28 November 1[illegible].

Major L. Darwin, Sc.D.,
Cripps's Corner,
FOREST ROW,
SUSSEX.

Dear Major Darwin,

If Todd had exhausted the possibilities of his method there would be nothing left for us to do. But he has not, and I doubt if he ever will. He is not specially interested in genetics, and talks of retiring. He would like some geneticist to take on this aspect of his work, but apart from Haldane, who is doing two jobs and a lot of journalism already, there is no one who could be interested.

Early this year I suggested an experiment to obtain a serum diagnostic of sex, as that is the only visible thing in which his chicks are segregating. In birds the hens are heterogametic, so the thing is to take blood from a number of hens, inject into cocks, draw active serum from the cocks, and exhaust it with the corpuscles of several birds, all cocks, until it reacts to no cocks. If it still reacts to hens, thereis a serum for a single factor (or possibly) chromosome). Unfortunately, something Haldane had said had discouraged him from looking for a sex discriminant, so, though he was, I think, interested, he was not

interested enough to fit in a biggish extra job in his programme.

This autumn he sent me a proof of a new paper in which he ~~separated~~ abstracted tests of ~~sex~~ sera exhausted for different chicks on others of the same broods, and asserted that there was no sex effect. I was so concerned that I tabulated all the cases of positive and negative reactions for the corpuscles of males and females, to serum exhausted for males and females, and was able to show Todd that there was an apparent sex effect in the right direction in all three of his broods, and that in one case it was big enough to be judged significant. This time he was interested enough to cut out the references to sex, and to say that he would do the experiment I had suggested.

Beyond sex one wants to know "Do most genes give an appreciable reaction?". For this one needs material segregating in single factors, just as any flock does in sex. It so happens that my test flocks for dominance in the wild Gallus are just of this kind for, from next year onwards, I shall have lines segregating each in one of 9 different factors. The birds will be smaller than Todd's big Plymouth Rocks, and will therefore yield less serum, but I think this can be got over.

It is quite likely the sex experiment will fail, either because the reaction is too faint to show up with his standard quantities and times, or because there is nothing specific in

the female to react to, sex determination being perhaps merely quantitetive. In that case probably Todd will be disinclined to go any further with this aspect of his work. What in my view is wanted, is to offer him a voluntary worker, paid by an outside body, whose programme should be to explore the possibility of detecting single genes.

Yours sincerely,