

22 September 1943

My Dear Dunn,

Many thanks for your letter. I see that there is more to be done in getting a decent Department built up at Cambridge probably than I shall have time to do, what with the war, before my retirement age. However, I may be able to make a decent start.

About "normal development" I expect we agree as to facts, though we find it hard to use the same language. I suppose, for example, that a necessary and therefore normal development in a mammal is the heart. If you were making a contract to have a mammal built to your specification, you would probably demand that it should have a good big heart, on the principle of having some extra power behind the engine. But of course you would recognise that in fact, et ceteris paribus, if the size of the heart in any mammal were progressively increased through a succession of stages it would pass an optimal value, and beyond that the heart would be too big at the expense of more valuable organs, or of harmonious working with them. Personally, I suspect that the optimum is usually not far from the actual mean, but you need not admit this; it is unnecessary to the cogency of my main argument, namely that

a gene which always tends to increase or decrease the size of the heart will in some circumstances be advantageous and in others disadvantageous, and these opposed experiences have actually occurred to sections of the species either in past times in distant places, or among particular genotypes. I submit that we shall never find a character which cannot be carried to excess, so that any gene affecting a character will be sometimes advantageous, i.e. when the character is in defect, and sometimes disadvantageous, i.e. when it is in excess. I submit too that the more important or vital the structure or function concerned is, the more sure we may be that the optimum is closely approached and that fluctuations, in the sense we are using the word, must more surely occur.

I do not yet agree with you about Umbrous and Sable, though perhaps the lines I now have in preparation will show you are right. My note will have served its purpose if you are quite clear that neither I, nor, so far as I know, anyone in my Department was responsible for Grüne berg's statements. He was often about, picking up information, and I think my Umbrous is the only gene of the kind which he has ever seen segregating in culture.

Your P.S. is interesting. Does it not show how thoroughly stabilised or buffered the normal genotype often is against the effect of genic variation? That of course is one reason why I should put modifiers of Yellow only in a ^{quite} different class from those which also modify the wild Agouti. I should much like to see your super-dark Yellow. The Rockefeller people are kindly getting a small consignment of mice for me. If possible, I hope you will send some through them.

Yours sincerely,