

23rd June, 1951.

My dear Rob,

Thanks for your letter and for the paper which I return herewith. I have messed the letter about a bit, the chief point being that what you call methods II and III, I should call methods II(a) and II(b), seeing that each of the latter supplements the other and deals with a different question. In II(a), we compare with expectation, the number of families containing recessive children, or equally the number which do not, and having satisfied ourselves that this comparison confirms the theory, we <sup>(b)</sup> compare with expectation the additional recessive children found in those families. This last comparison, II(b) does not involve the fitted gene frequency, but only the Mendelian ratios, and so is a test of viability, parentage, diagnosis of parents, etc., whereas the first involves also the gene ratio estimated from population survey. Under your table 5 I have, therefore, put in table 6 and a kind of explanatory note for page 5.

Apart from all this, I think you should consider whether a reference to the fairly elaborate explanation given by Taylor and Prior would not enable you to shorten your explanation, e.g. by considering only families of  $n$  children without prior discussion of families of one and two children, and make a little space for making clear the actual arithmetic of the

test. E.g. in your table on page 9 the total number of families of one child, whether that child is Duffy + or - does not appear, though I suppose it is the basis of the expected value 5.0528.

If anything I have done is not clearly intelligible please make me make it clear. Once it is clearly understood, however, do feel free to disregard any of these suggestions if they seem to stand in the way of a lucid exposition. The main point to my mind is that what you call method I, lumping together all families of a recognisable type, which are not, however, genetically homogeneous, does throw into one test two different questions, namely how many families have no recessive children, with the second question, how many recessive children do these provide. Both questions, of course, are to be taken in relation to the general framework of the number of families observed and the size distribution of these.

*As referred to*

My salutations to Ruth if she turns ~~up~~ at your department.

Yours sincerely

Note for insertion on Page 5.

Two separate comparisons with expectation are made. In (a), we compare the number of families observed to contain no recessive children, irrespective of size, with the number expected, taking account of the estimated gene frequency and of the sizes of all families observed. In (b), we compare the numbers of recessive children observed in those families which contain any, with the numbers expected on Mendelian theory, when allowance has been made for the fact that at this stage, each of these families is known to contain at least one recessive child.