BIOLOGY

IV. ABNORMAL SEX RATIOS AND NORMAL SEX RATIOS IN BRUCHUS

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(Abstracted)

The cowpea-weevil, Bruchus quadrimaculatus, is especially adapted for sex studies because it is not difficult to distinguish adult males and females. The males are usually smaller than the females. The former are less marked with spots and patterns while the latter are always spotted conspicuously. The mechanism that geneticists and cytologists believe to be accurate for

sex determination is a sex chromosome mechanism. By this mechanism through a chance assortment of the sex chromosomes, equality of the sexes should result in giving an approximate 1:1 sex ratio. There are in general two kinds of sex determination. In one, as in most insects and all mammals, the female is homozygous (XX) and the male is heterozygous (XY). In the second type, such as in moths and birds, the females are heterozygous (ZW) and its males are homozygous (ZZ). Either of these should give exactly a 1:1 sex ratio, equality of males and females, unless acted upon by some other agent.

The abnormal ratios concerned in the problem were 2:1, 1:2, 3:1, 4:1, and 8:1 ratios. These are to be explained by the presence of lethals.