Dear Fisher,

I have been thinking over my old problem of the similarity 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 share cold water on my ideas. You ought not to do so, for what I suggest is merely an outgrowth of your theory of the fitness of species, which you may perhaps yourself have fully realized. Whenever two varieties are adapted to two localities, whenever two beneficial but incompatible mutations keep appearing; whenever two 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 two forms. This is, I take it, the basis of your theory. Now at first sight it would seem that when fitness has taken place—or failed to take place—natural selection would have done its work, and no other trace would be left. But now seems to me highly improbable. If natural selection happened to hit on a dodge which would create sexual incompatibility between a form containing gene A, B, C, and a form containing gene D, E, and F, she would succeed in her object — to make form certainly a fail to breed with form containing
But after crossing, none certainty B and C would
continue in either of the 2 species. To avoid breaking
with the forms containing E, if F. I mean that AA x DD
are the 2 varieties, but B or E x C or F are allelomorphs.
B, C, E, or F will be found with each variety, but in
differing proportions in all probability. If B is rare that-
E, it will find it harder to get a mate, and tend
slowly to die out. Hence in this and each variety will
contain B or E x C or F. In other words their degree of
variability will be diminished. And this will apply to
all the characters as well as useful, or may do so. This
is my theory. Even since Mendelian inheritance came on
earth, natural selection has been doing something all
the time which may tend to reduce the variability of
different 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 selective
will reduce the number of recessive qualities, or the patient becomes
more, mate with unlike forms, nor with like forms as
above. We must judge all homozygous harmful recesses
eliminated from a species, before we judge how great-
uniformity has been produced. I expect it's nature,
when this has been done, species can vary uniformly. 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 doctor still wants me to be very careful. I wonder if they know what they are talking about! When I get well I may write their own property, which I have not done here—so I may not, as I now find it much more difficult to do so.

Why do birds flock together in separate species, and behave thus? Is it to prevent, or lessen the probability of intercrossing mating?

No need to answer all this, which is being off stream to pass the time!

Your sincerely,

Charles Darwin

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