dated, this chapter will be useful reading for many people wanting to take up gene mapping now it seems so easy.

An absorbing chapter by Brinster and Palmiter tells the story of the transgenic mouse and the many opportunities it provides for studying the tissue and time specificity of gene expression. You may be relieved to know that transgenic pigs stay a normal size despite expression of the metallothionein-growth hormone fusion gene which produced the famous giant mice. This chapter shows the Harvey lectures at their best, summing up historically important work by one fruitful partnership over many years.

Joan Steitz describes her work on snurps, the small ribonucleoprotein particles which probably control mRNA splicing and perhaps modulate transcription by RNA polymerase III. They are the targets of characteristic autoantibodies in rheumatoid diseases, so may be important for understanding the pathology of these diseases.

Other chapters include a very brief account of oncogenes by Robert Weinberg, Cuatrecasas on hormone receptors, and Metzger on antibodies as effector molecules, looking at what happens after the antibody-antigen reaction, rather than at the generation of antibody diversity. The final chapter is a detailed description by Le Douarin of the quail-chick chimera as a system for studying the ontogeny of the peripheral nervous system. This could be read with advantage by those concerned with syndromes originating in neural crest cells.

Overall then, a more interesting collection of articles than I expected. You are unlikely to buy the book, but might well enjoy borrowing it.

ANDREW P READ

X Linked Mental Retardation 2

Edited by John M Opitz, James F Reynolds, and LaVelle M Spano. New York: Alan R Liss. 1986.

This volume belies the generalisation that conference reports make unreliable books. It is an account of the Second International Workshop on Fragile X and X Linked Mental Retardation, which was held in Australia in 1985. In spite of the title, the book is almost entirely about the fragile X syndrome, that is, that type of X linked mental retardation that is accompanied by a fragile site on the long arm of the X chromosome. The book highlights the unusual features of the condition, namely the inconsistent phenotype, the curious family patterns with possible

distorted segregation ratios, and the high mutation rate. There are hypotheses to account for these odd features, none of which fit all observations, but which make stimulating reading. Linkage studies using DNA polymorphisms suggest not only that crossing over is frequent at the fragile site, but also that the frequency is higher in a woman if transmission was from her mother than if it was from her father (pp 633–64). This is relevant to the Pembrey-Winter suggestion that clinical manifestations of the fragile X gene follows abnormal recombination. Two groups of workers (pp 685–713) speculate whether transposable elements might affect the clinical manifestation of the fragile gene. This proposal assumes that transposable elements can be transmitted from father to son as well as from father to daughter or from mother to son or daughter. There are few possible examples of father to son transmission in reported families but this omission could be due to lack of observation, rather than to lack of occurrence. True facts about the fragile X syndrome have been too slowly demonstrated because of the hasty conclusion by many workers that it is inherited as a single X linked recessive gene. This book does much to question such a superficial belief. The third hypothesis of interest (pp 723–37) is that the varying level of intelligence in fragile X males and females is influenced by a maternal intrauterine effect, with an interaction between maternal blood, placenta, and fetus.

There are many other subjects of interest discussed here, such as the association of the fragile X gene and autism; the finding of the fragile X in two subjects with Soto's syndrome; an account of factors modifying the expression of the fragile site in vitro; and observations on increased occurrence of aneuploidy in cultured cells containing the fragile X chromosome. An excellent chapter by Partington shows some problems of genetic counselling. There are also reports of several population studies (pp 567–97) which show some variation in the incidence of the fragile X syndrome in different populations, but which emphasise its overall high frequency.

This book therefore highlights the interesting and speculative aspects of the fragile X syndrome. I found the introductory summaries rather tiresome but enjoyed most of the subsequent chapters. As it is the bound version of a single issue of the *American Journal of Medical Genetics*, it is not essential buying for geneticists, but I thoroughly recommend it for libraries.

SARAH BUNDEY