31 October 1932.

Dr. L. Penrose,
Royal Eastern Counties' Institution,
Colchester.

Dear Dr. Penrose:

I do not understand what is the variate you call incidence of mongolism. As far as I can see you have two observed two-way distributions of Mothers' age ($x$) and Fathers' age ($y$), one for mongols and one for normals.

These supply a common value (based on pooled products) of the regression of Fathers' age on Mothers' age, i.e. of $y$ on $x$:

$$y = b x + c.$$

You wish to compare $\bar{x}$ for mongols with $\bar{x}$ for normals, and this is a straight $t$ test.

Equally you can compare $\bar{y} - bx$ for mongols v. normals, with a known standard error.

You ask how many families will be required to give significance to the results. The answer is that the worse the data the better it fits any theory (except of course the true one). So that if some material made the paternal difference significant your results would be changed, and if it is not
changed the paternal difference will remain insignificant. Actually I should like to see more than 52 and 184 respectively if these are available.

I hope the "normal" children have a real physical existence, and not merely inferred from statements of birth order respecting the mongols. If so, the comparison suggested here would be perfectly sound, and I think you will agree, much better than partial correlations with an imaginary variate.

Yours sincerely,