

Cuffe's Corner - Forest Row. Sussex. 22.2.32

Dear Fisher.

I have not yet sucked the whole juice out of your two letters, so I shall keep them by me for another suck. It is good of you to take so much trouble. It what I wrote stirred you up to reconsider these problems, why it has done something, and may rest content for a bit or for ever in its drawers.

It does seem to me that favouring a mutation as it arises, and ^{the} favouring one combination of existing genes rather than another, does make a fairly radical distinction in method. Certainly it is all rather guess work, as I do not believe we yet know how wide an effect a gene can have. What I have read about Drosophila mutations gives me the impression that each gene mainly affects one part. You do not get a mutation upsetting the whole internal arrangement, perhaps, largely because such mutation would be fatal at a very early stage. Imagine two cottages, similar in most respects, one painted red and the other brown; then these are two species. Directly you meddle with the shape of a room in the interior, you upset a lot of internal arrangements, shape of other rooms, heating, lighting, telephones, &c. To ^{differentiate} ~~differentiate~~ orders or classes needs a gradual and nearly simultaneous changes in great numbers of genes - at least

that is how I view things. And these gradual changes are generally brought about by selection of previously existing combinations. I can conceive an animal learning to fly fairly quickly, in the evolutionary sense; because that needs a differentiation mainly in a few parts only. But a bat's descendants will be distinguishable as a mammal for an immense time. It will be long ages before ^{they} become distinguished from the ordinary mammals by such a radical difference as laying eggs, for example. The distinguishing features of animal and plants, in regard to absorbing carbon from the air, would need an immense time to arise, so it seems to me, because of the complete change in the action of nearly all the genes, a change which must have taken place simultaneously and slowly. But I am going over my old ground.

I have written a little addition on Eugenics. In it one thing I try to show is that to change an environment so as to make a harmful recessive become beneficial is to set in motion the most rapid evolutionary process known to us. It is rapid because recessives can come to the surface with any degree of frequency - much more frequent than mutations; because such recessives can differ from the normal to any degree, provided they are capable of interbreeding

like the normal; and lastly because this is a
 process that goes on with increasing rapidity, just as
 the weeding out of racemose gets slower and slower.
 And this rapid evolutionary process is what
 Philanthropists, who adopt no safeguards, are setting
 in motion so as to multiply the unfit.

With I want bore you very much
 Yours sincerely

Demand Darwin.

P.S. I blundered. It was the Spencer letter which
 F. Galton undertook to give me an old man,
 and did not actually come up to scratch.