

October 11, 1940

Dear Harland,

Many thanks for your letter, which I am very glad to get. Nothing could be jollier than a situation in which scientific views were discussed with the exactitude and impartiality appropriate to pure logic, for in that case any new fact is an obvious enrichment of the material available to all thinkers, and a new argument is as good as a new tool in a workshop. We should perhaps feel grateful and gratified all round; but in fact the situation of research is rather different. Actually almost anyone who makes a scientific advance of almost any kind is bound to be exposing as erroneous or obsolete views and methods formerly taught and trusted. The teacher especially who is accustomed to pontificate is decidedly reluctant to eat his words or to recast his courses. He therefore finds some excuse for not doing so by ignoring or, failing that, belittling and criticising with more or less astuteness views which threaten his current stock of ideas. This temperamental factor is almost always in evidence in the earlier reactions to any new notion, and of course ^{The publication of} new findings and the discussion of their relevance is not really carried out in logical terms, much of what is said being read, and I suppose written, in the sense of a vote Aye or No.

In fact, of course controversy, even with ruffled tempers, does not do nearly so much harm as might be expected, but it does enough harm to make me want always to avoid writing severely except in cases where unfair personal attacks have been made on a third person.

On the question of modifying factors selected on their own account, there is a distinction worth making, of which I do not know whether you have ever formulated it to yourself: it is exceedingly difficult for any factor to be mathematically neutral; indeed this is almost impossible, but even to be neutral enough for the incidence of such factors in a large population to be approximately as though they were neutral requires a balance of forces about as accurate as a chemist uses in the finest chemical weighings. Consequently the factors actually used in dominance modification will necessarily be predominantly those which have some, perhaps slight, selective advantage on their own account. This, however, affords no explanation as to why dominance is modified in the right direction. The explanation ^{lies} ~~is~~ in the additional selective advantage afforded by improvement in the heterozygote, i.e., there is no need to postulate that those genes which make changes of dominance in the right direction do ipso facto enjoy any selective advantage other than that provided by the improved viability of the heterozygote.

This is presumably true of all selected ^{we} effects without exception, e.g. those by which the spur of a cock was built up were presumably the most advantageous, or least disadvantageous, of those by which the same morphological change could have been brought about.

Your new artificial allotetraploid sounds like being delightful material for a variety of purposes. I shall hope to hear a good deal about it as your papers come out.

Yours sincerely,