

The Galton Laboratory,  
Rothamsted Experimental Station,  
Harpenden, Herts.

August 19, 1940

Dear Kendall,

Many thanks for your letter and the paper enclosed. I am very pleased to have the letter for the Annals, as it makes a worthy addition to the two valuable papers you have written on the subject previously.

I am glad also you find the term "cumulants" satisfactory for purposes for which I use it. My own reasons, as usual in such cases, were somewhat complex, but I was influenced by the fact that Thiele introduced his term "half invariants" for a system of statistics calculable from the data, and only later, in the rather casual manner of his time, came to use them for the parametric moment functions to which French and American writers especially later came to apply the term semi-invariants. I have noted Thiele's usage in Statistical Methods, pp 75-78 of the 7th edition. Of course I also wanted a term rather more distinctive than the general term, introduced I believe by Caley, for the wide class of symmetric functions. I fancy the usage you suggest now corresponds with Caley's original meaning. Thirdly, I felt some need to avoid such a cumbrous phrase as "the semi-invariant generalising function" for what I call the cumulant <sup>five</sup> function.

I am glad to have your correction in my formula  $k_{\frac{r}{2}}$  which is obviously right by symmetry or by checking the sum of the coefficients. It had, however, escaped me hitherto among

the rather numerous arithmetical corrections which my mathematical paper required.

Sincerely

In your first paragraph I think you miss a point when you say: "Since these general forms are too cumbersome to be written down, however, the result is not of practical value." At the stage at which it appears in my paper its value was really rather vital, for it showed me that the coefficients of terms in the univariate formulae must be solutions of a combinatorial problem in which the units in the suffix of  $k_n$  are regarded as n distinct objects, and that the rules by which the uni-variate coefficients were obtained must give the multivariate coefficients merely by assigning these objects to two or more kinds instead of regarding them as all of one kind. I fancy this thought may be the latent missing link in the arguments of Section 10.

Yours sincerely,