adding albinism and cystinuria as examples) seems to have fallen on unreceptive ears.

In his study of alkaptonuria Garrod had noticed an increase in consanguinity amongst the parents of affected cases. This fact was picked up by the botanist Bateson, one of the early advocates of the recently rediscovered Mendelian principles, who pointed out that 'the mating of first cousins gives exactly the conditions most likely to enable a rare and usually recessive character to show itself'. A rapid exchange of correspondence between the physician and botanist followed, and in a *Lancet* paper in 1902 Garrod stated that Mendel's law of heredity offered the best possible explanation for a condition such as alkaptonuria.

In the first decade of the twentieth century a furious debate raged between the Mendelians and the biometricians. Garrod took no part. He continued to study his 'metabolic sports' and the detailed chemistry of the urinary pigments. Once he had satisfied himself that consanguinity was involved in inborn errors of metabolism, he seemed to have had little further interest in the genetic mechanisms that might be responsible. In 1914 the German biochemist, Oscar Gross, reported that an enzyme capable of oxidizing homogentisic acid was deficient in patients with alkaptonuria. The vital connection between gene and enzyme was tantalizingly near. But not until Beadle's paper in *Chemical Reviews* in 1945 was it explicitly stated.

It is easy with hindsight to see what others missed. Perhaps the intellectual climate in 1914, with the Great War looming, was not right for making theoretical deductions. By the end of the war, Garrod had lost two of his three sons, while the third died in the flu epidemic of 1919. As befitted an English gentleman of the time, his grief was private and he talked little to friends about his loss. But is hardly surprising that at 62 years of age some of the fire went out of his work. One can only speculate on how the development of genetics might have changed had Garrod been able to deduce from the evidence before him in 1914 that the function of genes was to make proteins.

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Preimplantation Diagnosis of Genetic Diseases: A New Technique in Assisted Reproduction. Edited by Y. VERLINSKY and A. M. KULIEV. Wiley–Liss. 1993. 144 pages. Price $59.95. ISBN 0 471 58824 5.

'Genetically disadvantaged' is the new political correctspeak for couples where both partners are heterozygous for the same rare recessive mutant gene. If such couples wish to have unaffected children they must resort to prenatal diagnosis and the 1 in 4 possibility of a termination of pregnancy. For some, though in actual practice a total minority, abortion is morally unacceptable, and their options are to forgo reproduction or to take a chance. In theory the development of methods of preimplantation diagnosis overcomes this problem by permitting selection of unaffected gametes prior to fertilization or unaffected pre-embryos before implantation. These two techniques, of which the latter is the better established, have been collectively termed preimplantation diagnosis.

The most serious drawback to making genetic diagnoses on gametes or pre-embryos is that the high failure rate of the subsequent fertilization and implantation processes usually renders the findings void. In fact the 'take home baby' rate of in vitro fertilization centres, from which the success rates must be derived, is usually below 15%. This means that a preimplantation diagnosis may have to be repeated up to 10 times before the couple achieve their goal of an unaffected child. Couples need to be absolutely sure that termination of pregnancy is outside their moral framework and equally determined that they want to have a child before they go through this long-drawn-out and emotionally draining experience.

Many of us suspect that preimplantation diagnosis will never become a mainstream part of antenatal care. None the less, it attracts a great deal of attention in both the lay and medical presses. The professional publications, like this one, all suffer from the same disadvantages in that they are written by aficionados for aficionados, and give completely unbalanced accounts of the reality of the subject. Lavish chapters on the technical minutiae of making cytogenetic or molecular genetic tests on single cells are usually followed by an apologetic few paragraphs on the fact that the whole science is undermined by the failure rates of artificial implantation. This book is no exception; furthermore it is compiled by the staff of the Reproductive Genetics Institute and Illinois Masonic Medical Center, which I understand to be a private organization selling preimplantation diagnosis. Perhaps it should be labelled 'advertisement'.

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Handbook of Quantitative Forest Genetics. Edited by L. FINS, S. T. FRIEDMAN and J. V. BROTSHOL. Kluwer Academic Publishers. 1992. 398 pages. Hardback £54.00. ISBN 0 792 31568 5.

This book is Volume 39 in the excellent 'Forestry Sciences' series published by Kluwer Academic. It has brought together 10 of north America's most respected quantitative tree breeders to present a chapter each on different aspects of quantitative tree breeding. The book grew out of a meeting of the Western Forest Genetics Association (WFGA) back in 1987, when it