relation between the sex ratio of a culture and the pedigree of the parents—in fact, two cultures from the same parents may give quite different sex ratios.

Preliminary experiments indicate that environmental conditions—especially temperature—affect the sex ratio in this line; but we are not yet able to control it at will.

In this race the females frequently have abnormal abdominal bands; but this character appears in the males only very rarely. The evidence indicates that it is this character that is influenced by environmental conditions, and that the very abnormal females do not emerge from their puparia. Dark pupæ, evidently dead, are always to be found in cultures that give a significant excess of males. A few of these have been dissected, and have been found to contain dead flies with abnormal abdomens. In the few cases in which the sex was determined, these were females.

When the race here described is crossed to unrelated races, the sex ratio in F_1 approximates 1 : 1, and the F_1 females do not have abnormal abdomens. Both characters, however, reappear in the next generation. These crosses show also that the characters are both transmitted by males as well as by females.

These data indicate that abnormal abdomen is a recessive sex-limited mutation. It commonly affects only females, and the degree of the abnormality produced is dependent on environmental conditions. When the abnormality is extreme the females do not emerge, and an excess of males results.

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The construction of chromosome maps.

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The accuracy with which a chromosome map may be constructed depends upon several conditions. (1) The mutant characters employed should be carefully restricted to those cleanly separable both from the wild type and from each other, and whose viability is practically the same as that of the wild type. (2)

Mutants should be selected whose loci are properly spaced—not so close together that the error of random sampling is excessive, nor so far apart that double crossing over occurs between them. (3) When the amount of double crossing over between two distant loci is accurately known, data involving them can be used by making the appropriate correction. (4) The data must be obtained under uniform conditions, special attention being paid to the age of the parents, constancy and suitability of temperature, and to freedom from genetic modifiers of crossing over. (5) Any experiment involving more than two loci should figure only once in the calculation of each particular region of the chromosome. (6) Data for each region should be adequate in amount as judged by the laws of probability. (7) If slightly different positions are indicated by two or more independent experiments, then a mean position should be calculated in accordance with the amount and value of the different sets of data. (8) The framework of the map having been constructed on the basis of the most significant loci, each remaining locus is interpolated as accurately as the amount and reliability of data permit.

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Effect of position of body on the length of systole and diastole and rate of pulse in man.

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There is need of a practical method of determining the condition of the heart muscle in man. The contraction period of other muscles is lengthened if they are fatigued or degenerated, and this may be true of heart muscle. An accurate determination of the length of systole might be of use, provided its normal relationship to the heart rate and the ordinary variations were known.

At the Minneapolis meeting of the American Physiological Society December 28, 1917, the writers reported that they had studied the length of systole and diastole in man, by recording the carotid pulse and measuring the systole from the beginning of