

January 6th, 1935

Dear Professor van Uven,

Thank you for your letter of January 2nd, which I have read with the greatest pleasure and interest.

I agree entirely with the point you make about methods of estimation. Every method belongs to some class of methods having the same efficiency and reducing in the theory of large samples to the same equation of estimation. Of each of these classes only one member has an equation linear in the frequencies. The unique character of the equation of maximum likelihood is perhaps best shown by the fact that ^{it} is the only efficient method for which the equation is linear in the frequencies.

One consequence is that the differences among efficient methods become unimportant for large samples, though they may be of real importance for samples of any finite size. In the theory of finite samples it would, I think, be unreasonable for a better result to be obtained from an equation non-linear in the frequencies; but I have only proved in fact that, as the limit for large samples is approached, the maximum likelihood estimate contains never less information than any other estimate. It would be

good for this to be proved in the true case of finite samples, for which also I am sure it is true.

In respect to your second Appendix, I cannot easily answer you. In your place I should return to a search through the _____ of that great but neglected writer, Gauss, who has certainly discussed analogous questions, though I do not know that he has anticipated your approach.

Finally, may I say that your English is really excellent.

Y urs sincerely,