

BOOK REVIEWS

Idiosyncratic Genetics

Textbook of Human Genetics. By Max Levitan and Ashley Montagu. Pp. xiv + 922. (Oxford University: New York, London and Toronto, May 1972.) £5.

THIS is an idiosyncratic book which strongly reflects its authors' approach to human genetics, that of the "human biologist" rather than the "clinical geneticist". There are few human geneticists with both the sound scientific training and the clinical experience necessary to enable them to write well about both aspects of the subject. This is unfortunate as the two are closely interdependent. It has the consequence here that while the chapters devoted to basic cytogenetics, Mendelian inheritance and population genetics are on the whole sound (apart from certain omissions to be discussed), that on clinical genetics is not.

The text is long, just over 750 pages, compared with 200 to 250 for most recent undergraduate texts on human genetics. It is intended for all types of undergraduates taking a course in human genetics. For this reason the authors have chosen to explain fundamental theory in great detail for the student with little background knowledge, but at the same time to go into the more mathematical aspects in greater depth than usual for a basic textbook. This approach, which at least partially accounts for the book's length, is an attempt to deal with a real problem encountered by all teachers in this field. However, it is doubtful whether the different needs of students taking different courses, and often with differing backgrounds in genetics, can be met by a single book. I suspect that most medical, dental and nursing students would be deterred by its length and price, by the discursive style of much of the writing, as well as the rather full treatment of population genetics only limited parts of which are really relevant to medical practice. It may well suit students studying genetics as part of a biology or human biology course somewhat better.

In spite of the length there are serious omissions, some admittedly the inevitable result of several important developments too recent for inclusion.

The most unexpected omissions are the inadequate presentation of multifactorial inheritance which is dismissed in only six pages and the scant attention

paid to normal human variation. Normal chromosome variation is not even mentioned. Both blood groups and biochemical polymorphisms are used to illustrate specific ideas in genetics but are not collectively reviewed.

Several important recent advances are omitted. The quinacrine mustard fluorescence and Giemsa banding staining techniques have made it possible to identify each human chromosome, to analyse structurally abnormal chromosomes with precision, and to stain interphase cells for Y chromatin. It has been established that the trisomic chromosome in Down's syndrome is the smaller, and not the larger, of the two small acrocentric chromosomes. Along with the technique of somatic-cell hybridization these methods provide important new tools in human somatic cell genetics that have already borne fruit in the assignment of several human genes to specific chromosomes since the book was written.

The account of fertilization does not mention outstanding recent work on *in vitro* fertilization of human ova. The increasing evidence for genetic heterogeneity of apparently single phenotypes is not discussed. There is an excellent discussion on the origins and mechanisms of polymorphism but Kimura's controversial theories on random drift of neutral genes are not included.

There are also a few sins of commission. In spite of a long semantic discussion of the meaning of dominance and recessivity they fail to get across clearly that dominance and recessivity are a combined function of gene action and the method of observation used. They resurrect Muller's terms "amorphs" and "hypomorphs" for mutant genes that result in either total or reduced enzyme activity but fail to discuss different types of structural gene mutation in modern terms and only discuss regulatory gene mutations elsewhere in the book without cross reference.

The most serious fault is an unsatisfactory final chapter on genetic counselling that starts with the astonishing utopian recommendation that genetic advice should become a routine procedure for everyone in the community. The naive approach of this chapter is typified by a table listing more than seventy inherited disorders for which it is claimed methods of "carrier" detection are available. The

list includes several genetically complex or heterogeneous disorders like diabetes and hypertension, false claims such as that for detection of cystic fibrosis carriers by the sweat test and several tests of only limited value in carrier detection such as factor VIII assay in haemophilia.

The book concludes with a directory of genetic units in the United States and a full bibliography.

M. CRAWFURD

Grasslands

The Prairie World. By David F. Costello. Pp. xii + 242. (David and Charles: Newton Abbot, July 1971.) £3.75.

DAVID COSTELLO writes with obvious affection and knowledge about the grasslands of western North America, revealing a lifetime of careful observation and thought on the mutual dependencies of living forms in that arid to semiarid environment. Historical incidents, reminiscences of his boyhood on a Nebraska farm, and studies in his maturer years over much of the great prairie region are blended to convey a genuine "feel" for the variety and beauty of a landscape fast vanishing.

Though not strictly a science text, the book could serve admirably to introduce young students, naturalists and travellers to the prairie world. Chapters deal with such broad topics as environment, changes of the seasons, plants, mammals, birds, insects, water, catastrophes (drought, fire) and man's impacts, but the author has avoided the constraints of a tight organization so that many interesting associations and sidelights are explored along the way. Thus anecdotes and notes of historic and scientific interest are sprinkled through the pages in a very readable manner.

Numerous black-and-white photographs of flora and fauna add interest to the descriptions, and a bibliography of about ninety articles plus an index will assist those readers seeking detailed or specific information on grassland ecology. There is appended also a list of sizable prairies still in existence in the midwestern and western States; places where the sweep of the grass and the immensity of the sky can still be appreciated.

J. S. ROWE