

Cripps's Corner. Front Row. Sussex. Dec. 17-18.

My dear Fisher.

I should have written before this to thank you for Chap. III had I not been rather seedy. Nothing much aches, but it seems to addle my brain. You must not pay too much attention ^{at any time} to any of my criticisms, ~~but~~ because they are just written straight away, and may easily be erroneous. It may suggest thoughts, that is all.

What I had mainly in my mind about Chap. II was probably the point I tried to make in my article on N.S. in The Review, and the letter subsequently correcting it. It was that the expediency of coordinating the different parts of the same organism is the main check on the pace of N.S., and consequently that, with complex organisms, the pace is very slow when coordinated changes have to be effected. If the colour of a butterfly can change without any change in any other quality, it can be quickly made to fit its surroundings. The point which I did not see, and your chapter has made me see, is that the more complex the surroundings, the slower will be the adaptation. If there is only one other butterfly to mimic, N.S. will ^{do} the job quickly. But if there are 2 or 3 different butterflies, to imitate each of which would be advantageous, the benefit from imitating any one of them is likely to be diminished,

and N.S. made proportionately slower. It seems to me, therefore, probable that it is generally true that the simpler the organism and the simpler the surroundings, the quicker its adaptation takes place. Lowly organisms at the bottom of the sea will become almost perfectly adapted to their surroundings, and will, therefore, out-live for vast periods of time. On the other hand a highly complex organism in a highly complex environment will evolve so slowly, and will have such vast possibilities before it, that it would take a practically unlimited time to reach the stage when no further improvement would take place. I may here be making the assumption that the possible range of mutations is more limited in the simple than in the complex organism. But I want to establish the view that evolution of complex organisms will go on quite indefinitely in an unchanging environment. But please remember my brain is getting a bit addled.

I think I did send you my Galton address for remarks, and said I should not wait it but till the new year, did I not? I shall then begin to fuss about it.

Yours sincerely

Leonard Darwin