

8th May, 1953.

Dear Luca,

I want you to have the ^{following} enclosed list of papers or exhibits offered by different members of this department, both to the Biometrical and to the Genetical Congresses. For my own part, to the Biometrical I should like to offer some remarks on "The variability in the length of germ plasma still heterozygous after a given amount of inbreeding" and to the Genetical, a paper on "The experimental study of multiple crossing-over". Dr. Bennett has a paper for the Genetical Congress on "The theory of random mating" and an exhibit of some diagrams on inbreeding. Dr. Owen has a paper for the Biometrical on "Experimental designs in Genetics" and for the Genetical, on "Balanced polymorphism in allelic systems". He will also cooperate with Margaret Wallace in a demonstration of the ^{present} position of the fifth linkage group in the House mouse. Margaret Wallace, if she is able to attend the Biometrical, would like to give a demonstration of a sequential test for genetic selection, and hopes in any case to give a substantial paper on "Affinity" to the Genetical Congress. Father Walter Peters has some genetic work with data to report on the water bugs ^{(*Corixa femorata* (Lynx))} with which he has been working, which could be

presented to either congress or both in different aspects.

I enclose an abstract of my own paper to the Biometrical Congress.

Sincerely yours,

I shall send off Vol 3. Please thank Matteo for his admirable letter! It was fine.

Abstract from "The variability in the length of germ plasma still heterogeneous after a given amount of inbreeding".

Elementary inbreeding theory gives the expected proportion in which that part of the germ plasma initially heterogeneous will be reduced by a given procedure of inbreeding. The progress towards homogeneity is, however, affected by chance at each stage with the consequence that the amount of heterogenic material varies greatly from one individual to another, though obtained by the same procedure.

More exact knowledge of the nature and extent of this variation is obtainable by two paths:- 1. by the calculation of the numbers of junctions formed by recombination at different stages of the inbreeding process, and 2. by the calculation of the rate at which the germ plasma at two different loci ceases to be simultaneously heterogeneous. Using these two methods together the variance may be calculated and the parts ascribed to variation in the lengths of heterogeneous tracts and in their numbers can be distinguished.