24th May, 1935

Dr. J.C.Drummond,
Department of Physiology & Biochemistry,
University College,
          W.C.1

My dear Drummond,

          The possible effect of overlap does seem certainly the g
greatest difficulty in interpreting the experiemnt. A method
whibh has been very successful in dietary studies with dairy
cows, as measured by milk or butter fat yield, is to give
each diet for a month within neutral or intermediate diet
in the intermediate fortnight; and probably some such
precaution in this case would have produced clearer contrasts.
I do not know, however, whether anyone has examined the data
for cattle to assess the magnitude of the after effect, and
I think it would be interesting to get this done as a guide
to the use of any similar technique.

          The fact that I do not think one can get behind, is
that fairly substantial contrasts, *are obtained* as compared with ~~other~~
standard errors based on the discrepancy *ies* of performance
between diffwrent children receiving the same diet, who have
previously received different diets. It would seem that any
important after effect would not only diminish the average
difference observed between different treatments, but would

also enlarge the estimate of error, and so, for both reasons,
make it more difficult to obtain the significant results
reported. On this point I do think a defender of the experi-
ment has a very strong ground; even if he admitted, as I
think he should, that clearer differences might have been
obtained by inserting neutral weeks, and certainly by enlarg-
ing the experiment by repetition, either at other times, or
on other children; apart from the possibility of after effect,
one way of viewing the quantity data is to say that the
growth of 48 children for six weeks is equivalent to the
average growth of one child for five and a half years, and
that it does not matter that the elements out of which the
total is made are small, provided that, by multiplying
these elements, the error of the aggre/ gate is not unduly
increased. Some quite surprising consequences of this line
of thought were very well brought out by a paper read yester-
day by F.Yates at a sectional meeting of the Statistical
Society. I am sending the galley in case you would like to
look at the paradoxical weighing result given on p.15, under
the heading "Independent Factors." His phrase: "that constant
errors are non-existant" is not very happy, since his
method takes full account of zero error; it only means
that the scale of measurement is genuinely linear or additive,
so that there is no tendency for the zero error to vary with
the weight of the object.

                    Yours sincerely,