to suggest that at least among some women vitamin deficiency in the early weeks of pregnancy might be an important factor". Such sceptical comments are a pleasure to read. As Fisher once remarked: 'in *The Design of Experiments* the word *randomisation* did not appear by chance".

J. S. GALE
*Department of Genetics,*
*University of Birmingham*

GENETIC COUNSELLING. W. Furhrmann and F. Vogel. Springer-Verlag, 3rd Edition 1983. Pp. x+188. Price: $16.80 P/B.

The authors chose to introduce this book by employing shock tactics, as the reader is confronted on the very first page with a complicated counselling problem featuring no less than three types of diseases segregating within one family, accompanied by the rhetorical question "Should my daughter marry this man?" Despite the reassuring and inevitable outcome of this genetic riddle being "Why not?", the authors do suggest that the untrained reader start at Chapter 2. As Chapter 1 continues with a detailed but out of place list of the mucopolysaccharidoses he is tempted to do just that! A description of genetic counselling and its aims is unfortunately missing. However, the end of Chapter 1 combined with a short Chapter 2 together detail some of the more general principles of counselling with advice on how to obtain and perhaps more importantly how to construct a pedigree.

The next few chapters are devoted to the delineation of the Mendelian laws of heredity in the context of autosomal dominant, autosomal recessive and X-linked human disease. More emphasis could have been placed on the more knotty problems such as penetrance and expressivity in autosomal dominant disease as these are complicating factors within particular pedigrees. More information actually emerges when somatic mutation is discussed with especial reference to retinoblastoma. The Chapter on autosomal recessive disease hardly mentions the metabolic diseases at all, and certainly does not stress the enzyme/biochemical nature of many of these conditions. As a consequence no emphasis was placed on the practical importance of storage of material from affected individuals in order to aid subsequent accurate diagnosis. As a contrast the second half of this chapter, which is devoted to heterozygote testing, is much more detailed and comprehensive. Although this will act as a guide when other family members seek advice, fearing that they may be carriers, the authors do not emphasise that the risk is exceptionally low except in the case of X-linked recessive disease, as both types appear in a single table.

Bayesian risk calculations are very important for the modification of empirical risks and make for better counselling and more accurate prognosis but this Chapter is not intended for the novice as the mathematics are daunting despite the clever use of Christian names to make identification with the problems easier.

A description of chromosomal aberration not unnaturally places its main emphasis on Downs Syndrome with an excellent description of how and how often this condition arises. However, the instruction to compare Tables 8:1 and 8:2 cannot be achieved without the aid of a pocket calculator as one details frequencies and the other percentages. No self-

respecting cytogenetics laboratory would accept the statement on p. 85 that "the laboratory report usually specifies only the group affiliation of the supernumerary chromosome (*G*)—for example 47 *XY* + *G*."

The upward bend continues with a good description of multifactorial inheritance and an excellent chapter on prenatal diagnosis. More emphasis could have been placed on the very commonness of the polygenic conditions such as neural tube defects but empirical risks are well handled.

After a well-organised chapter on those most baffling of genetic problems mental retardation and mental illness come three short pieces on the non-starter subjects consanguineous marriage, exposure to mutagens and teratogenic effects during early pregnancy. While genetic advice based on extrapolation from mouse data may not seem to be adequate, it is still the best available. This type of problem does occur relatively frequently and accurate negative information is always the most difficult to find.

Finally, in its last Chapter the authors deal with psychological and social considerations. Their arguments seem rather weak and belated after the previous subject matter. This book is one for the scientific genetic counsellor rather than the psychological one!!

T. WEBB,
*Department of Clinical Genetics,*
*University of Birmingham*

GENETIC ENGINEERING 4 (1983). Edited by R. Williamson. Academic Press, London. 185 pp. £11·80.

This latest volume of "Genetic Engineering" contains three articles which explore in depth various aspects of *in vitro* recombinant DNA technology. The first article by Lathe, Lecocq and Everett is entitled "DNA Engineering: the use of enzymes, chemicals and oligonucleotides to restructure DNA sequences *in vitro*". Approximately half of it is concerned with how fragments of DNA can be joined together in novel combinations despite, in some cases, their initial lack of blunt or complementary cohesive ends and how the ends of these fragments can be altered prior to joining, either so as to achieve desired changes in DNA sequence in the vicinity of the fragment ends or simply to make possible the juxtaposition of two genetic regions. The authors have been very thorough in documenting the tricks of the trade, both published and unpublished, which ingenious workers have devised over the years. It should provide a source of inspiration to most people faced with some seemingly intractable problem of hybrid plasmid construction. The rest of the chapter is a description of current methods of localised and site directed mutagenesis which again is thorough and useful.

The second article, by Craig and Hall, covers the application of recombinant DNA technology to characterisation and expression of polypeptide hormones. Inevitably this includes basic eukaryotic gene (cDNA) cloning technology (already covered in this series) but gives a useful perspective on the problems of cloning hormones (sometimes minor products of not very abundant sub-populations of cells). Of importance in this field is the way that nucleotide sequence information for cDNA clones can be of significance in discovering new hormone-like polypeptides contained within the prohormone precursor protein for the hormone of interest.