11 November 1930.

Professor J.B.S. Haldane,
Roebuck House,
Ferry Lane,
CAMBRIDGE.

Dear Haldane,

I think I see the point of your calculations now. I should take +log $(x+1)$ instead of log x, since log $(x+1)$ measures the amount of elimination in the sense that if such a progeesse.g. decimation is repeated log $(x+1)$ is doubled.

~~Such~~ small selective intensities are then not far from proportional to $\sqrt{\mu}$ when $\mu = +\log(x+1)$. The graph I send is remarkable in showing how nearly constant is the <u>difference</u> between the true curve and the parabola. This must have a maximum for quite small values of μ.

I do not think one ought to be surprised at the result that small mortalities are much more efficient selective agents, in that they produce a greater effect "per decimation". One would find very much the same taking the variate selected as an ordinary heritable variate, and not confining the heritable difference to two groups having different means. Actually I suspect that selection always acts by a graded series of rates of death or reproduction, rather than by truncating the distribution. A selective factor proportional on the effective range, to e^{kx} gives a very simple and probable effect, though the minimum mortality needed to effect this would be much less than when the selective intensity is kept small by keeping λ small.

I doubt if it is worth while to bring in variation in S.D., as this will be inevitably bound up with the exactitude of normality; for example your cases of constant coefficient of variation, $\lambda = \mu$, might just as well be equivariant normal variation in log weight. Of course the probability integrals of different genotypes must cross sometimes, but it rather emphasises the arbitrariness of the selection by truncation to stress the paradoxical effects of it ~~readily~~ unduly.

Yours sincerely,