

February 11,
1941

My dear Besse,

I have just received yours of January 17th on the 502 deer. I am a bit foggy as to the practical requirements of the problem, for if you have dressed weight and other measurements I suppose you also have the tooth data, so far as it goes, as a basis for determining age. One way of treating the problem as you state it to me would be to form a linear compound of the metrical values such that the ratio of the variances between age classes to the total is maximised. Such a compound measurement would, of course, give something more like the logarithm of the age than the age itself; but as years do not enter into the data they will not come out at the other end of the machine. Any translation to actual age would have to be done by assigning plausible boundary values to the age classes.

In theory we can only reject variates after working with the whole lot, and what Miss Barnard did with the skull measurements was, in a way, only a plausible aid to judgment. I suppose in your case the lengths of the body and the hind foot, as well as the dressed weight, must overlap largely in the information they supply to the extent that one would be surprised if length of body alone were not nearly ^{all these} as good as the use of the other measurements.

be rather closely associated, so that one would not expect to lose a great deal if one worked the problem with only three metrical variates instead of seven. I find, however, the question of whether a variate is superfluous or not rather bewildering when one is maximising three degrees of freedom instead of one. For this reason, since in reality ~~x~~ you have a single variate, age, in view, one might accept the average values assigned to the four age classes by, let us say, a four-variate analysis. In making the comparison to see whether any one of the four was superfluous by repeating the analysis using three only, but the same fixed averages for the age classes.

Gertrude Cox writes that I may hope to see you at Raleigh, North Carolina in the Summer. I hope this may be true.

Yours sincerely,