29th January 1934.

Dr. O. Tedin,
Svalof,
Sweden.

My dear Tedin,

I have looked through the analysis of the 19 degrees of freedom in the after effect experiment on grass land. As you say, each of the figures you sent is the average of 4 plots. I suppose there are 57 degrees of freedom for real error, but raise this point because in one place you take 12 degrees of freedom belonging to high order interactions as the error in testing the simpler effects. It would, of course, be safer to use the pure error for this purpose, especially as it is based on a larger number of degrees of freedom.

I see that you have calculated the sum of squares by dividing the square of the total difference by 20, e.g. the total difference for liming is 1325 units, and your entry is 1325^{1} divided by 20. As your values are each the mean of 4 plots, I should have taken 5 as the divisor, and if each were the total

of 4 plots the divisor would have been 80, the total number of plots in the experiment.

However, all your values in the sum of squares column seem to be effective alike, so that the test of significance will be valid if your value for pure error is reduced to the same basis.

You will have noticed that the 4 entries involving nitrogen and its interactions are obtainable from the squares of simple sums, and differences of the 4 quantities obtained by sub-tracting 4 times the yield of the no-nitrogen plot from the sum of the 4 yields given by corresponding plots dressed with nitrogenous fertilizers. Equally from each of these, such as calcium cyanamide, one can obtain 4 different quantities, i.e. the sum of all values and the 3 differences between pairs each of which belongs to a set of 4 corresponding to the 4 different fertilizers yielding one of the sets of 3 degrees of freedom in the final analysis.

I have no doubt you did it this way, as it is evidently much the easiest approach. It also serves as an independent check on the values obtained by differences.

Yours sincerely,