Table 19.5

Illustrative data for a two-factor experiment with repeated measurements on one factor

		Subjects	C_1	C_2	C_3	C_4	C_5	$T_{r.s}$
Group 1	R_1	1	2	7	6	7	9	31
		2	4	3	7	12	14	40
		3	7	6	4	12	10	39
		4	1	3	3	6	6	19
		$T_{rc.}$	14	19	20	37	39	$T_{1..} = 129$
Group 2	R_2	1	4	4	7	9	1	25
		2	10	12	12	12	16	62
		3	8	7	8	12	10	45
		4	5	7	6	7	8	33
		$T_{rc.}$	27	30	33	40	35	$T_{2..} = 165$
		$T_{.c.}$	41	49	53	77	74	$T = 294$

From this table *six* quantities can be readily calculated as follows:

$$\frac{1}{C}\sum^{R}\sum^{n} T^2_{r.s} = \tfrac{1}{5}[(31)^2 + (40)^2 + \cdots + (33)^2] = 2{,}405.20$$

$$\frac{1}{nC}\sum^{R} T^2_{r..} = \frac{1}{4\times 5}[(129)^2 + (165)^2] = 2{,}193.30$$

$$\frac{1}{nR}\sum^{C} T^2_{.c.} = \frac{1}{4\times 2}[(41)^2 + (49)^2 + \cdots + (74)^2] = 2{,}287.00$$

$$\frac{1}{n}\sum^{R}\sum^{C} T^2_{rc.} = \tfrac{1}{4}[(14)^2 + (19)^2 + \cdots + (35)^2] = 2{,}347.50$$

$$\sum^{R}\sum^{C}\sum^{n} X^2_{rci} = (2)^2 + (7)^2 + \cdots + (8)^2 = 2{,}664.00$$

$$\frac{T^2}{nRC} = \frac{(294)^2}{4\times 2\times 5} = 2{,}160.90$$

Applying the computation formulas given in Sec. 19.8, the required sums of squares are as follows:

BETWEEN SUBJECTS

$$\frac{1}{C}\sum^{R}\sum^{n} T^2_{r.s} - \frac{T^2}{nRC} = 2{,}405.20 - 2{,}160.90 = 244.30$$

ROWS

$$\frac{1}{nC}\sum^{R} T^2_{r..} - \frac{T^2}{nRC} = 2{,}193.30 - 2{,}160.90 = 32.40$$