19th March 1935

Dear Pease,

Thanks for your letter of the 17th. As far as I can see, the only adequate technique is what you suggested, namely continual backcrossing to a pure strain, using, if one is introducing a recessive, inbreeding in alternate generations. This makes the job sadly long with poultry. I am interested that you think it would be feasible with dominant white, that is, that one could introduce the gene for colour into a white breed, like white Leghorn, recognising the heterozygous in each generation. Now I believe with you, that heterozygotes may be easily recognisable in wild gallus, but I am not a bit sure that one would be able to recognise them in the presence of the other genes in the white Leghorns. However, one cannot tell without trying.

The same technique would be very instructive with breed-crosses, e.g. after crossing a breed with dominant A with one carrying dominant B, one could make backcrosses in both directions, introducing A and B respectively into breeds in which they did not previously occur, and with
greater difficulty doing the same in parallel with their recessive allelomorphs a and b. Then I should expect rather frequently to find each gene rather more dominant in the variety in which it occurs, than in another variety into which it is artificially introduced.

In the course of your work with the Cambar, have you ever compared homozygous with heterozygous paired birds in chicks, having otherwise black down. I ask because I have never worked with barred on the black background, which is the standard condition in which it is always studied. If in such chicks, the two phases are indistinguishable, then black must be a remarkably effective modifier of the dominance of bar.

One other point. Has any recessive black, producing the general melanism of the plumage, been reported in poultry? I ask, because I have some blacks now derived from non-black ancestors.

Yours sincerely,