June 21st. 1930.

Dear Major Darwin,

The point of my letter to Nature is quite a negative one, that one cannot gain any guidance from the mere fact that (egg) only one egg in 10 hatches to a larva, and only one larva in 100 pupates and emerges successfully. The fact that of the eggs laid 90% die unhatched, 9.9% die as larva or pupe, while only 0.1% die as adult insects, can not be taken to imply that Natural Selection is more potent on eggs than on larvae, or on larvae than on adults. You are wanting a much more positive contributon, but I was only trying to show the fallacy in the simple argument stated above, by saying that a freshly emerg emerged adult is, on the premises, worth 1000 newly laid eggs, which serves to counterbalance the apparent disproportion.

Your point about how much of the mortality is selective is of course a much more subtle one, and could not be dealt with by a mere enumeration of the number surviving to different ages. One fairly simple step towards a more positive statement is that if A and B are two groups of genotypes into whic the species is divided , then if I kill one in 100 of group A, and none of group B, I exert the same selective influence at what whatever stage I operate up to the commencement of reproduction

therafter I exert a diminishing affect, and none after reproduction has completely ceased. To do this I should have to kill (supposing the groups are equal as regards other selective agencies) 1000 times as many new eggs, or 100 times as many newly hatched larvae, as if I killed them off at emergence. That is I must destroy equivalent amounts of reproductive value, but this statement holds even after reproduction has commenced and up to the end of life, or at least as long as there remains 1% of the reproductive value of genotype A for me to destroy.

Julia Bell must be about 45, and I do not know her work on eye defects. She has done a good deal of routine calculation at University College. Wishart, who knew her there, thinks she is a very nice person to get on with, though probably not very adaptable.

Yours sincerely,