Textbook of Human Genetics
3rd edition. By Max Levitan. (Pp 475; £30·00.) Oxford: Oxford University Press. 1988.

Levitan's *Textbook of Human Genetics* is unusual in at least two respects. The three editions have been unusually widely spaced (1971, 1977, 1988). More surprising, this third edition is only half the size of the first. How has it been done?

One explanation, unfortunately, is that the updating is not very thorough. This is apparent in innumerable passages, most obviously in the karyotypes illustrated, few of which are banded. Usually the more up to date material is mentioned in the text, but as an afterthought. For example, the first thing you see on HLA is a table of specificities using the 1975 nomenclature and including the long dead LA and FOUR terminology. Reading the text, you will then find DR, DP, and DQ mentioned. Or again, the main description of the Ph chromosome on p 78 describes the 9;22 translocation and dwells on the mystery of its significance; only on p 408 is the role of the *abl* oncogene mentioned.

In other respects the shrinking has been achieved by intelligent condensation and rearrangement of the earlier material. The book now starts with pedigrees rather than chromosomes so that students are immediately faced with phenomena they can relate to but which demand explanation. A strong point retained from earlier editions is the clear and careful treatment of probability and ascertainment bias in pedigrees, much the best I have seen in an elementary textbook. Non-Mendelian conditions are given a new chapter on polygenic inheritance which expounds the conventional multifactorial threshold model.

Knowledge increases exponentially but the capacity of students remains the same. What is the essential core of human genetics which an introductory textbook should cover? I have a lot of sympathy with the essentially historical approach of this book, but I fear it is becoming increasingly untenable. I would argue that the change from the 1960s to the 1990s is not just an accretion of masses more information on the periphery, but a fundamental shift in the way we understand human genetics. It always used to be about how people differ; now it is about how cells work. For decades, genetics was the odd man out among the clinical sciences. In anatomy, physiology, or biochemistry, students learned how the normal human functioned and then used that as a basis to understand abnormal states. Only in genetics did we start by talking about diseases. Now that we can at last give a description of the normal genome, surely a human genetics textbook should be about the normal genome and how to study it? Of course the medics need to know about genetic diseases, but genetic pathology comes later. Or am I ignoring the realities of how people learn, like a physicist insisting that physics courses should start with relativity?

Overall then, I have to say I am disappointed. I used the first edition a lot when I was first trying to get to grips with human genetics, and I thought it was the best of the books available then. Students will still learn plenty from it, and will not be misled. It is good and reliable for any topic where genes are seen as being either *A* or *a*. But genetics has moved on, and this 1988 edition still has the flavour of 1960s genetics.

ANDREW P READ

The Status of the Human Embryo: Perspectives from Moral Tradition
Edited by G R Dunstan and Mary J Seller. (Pp 119.) London: King Edward's Hospital Fund for London. 1988.

Research into fertilisation, the earliest stages of embryo development, normal gene regulation, and the processes of human organogenesis have been made possible by the parallel developments of in vitro fertilisation and molecular biology. Of immediate practical value are improvements in the success rate of in vitro fertilisation and human fertility treatment generally. However, research is now possible which could identify the mechanisms of many birth defects and genetic disorders and thus potentially allow a marked reduction in the load of human handicap, disease, and premature death.

For these reasons the majority of researchers would agree with the recommendations contained in the report of the Warnock Committee and would be prepared to accept the limit of 14 days as being the point beyond which research should no longer be permitted on the human embryo. Others might argue that more would be gained by allowing research up to the point of organogenesis and point out that many abortions are carried out on fetuses up to 12 weeks of pregnancy and beyond for precisely those fetal abnormalities that embryo research might prevent.

Against this utilitarian philosophy is the strongly held objection from those who argue that the human embryo is absolutely different from any other research material and must be conceded full status as a human individual from conception.

These opposing views are only partly amenable to logical debate because they touch the sensitive nerves of belief and emotion, which are largely immutable relics of our childhood conditioning. Nevertheless, it is essential that compromises be sought which are acceptable to the majority, do not

unnecessarily or precipitately transgress established beliefs and morals, and which are based on the fullest possible understanding of the issues involved.

This book therefore performs a valuable function in recording discussions by a diverse, authoritative group about the moral status of the human embryo. Meeting at King's College, London, the group comprised three medical practitioners, a research scientist engaged in experimental biology, and three theologians working on moral questions. The religious traditions included Anglican, Roman Catholic, and Jewish, the last represented by the Chief Rabbi of Britain and the Commonwealth.

Early chapters provide a simple outline of the early development of the embryo and what ends might be served by research on the developing embryo. The first ethical problem to be considered involves the pros and cons of sex selection in the absence of disease. The book then traces the moral tradition from the civilisations of ancient Mesopotamia through Jewish, Greek, Arabic, and European cultures, and leads to chapters on Jewish Rabbinic teaching and on contemporary Roman Catholic teaching.

The proposition that protection of the embryo might be delayed until it has the capacity for feeling is critically examined. Finally, a philosopher examines the various arguments advanced and tries to discern consistency or inconsistency between them and with contemporary philosophical reasoning.

This is an elegant, well informed, and straightforward book which sets out the facts and the philosophy and provides essential background reading for anybody who, for whatever reason, is drawn into the present debate on the status of the human embryo.

RODNEY HARRIS

Heterochromatin: Molecular and Structural Aspects
Edited by Ram S Verma. (Pp 301; £30·00.) Cambridge: Cambridge University Press. 1988.

The rationale behind this volume, given in the preface, is to provide a comprehensive review of new information regarding heterochromatin which has accumulated over the last three decades. The proliferation of new staining techniques, the use of electron microscopy, in situ hybridisation, and recombinant DNA technology have all contributed in a major way to a detailed exploration and understanding of the components of chromosomes. Today, eukaryotic chromosomes are primarily described according to the structural and functional aspects of euchromatin and heterochromatin.

In eight chapters, the topics covered include the evolution of satellite DNA sequences in *Drosophila* (A Lohe and P Roberts), the mammalian kinetochore, its structure, function, and evolution (D A Pepper), and the organisation of the centromere and centromeric heterochromatin (J B Rattner and C C Lin). Detail is given of nuclear architecture and the three dimensional organisation of chromatin (C Nicolini) and the heterogeneity of human heterochromatin as shown by restriction endonuclease treatment (A Babu). The results of basic cytogenetic study into heteromorphisms of human heterochromatin are described by R Verma. But almost one half of the book is written by Bernard John in a thoroughly comprehensive first chapter dealing with the biology of heterochromatin. This provides the reader with definitions, detail of function in somatic and germ line chromosomes, evolutionary perspectives, and species differences. For me, purchase of the book would be made worthwhile for this chapter alone, notwithstanding the contributions made by the other authors.

In spite of all the research endeavour, it is, however, the conclusion of several of the authors that the biological significance of chromosome heteromorphisms and the role of constitutive heterochromatin in the cell remain major unsolved problems in biology. For cytogeneticists, geneticists, and molecular biologists the book should provide a useful source of reference.

ANN C CHANDLEY

Announcement

EMBO WORKSHOP. CHROMOSOME 21: IMPACT OF THE NEW GENOME TECHNOLOGY IN HUMAN GENETICS

This workshop, sponsored by The European Molecular Biology Organization, The International School of Pediatric Sciences, will be held at Santa Margherita Ligure, Italy, on 18 to 20 May 1989. For further information contact International School of Pediatric Sciences, Istituto Giannina Gaslini, Direzione Scientifica, Via V Maggio 39, 16148 Genoa, Italy. Tel: 039-10-38.36.28, 039-10-56.36.324, 039-10-56.36.326.