

ROTHAMSTED EXPERIMENTAL STATION
(LAWES AGRICULTURAL TRUST)

Director: Sir WILLIAM G. OGG

DEPARTMENT OF STATISTICS
(Research Statistical Service)

Head of Department:
F. YATES, Sc.D., F.R.S.

HARPENDEN
HERTS.

27th September, 1956

My dear Ron,

Many thanks for returning the material on transformations and for the insertion on Kosambi's relation. I am now sending all this off to Oliver & Boyd.

I have now checked that the new χ^2 value for the difference in slope agrees with the ratio given by the square of the difference to its variance. The difference .655 has in fact a standard error of .758. The reworking confirms your conclusion that the recombination in males is slightly higher. I will insert something to this effect.

In my previous letter I omitted to thank you for looking through the preface. I fully agree with your amendments and have already sent the manuscript to Oliver & Boyd.

Give my regards to C.B. if you are still with him. In case you have returned to Cambridge I am sending a copy of this letter there also.

Yours,



Professor Sir Ronald Fisher

P.T.O.

F. Yates & Fixer 27 Sept. 1956 (2)

* P.S. I enclose a further insertion on inverse interpolation which I think might be useful. It would follow immediately on the bit about direct 4-point interpolation. The phrase in brackets is probably enough to warn the reader that the process is not exact. It can of course be easily improved by using θ_1 as the basis of a second approximation and then doing a linear interpolation (or extrapolation) between the two approximations, but I don't think there is need to bother the reader with this. As it stands it gives a useful increase in accuracy. For example, with 7-figure logs to base 10 using 1.00, 1.01, 1.02, 1.03 as tabular values and performing inverse interpolation on the tabulated values of $\log 1.011$ and $\log 1.015$ we obtain

	Linear (θ)	From θ_1
1.011	1.0110045	1.0110000
1.015	1.0150122	1.0149999

F. Yates & Fisher 27 Sept. 1956 (3)

This procedure can be used also for inverse interpolation.

The inverse linear interpolate $x + \theta$ corresponding to a value u is given by

$$\theta = (u - u_x) / (u_{x+1} - u_x)$$

An improved value of θ (though not the exact 4-point interpolate) is then given by

$$\theta_1 = \theta + \frac{1}{2} \theta^2 \rho (u'' - u) / (u_{x+1} - u_x)$$

* [cf. Statistical Tables, 6th edn., p. 39] JMB

27th September, 1956.

My dear Frank,

I am back now and should like to have another look at the working of that example on the change in recombination value with age of parent, of which you sent me the proof when I was in Scotland. I think there must have been some discrepancy that we ought to remove.

Sincerely yours,

I have just received the J.R.S.S. number with the note on Pearson and Hartley's table. I suppose the correction will be arranged for the next number.