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ROTHAMSTED EXPERIMENTAL STATION

(LAWES AGRICULTURAL TRUST)

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OUR REFERENCE

YOUR REFERENCE

HARPENDEN
HERTS

13 December 1944.

Dear Professor,

My Ph.D.Thesis in an abridged and modified form is nearly ready for offering as a paper to a scientific journal, and I would like to report to you the main results of the last few months' work. These generally apply to the main period, namely 1858 - 1902.

1. Following Dr.Maskell's suggestion that some test of significance be made of the difference between the maxima of the pairs of curves, I tested the difference between the complete curves, using a method similar to that described in Dr.Yates' paper to the Royal Society of Edinburgh (1939), p.184. Only the most dissimilar pairs were tested but no significant difference was found.

2. Similarly no significant difference has been found between corresponding distribution coefficients of any pair of curves, viz. b_1(plot 9) - b_1(plot 7), etc. But the coefficients b_0 do differ significantly in some cases.

3. On testing the significance of individual regression coefficients it appears, as may be expected, that only the first coefficient (b_0) is significant in each case,

with the exception of plot 14, complete minerals and nitrate of soda. None of the distribution constants are significantly greater than zero. Some distribution constants (linear and quadratic) were found to be significant in the 1920 - 1940 period.

4. A test of the sums of squares taken out by individual terms of the rainfall regression or the additional portion contributed by each successive term, confirms the result in "3", only the first term taking out a significant portion.

In view of the above I have re-grouped the curves into three sets according to the manurial treatment received, and in the description have confined myself to general remarks applicable to all the curves or to groups of them.

I have discovered some association between percentage botanical composition and previous year's rainfall in the period 1874 - 1895, and have added some relevant remarks.

I hope to present the report to Yates when he returns next week.

Sadie tells me the good news of your proposed trip to India. Both she and I are very glad about it, and hope you will enjoy the change and the sunshine. She joins me in wishing you all the best and a safe journey,

Affectionately,

R.O. Cashen.