Cripps's Conna. Forest Row. Sussex.
Dec. 1926

My dear Fisher.

I suspect you are being rather muddle-headed over this sterility business; but I can't resist having one more go. It will perhaps make it more clear to use infertility and sterility in different senses. Let infertility imply a tendency to produce smaller families than whatever came. Let sterility mean the same when the sperms are given every chance of reaching the ovum. It is sterility and not infertility which naturalists have held to distinguish species, and it was sterility which my father was thinking about.

I see clearly that infertility of certain types may arise through selection; e.g., as you suggest, by flowering at different times, or by attracting different insects, or, with the higher animals, through unwillingness to mate. But this is no necessary step to sterility. In fact, when perfect infertility is thus
Droughts about by selection, selection acts then leave no tendency to promote sterility. The proof that sterility may be promoted only makes the explanation of sterility more difficult.

Again I say that when sterility takes the form of failure to impregnate, and when this failure does not prevent impregnation from the same stock, it is a form which can be produced by selection. Plants impregnated by wind blown pollen would have more survival value the less probable impregnation by foreign pollen were found to be. But I gather that my father held that for the most probable step towards sterility was not failure to impregnate, but rather impregnation into fewer offspring.

Take two couples, one having one hybrid offspring and the other two. If these hybrids are of such an inferior type that they never mate, or if they are sterile, then it does
nor seem to me that the individuals which have fewer offspring have any survival value in consequence. If the hybrid is only somewhat inferior to the pure stock, then I think that steadiness may arise in the way you suggest. But even then, must you not assume that the hybrid is more likely to mate with a near blood relative than with one more distantly related? If a hybrid by making damaged the stock, and if it were a matter of chance that individual's descendants were thus damaged, would the parents of few hybrids have any survival value over the parents of many? If we imagine family Isotani, which will always take place to a certain extent, then I see that the more inferior hybrids, there are produced in that family, the more the stock will be damaged.
and the more probable will be

I think I now see that sterility may be produced in nearly all cases where sterility has not been produced. Whether sterility of hybrids can be so produced, I am doubtful.

The case when the hybrid of Superior to the parent stocks has also to be considered. As far as I can see the result would generally be, if there were much interbreeding, an intermediate or one of the two parent stocks.

But I am not sure.

You see that you have a hit whole nearly covered me so your reply. Now don't answer this.

Your sincerely

Leonard Darwin