

SYMPOSIUM ON MATHEMATICAL GENETICS

Sussex, 26–27 March 1974

Following the success of the first meeting in Sheffield in April 1973, a second symposium was held in the School of Biological Sciences, University of Sussex, on 26th and 27th March 1974. (See *Adv. Appl. Prob.*, 6, 1–20, for abstracts of Sheffield meeting.) The objective was, as before, to provide an opportunity for the presentation of papers on mathematical aspects of genetics.

Thirty people attended and the twelve papers given covered a wide range of topics. Abstracts of these papers are given below; further information should be obtained from the individual authors.

It is proposed to hold a similar meeting in Edinburgh in 1975.

The increase of balanced chromosome mutations in mammalian populations

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Balanced, autosomal chromosome mutations do not change the genotype of animals that are hetero- or homozygotes for the mutation. However, in the gametes produced by a heterozygote animal, there normally exists a fraction with unbalanced chromosome complements. Such gametes are functionally effective in mammals and produce embryos with unbalanced genotypes, which leads to zygotic loss. The fertility of chromosomally heterozygote animals is thus lower than the fertility of homozygote animals. This fertility decrease of heterozygotes has been shown in a number of studies on translocations in mice, cattle and humans. The problem is, how such mutations can ever increase in a population until all animals are homozygotes for the chromosome change.

To review various evolutionary factors which may help a chromosome mutation to increase, a start is made from a simple, random mating, multiplicative fertility model, where the heterozygotes have fertility decrease s (or s_m and s_f if a distinction between males and females is made), while the two kinds of chromosomal

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