———

10th October, 1956.

My dear Lawrence,

I have communicated my approval of your title to the Board of Research Studies, and perhaps they will next require it in writing.

I sent you the term in $\underline{x}^7$ in the expression for $\underline{a}$, but I have not calculated the term in the same degree in the final expression for $\underline{pN}$, which seems to me not urgent and certainly would be a chore. It would supply the third correction term to the variance of the fiducial distribution, which at present stands

$$\frac{ab}{N^3} - \frac{48ab - 7N^2}{12N^4} + \frac{11ab - 2N^2}{N^5}$$

with which you may compare the corresponding variance for the angular Bayesian, the comparison being a sensible one because the means are obstinately the same to this degree of accuracy.

I see that the difference of these variances is not, as I had thought, in the first term $\frac{1}{12N^2}$, but rather $\frac{1}{12N^2} - \frac{ab}{N^4}$, which is positive $\overset{or}{\text{and}}$ negative according to the magnitude of $\frac{ab}{N^2}$. I think, however, the only point of importance is that the variances

(marginal handwritten note, reading top to bottom:)

$$\left. \frac{60ab - 11N^2}{4N^6} \right|$$

$$1 \quad \frac{28ab - 5N^2}{4N^5}$$

$$\frac{6ab - N^2}{2N^4}$$

$$- \frac{ab}{N^3}$$

are different, even though, supposing the fiducial process were convergent, not for the distribution in general, which would seem impossible, but for certain parameters of the distribution, such as the mean, the means themselves do appear to agree.

Sincerely yours