5th October, 1915.

Dear Fishor,

I want to bother you once more about my inheritance hobbies, as I may now find time to work at them a bit.

To remind you of what I said before, first imagine a number of genotypes of pure lines, the genotypes as regards each character being normally grouped about a centre. Then imagine each genotype to begin to fluctuate. Then we shall have a state of things in which we can account for the regression of the son as compared with the father. But there would be no regression beyond the son, and we know there is further regression. Next imagine the inheritance Mendelian, except that the characters blend perfectly. If the zygote is AB, then the character is the mean between A and B. We can imagine either a fluctuation due to a fluctuation of the whole zygote AB, or a fluctuation due to larger fluctuations in each separate gamete, and, as far as I can see, the result will be the same. But of this I am not sure. In the next generation we get A and B segregated, the mean between them showing a certain regression as compared with AB, the parent. But then A and B will on the average mate with an average partner, and, the inheritance being blended, there will be regression in this second generation; and so on in the succeeding generations. Whenever you take a selected individual

and mate him at random, there will be regression in the next generation. Let us call this the regression of random mating. Now according to Pearson the correlation coefficient of father to son is about .5, and I see Schuster on p.125 says that the correlation between grandparents and children is often about .3, and it seems to me the problem is how nearly can this comparison between the parental and grandparental correlation coefficient be accounted for ~~purely~~ almost entirely as a case of random mating regression? If there is any selective mating this will lessen the regression. If the regression cannot be at all nearly thus accounted for there is something wrong in my views. This is the main point on which I should much like your help. I have looked through your old letters, and I think I ought to be able to answer this question myself. But I cannot.

One other less important point. I gather that you came to the conclusion that fluctuations would not assist the action of natural selection. In thinking it over I wonder if you have assumed that the deathrate is some function (it does not matter what) of the difference of the measure of the character from the median. If so I agree that fluctuation will not help natural selection. But this is, I suspect, a law which is seldom even an approximation to the truth. Take an extreme case. In certain circumstances it is conceivable that all giraffes would die from

want of long enough necks, whilst some would live if the fluctuations of neck length were great enough. Or again, all giraffes below the average in neck length might have equally bad chances of life, whilst the fluctuations of the tall-necked ones might materially affect the distribution of the death rate in this long-necked half of the species. In short it seems to me that whenever selection is lop-sided, fluctuations will increase selection, and that selection is generally lop-sided. Where the selection as it were centres about the median, does it not mean that the median is the best position, from which no progress can be made? And this is seldom the case.

I got back from you my pencil notes. But I cannot trace that you have returned the typewritten article on "Heredity and Environment, a warning to Eugenists." If it has gone astray in the post it is little consequence, as I have a copy.

Yours sincerely,

L. Darwin