

ROTHAMSTED EXPERIMENTAL STATION
HARPENDEN, HERTS

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13th. August, 1929.

Professor Sewall Wright,
Department of Zoölogy,
The University of Chicago,
CHICAGO,
Ill., U.S.A.

Dear Sewall Wright,

Many thanks for your interesting letter and the copy of your comment on my reply. I am inclined to think your comment carries the discussion of your main point as far as it can be usefully carried in the present state of our knowledge, and I do not see that I can usefully add anything.

The point about using selective intensity

$$i = \frac{\delta\beta}{\beta(1-\beta)}$$

was of course aimed at comparisons with the selective value of 'multiple effects', in which also $\delta\beta$ will contain the factor $\beta(1-\beta)$, depending on the gene ratio. From this point of view counter-selection is infinitely powerful against the prevalent type of gene, as is illustrated by the power of mutation to keep a gene in existence against powerful selections.

You see, of course, that the principle of multiple

effects, if carried far enough, greatly increases the number of factors available for modifying dominance, though possibly it does not increase the number whose fate will be settled by the effect in modifying dominance.

I am not sure that I agree with you as to the magnitude of the population number n . To reduce it to the number in a district requires that there shall be no diffusions even over the number of generations considered. For the relevant purpose I believe ⁿ₁ must usually be the total population on the planet, enumerated at sexual maturity, and at the minimum of the annual or other periodic fluctuation. For birds twice the number of nests would be good. I am glad, however, that you stress the importance of this number.

Have you ever bred back "reversed toed" guinea pigs, to the wild stock for a few generations so as to be sure that the heterozygote and two homozygotes were in other respects genetically alike? A quantitative comparison with such material would seem to be of the greatest interest.

Yours sincerely,

R. A. Fisher