this is the major reason, apart from prejudice, why the topical breeder may not use the best stock available world-wide.

Gerald Wiener was formerly a member of the AFRC Animal Breeding Research Organisation (ABRO) in Edinburgh and has extensive experience of teaching students of tropical animal production and of consulting in developing countries. He is to be commended on writing a short and clear text and the publishers for pricing it at a very low level for a textbook. It deserves a widespread audience among undergraduate students and breeders, whatever the environment in which they keep their animals. The important topics are all touched upon, but the depth and quality of treatment are not uniform, reflecting the author's experience (and perhaps this reviewer's bias).

Strong points are the discussions of crossbreeding and of inbreeding, in which there are clear formulae and nice examples of practice. If, in the unlikely event that anyone was thinking of running an inbreeding programme, he will be put off by the pictures of unfit inbred sheep (taken from ABRO experiments). There are good descriptions of different types of breeding programme, with the basis for their choice and examples of their use. Obviously they are only outlines for any individual species, but a useful start nevertheless. There is a nice summary of new, including molecular, developments. The coverage is weaker on modern methods adopted in breed improvement, for example on indices combining records on the individual and his/her relative performance and on best linear unbiased prediction (BLUP). Although the computational procedures used in BLUP are obviously well outside the scope of this book, the results are the standard for comparing candidates for selection, for example of temperate bred dairy sires for use throughout the world. Even the definition of breeding value in the Glossary is unhelpful: 'Genetic worth of an animal in respect of a particular trait or combination of traits.' It is important that practitioners know what lists of breeding values or transmitting abilities computed by BLUP mean.

I found few errors, but the example (p. 147) on testing a bull for a genetic defect with females of unknown genotype is misleading: 'Mate the bull to his daughters. If the bull carries the defect but does not show it, he is expected to pass the allele responsible to 50% of his daughters. If he is then mated to his own daughters, the expectation is that, on average, 25% of them will have offspring which are homozygotes for the recessive and show the defect. Ten normal offspring from such matings (and no defectives) would provide reasonable confidence that the bull was not a carrier but would not prove it. There is still 1 chance in 20 that this [outcome] fails to detect the bull as a carrier.' Don't bet on it!

I hope the book will find a readership among those with a professional interest in general animal production, for it could go some way to reduce the widespread ignorance of the opportunities for and successes of genetic improvement of livestock.

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*Biological Inheritance: An Introductory Genetics Text.* By W. J. C. ROBERTS. Book Guild. 1994. 671 pages. Price £30. ISBN 0 86332 729 X.

This book was written by a public (private) schoolmaster from the notes he used when preparing his pupils for the Oxford and Cambridge Entrance examinations. With the recent doubling of the number of British Universities only schools with an historical attachment to these tests are likely to train their students for them; and this market must be small and diminishing. Extra material has been added to make the text 'appropriate to first and second year biology or genetics students', a much larger readership, but one already well provided for.

The material is presented, Roberts says, 'in the order I use for my own teaching... and which I would use for my own learning'; but school pupils are nowhere given guidance as to how much they should know or how to pick and choose across these many pages. With changes imminent in the British School Curriculum, a pack of publishers is now preparing to capture this business by providing *ca.* 100 page texts, illustrated and laid out using the latest design technology; whereas Roberts' pictures are mostly little more than blackboard sketches in an old-fashioned-looking book. It is obviously unlikely to be a winner in this market. Some schools may want to have a copy in their library for the coverage it apparently gives of cancer (no *ras* genes?), human genetic diseases (very incomplete), ethics (superficial), population mathematics (elementary) etc. But no!

The remaining question is: can *Biological Inheritance* be used by undergraduates? In my experience, University teachers usually recommend a text which is up-to-date and corresponds to their interests. They then proceed, doing their own thing, to give a course which may have little relation to the emphases of that text, and, in a flurry of enthusiasm, rightly pursue a topic to the point where students anxiously await the next number of *Genetical Research*, or whatever, for the ensuing instalment of the story; and they often ignore whole areas of the subject; say, population mathematics, as old hat. The textbook is a safety net in which the student will find topics not dealt with in detail in the course, or will find particulars there is no time to cover in lecture or seminar. Open University courses (distance learning) seem to be the exception to this rule, for good reasons.

*Biological Inheritance* falls very far short of being a safety net. There are many *ex cathedra* statements

like, 'When genes are repeated *excessively*, by mutational gene amplification, the effects can be *diverse* and *widespread*. Many *cell lines* can give rise to defective organs. Cancer can also result from gene amplification. *Mental* and *psychiatric* problems can be caused by excessive mutational gene amplification.' What would a student make of the words I have italicized? Rather typically, too, no references are quoted for these statements, but have to be found by the student, if he/she can, in a chapter-by-chapter collection at the end of the book. I was surprised, though, on looking at the section on the control of development in *Drosophila*, to find that it was not only inaccurate but that there were no references to the work of Nusslein-Volhard *et al.*, of Lewis, of Gehring, or to the recent reviews by Akam and by Ingham. In short, work outside the author's direct experience was out-of-date and ill-understood. And these criticisms apply to some of the molecular biology summarized. So, even if there is some stimulating material in the sections on evolution, which must interest the author, there are far better texts for undergraduates to consult. Roberts should have studied them before he started writing.

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