

Cripps's Corner. Forest Row. Sussex

[? June 1932]

54E

Dear Fisher.

I have been thinking over my old problem of the suitability of useless structures, and of the origin of species, i.e. the way in which organisms are swept up into neat heaps, and I think I see new light. I wonder if you will show cold water on my ideas. You ought not to do so, for what I suggest is merely an outgrowth of your theory of the fission of species, which you may perhaps yourself have fully realized. Whenever 2 varieties are adapted to 2 localities; whenever two beneficial but incompatible mutations keep appearing; whenever 2 combinations of genes form superior types which cannot march together in an evolutionary advance — then natural selection is always striving to find some dodge which will result in sexual incompatibility between the 2 forms. This is, I take it, the basis of your theory. Now at first sight it would seem that when fission has taken place — or failed to take place — natural selection would have done its work, and no other traces would be left. This now seems to me highly improbable. If natural selection happened to hit on a dodge which would create sexual incompatibility between a form containing genes A, B & C and a form containing genes D, E & F, she would succeed if her object — was to make forms containing A fail to breed with forms containing

D. But after fission, forms containing B & C would continue in each of the 2 species to avoid breeding with forms containing E, & F. I mean that AA & DD are the 2 varieties, & B or E & C or F are allelomorphs. B, C, E, & F will be found with each variety, but in differing proportions in all probability. If B is rarer than E, it will find it harder to get a mate, and tend slowly to die out. Hence in the end each variety will contain B or E & C or F. In other words their degree of variability will be diminished. And this will apply to useful characters as well as useful, or may do so. This is my theory. Ever since Mendelian inheritance came on earth, natural selection will have been doing something all the time which may tend to reduce the variability of all species. I wonder species are not more uniform. But the more uniform they become, the less powerful will be their selective action. Another point is that selection tends to make recessive qualities, or the patent-bearers of them, mate with unlike forms, not with like forms as above - We must imagine all homozygous harmful recessives eliminated from a species before we judge how great uniformity has thus been produced. I expect in nature, when this has been done, species are very uniform. The point marked with a X is that about which I have most doubt - I am assuming these allelomorphs to be nearly equally beneficial.

I have been on the sick list for 3 weeks or so, and the doctors still want me to be very careful. I wonder if they know what they are talking about! When I get well I may write this out properly, which I have not done here - or I may not, as I now find it much more difficult to do so.

Why do birds flock together in separate flocks, as I believe they do? Is it to prevent, or lessen the probability of incestuous mating?

No need to answer all this, which is blowing off steam to pass the time!

Yours sincerely

Leonard Darwin

P.S. In my Cambridge Press pamphlet of about 10 years ago I pointed out that <sup>with</sup> varieties adapted to different localities, which could breed together, the smaller would tend to be extinguished. This is a different point. It would give some help in starting fixation.