7 May 1932.

Dr. F.R. Immer,
University Farm,
St. Paul,
Minnesota, U.S.A.

My dear Immer:

It was a great pleasure to have your long letter. I was afraid you would find the political atmosphere gloomy when you returned; but I have no doubt that resolute patience will see it through. It seems funny that your Federal Government should be so easily alarmed, since its total expenditure is really relatively small.

On your problem, you have

All beets $50.7022 + 1.566(r - \bar{r})$ with variance 19.5544

Competitive beets $37.3497 + 1.737(r - \bar{r})$ " " 12.8254

$\bar{r} = 20.7317$

Then

$$12.8254\left(\frac{33}{20.7317}\right)^2 = 32.4958 \quad (a)$$

not much better than 34.4577 (b)

Moreover

$$\frac{33}{20.7317} \times 37.2497 = 59.29278$$

and

$$19.5544\left(\frac{59.29278}{50.7022}\right)^2 = 26.7420 \quad (c)$$

So on a basis of relative variance (c) is much the best, the others have each about 50 per cent. of the information given by (c). I imagine the reason for this is that (c) uses more data, i.e. weights of all beets and not only competitive beets. (a), with the regression, is a trifle better than (b) proportionately, but probably this is not significant.

The relative variance is really only a half way house. Ultimately what we want to minimise error variance relative to is variance between experimental treatments. Uniformity trials won't give this, but with actual data (of unquestioned significance) the method which gives the highest z wins, I take it.

I am sure you are on the right lines in developing statistical teaching independently on the St. Paul campus, but with all the work you have already, and are still asking for, you will probably have to aim at getting a permanent organisation; perhaps a graduate assistant and a small computing staff, so that you should really have time to attend to the odd problems on which help is wanted. Otherwise you may find yourself running a ready-made clothing store!

I think it will be worth while to get into touch with

Lindstrom, if you have not already done so, about F_3 work, he was discussing a big scheme for Ames, and possibly also Brunson.

Yours sincerely,