11th. March, 1929.

Dr F.R. Immer,
Dept. of Agriculture,
University Farm,
St. Paul,
Minnesota,
U.S.A.

Dear Dr Immer,

The formula for the variance of the statistic obtained by Maximum Likelihood, I first proved in 1921:

"On the mathematical Foundations of theoretical Statistics. Phil. Trans., A, vol. 222, pp. 309-368.

Since I am out of spare copies, the paper is not readily accessible, and I enclose a later more systematic statement of the theory. The actual proof, which is "pretty near" rigorous, and certainly valid is in section 7. I think it could also be deduced as a special case from the T_3 formula of my book.

Your application to the three factor problem is very good and I think exact. I ought to mention that J.B. Hutchinson, a cotton geneticist from Trinidad, was working here last summer on applications of the methods of chapter IX to more complex problems of linkage. Unfortunately I have not yet a copy of his paper, which is to appear in Genetics, but if I can obtain copies, as I hope, I will send you one. I think your solution will be found in his

paper, but I cannot be quite certain.

About $V(\theta) = 4\theta V(\sqrt{\theta})$ the proof you give is perfectly valid. The neglect of $(\Delta p)^2$ is justified because we are dealing with the theory of large samples.

I do hope the variance formulae will be useful. Your letter is just of the sort to give real encouragement, for the practice of the younger geneticists is of far more value than the opinion of older men who have grown used to inadequate methods, and ceased to think much for themselves.

Yours sincerely,