex genes are distributed throughout the chromosomes. It also describes sex-linked inheritance and abnormalities of this inheritance, including the effects of non-disjunction of the sex chromosomes. In the next two chapters the various theories concerning the genetic mechanisms of sex determination are dealt with, including the balance theory and the inactive-X theory in mammals. Forms in which the sex of the offspring is determined by the genes of the mother or by cytoplasmic influences are also included.

Next the book deals with hermaphroditism and dependence of sex on environmental factors, such as time, or body size, or, particularly in parasites, size and age of host and hormones of other individuals. Chapter 9, after describing the embryology of the sex organs in amphibia, goes on to list somewhat similar effects of the environment on sex determination in this group, including those of temperature, over-ripeness of eggs, castration, parabiosis, and hormones. Parthenogenesis is next treated, and again first the genetic and then the environmental factors affecting sex in parthenogenetic forms are discussed. There follows a chapter on evolution and sex, putting forward the general view that no satisfactory unitary theory of sex has yet been worked out and that there are a multiplicity of systems in different animal and plant groups, which have evolved in different ways to meet various needs.

The book is well produced, but marred by many misprints, spelling mistakes, and faults in translation. These last sometimes make the text difficult to follow, or even misleading, and the difficulty in comprehension is made worse by the use of many little known technical terms, such as epitochous, amphigonic, protogonia, and deutoplasm. A glossary is provided, however, and despite its imperfections the book will still prove a valuable work of reference.

M. F. Lyon


To judge from the account of the development and testing of volumes I–III, a great deal of work has gone into perfecting the technique of programming in this subject, and tests on student users give favourable results.

The authors are aware that a method that puts so much of the burden of teaching on the student himself depends for its success on the enthusiasm of the instructor. The reviewer, however, admitting experience only of closer student-teacher interaction, feels that a more than ordinarily keen teacher is needed, so diluted is his influence.

Again, in a biological subject, where the zeal of the student so often arises from, and is nurtured by, the handling of organisms and the ‘discovery’ element in the understanding of real data, is not a method, which uses very little of either, liable to stunt the growth of imagination and disciplined curiosity?

Finally, it seems that an effort has been made to simplify for the lowest intelligence, and that this, at least in this volume, has occasionally led to undesirable features. For example, chapter 1 shows that the checkerboard predicts the outcome of crosses (a) where the segregation of two alleles is studied without consideration of their attachment to chromosomes and (b) where the segregating alleles are assumed to be attached to chromosomes; it then ‘concludes’ that the genes are either the chromosomes or are attached to them. Is this not a tautology rather than a logical argument? Again, chapter 2 states that the ‘controlled breeding method’ of studying inheritance is different from the ‘family method’ (where data on many sets of parents and offspring are pooled); but it treats them as if they were the same, i.e. it does not point out that such pooling is not done on the basis of fully-known parental genotype: a mention of ascertainment (without describing it) is needed but not given.

This volume recaps on previous ones and introduces chromosomes, sex linkage, crossing-over, population...