

July 11. [1930]

Newnham Grange  
Cambridge

Dear Dr Fisher

Enclosed herewith is my copy of your book with the notes in it in the margins. They are of very unequal importance, but it would hardly be possible for me to assess them without going right through the book again, which I have no time for. A few are just minor misprints, and some are checking your calculations, probably because I had no other paper at the time; they are not meant to be taken as implying that the calculations should be fuller. The more important ones are often things that I did not understand at first reading, but did later; and it might be well to consider whether a smallish textual alteration would not make the point clearer. As a small example of a change I would suggest in a future edition in Ch. II you talk about "average excess" a good deal, but I constantly forgot exactly what it meant, and turning back could never find where it was defined. This could easily be cured merely by printing it in italics once or twice, so that it would catch the eye.

I have made no attempt to alter the proof of my review in the ways you suggested, as I think it is anyhow too late. As to the dominance business, I have never had the practice in thinking about complicated Mendelian things, so was not sure that one might not have a recessive dominant so to speak — hence the word "apparently" in front of absurd. But I do imagine that your theory requires that the mutation-rate of degree of dominance should be far and away higher than the rate of the

mutation itself - and this does seem to suggest that it is qualitatively a different thing. But short of more thorough study, probably including the working out of examples, I do not think I am competent to judge of the finer points of Mendelian modifying factors.

As to the runaway process of sexual selection I am still unconvinced, though my uncle forwarded me your notes on it and the reprint (for which thanks). I agree that the facts point to some runaway process being there, but it still seems to me that you have not got it. To get such a process one wants two independent causes reinforcing one another, I suppose. You say that fine cock is one and artistic hen the other. I say that the cock is only fine because the hen is artistic, ~~so~~ ~~attractively~~ and I claim that is only a single effect. I do not know if a mathematical theory could be made, but that ought to be done to clear the thing up. One would hope to get an effect advancing exponentially? or according to the square at any rate, so as to annul for many generations, the counter selection. However this is your business rather than mine.

In conclusion, may I say that I found the book most interesting in all its parts, and that I hope you are going on with that sort of thing. Only so can the trouble be cleared up with the people who say that N.S. is proved inadequate <sup>by such a such an example.</sup> for so and so. Be much regret that the part about man will probably miss a public, quite capable of understanding it and benefitting, but terrorized by Ch. II IV & V.

yours sincerely  
Ch Darwin

Page 137. 2nd paragraph. I don't see it. There are always females who don't care and take ugly cocks, and these should breed just as well. By hypoth. there are too few hens to go round so all get cocks. Would it work if one sup<sup>d</sup> that ugly cocks were less exciting because of less hormone and so left less progeny. I expect this begs the question altogether.

As I understand the argument; the two agencies are cock beauty and hen taste, and each reinforces the other. But if there are fewer hens I don't see how hen taste gets reinforced. Or if there are too many hens for all to breed then it is not taste, but amorous in the hen that not be favoured.

Later. I don't see the double effect nec. to make it a runaway process, but only a single one, e.g.P.