28th August, 1956.

Dear Frank,

* The formula for χ^2 derived from the general formulae of C and F is

$$
\begin{aligned}
& n \\
& + x\sqrt{2n} \\
& + \frac{2}{3}(x^2-1) \\
& + \frac{1}{9\sqrt{2n}}(x^3-7x) \\
& - \frac{2}{405n}(3x^4+7x^2-16) \\
& + \frac{1}{4860n\sqrt{2n}}(9x^5+256x^3-433x)
\end{aligned}
$$

At the 1% point

$$
\begin{aligned}
x &= 2\cdot326348 \\
x^2-1 &= 4\cdot411895 \\
x^3-7x &= -3\cdot694485 \\
3x^4+7x^2-16 &= 109\cdot7491 \\
9x^5+256x^3-433x &= 2828\cdot938
\end{aligned}
$$

for n = 30

$\sqrt{2n} = 7\cdot7459667$

Power of x	Terms	Remainder	
		50·892	tabular value
	30	20·892	
x	18·0198	2·872,2	
x^2	2·9413	− ·068,9	
x^3	− ·0530	− ·015,9	
x^4	− ·0181	·002,2	
x^5	·0025	− ·000,3	

The last column shows the true value and the errors remaining after each term.

Convergence is quicker for <u>n</u> exceeding 30, but slower for higher levels of significance. The method is good for the <u>general Eulerian distribution with non-integral</u> <u>n</u>.

The introductory note might embody the example in addition to the successive adjustment formulae. On p.41 add "For fuller formulae see introduction".

I have been calculating further C and F adjustments, but no more are needed for this table. It was nice to see you yesterday.

Sincerely yours,

*[Cf. <u>Statistical Tables</u>, 6th edn., p.] JHB