

ROTHAMSTED EXPERIMENTAL STATION

(LAWES AGRICULTURAL TRUST)

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HARPENDEN
 HERTS

Dr. R.A. Fisher,
 University College,
 Gower Street,
 London, W.C.1.

17th December, 1934.

Dear Fisher,

I think I have now sorted out the L.S. problem.
 The general scheme of the degrees of freedom are, in the case
 of $p \times p$ square with treatments a, b, c, d, :

Customary Division.

My Division.

	D.F.		D.F.	
Mean	1	←→	1	Mean
Treatments { a \bar{y} rest	1	←→	1	a \bar{y} rest
{ b \bar{y} c \bar{y} d ..	p-2	←→	p-1	Within a
Rows	p-1	←→	p-1	Part rows (α)
Cols.	p-1	←→	p-1	Part cols. (β)
Error { Involving a (δ)	(p-1)	←→	p-2	bvc \bar{y} d.. (γ)
{ Not involving a	(p-3)	←→	(p-3)	Error
			(p-1)	

(Note: In the 'My Division' column, the last three rows are grouped together with a bracket and the word 'rest' written next to it.)

Taking the square

Treatment totals.

a ₁	b ₁	c ₁	d ₁	R ₁	T _a
d ₂	a ₂	b ₂	c ₂	R ₂	T _b
c ₃	d ₃	a ₃	b ₃	R ₃	T _c
b ₄	c ₄	d ₄	a ₄	R ₄	T _d
C ₁	C ₂	C ₃	C ₄	G	

My expressions for the sums of squares for α , β , γ and δ are
 (in a $p \times p$ square):