

March 24th, 1936

Dear Professor Freehet,

I will try to answer your further questions of your letter of March 23<sup>rd</sup>th.

The investigator who has obtained a single correlation, and who merely infers that the variables are not independent, is quite immune from criticism on the ground that the regression may be non-linear; for this [proposition] if true, would only [decrease] the sensitiveness of his test, and not increase the frequency with which, in the absence of association, high values of  $r$  would be observed. The investigator who finds no significant correlation should always be cautious not to say that no correlation exists, for it may be, as in the case of the physicists of whom I first spoke, that he has failed to detect an important relationship, through using a physical quantity less suitable than he might have used, e.g., total calcium carbonate instead of the calcium carbonate in small particles only. He may have failed equally for the reason you have in mind, namely, through seeking for correlation with a linear function of his observed value, instead of using a function of more complicated kind

which would have revealed what it is in his interest to detect. In fact, I should say that the choice of one form rather than another for the regression equation to be examined is in the same sense a matter of the individual judgment, or intuition, of the investigator as is the choice of the physical attributes to which he is to devote his attention.

It may be worth noting that an investigator, who feels more sure of what physical <sup>quantities</sup> ~~estimates~~ to use than he does of what functions of them would be the most appropriate, can satisfy himself that the data before him deserve <sup>no</sup> more elaborate tests than he has applied by making a test of lineality of regression (Blakeman's criterion is, of course, quite incorrect). For, if there is no indication of departure from lineality in a test specially designed for detecting such departure, he has good ground for confidence that any curvature which exists will not have appreciably disturbed his judgment, based on a linear regression function.

Yours sincerely,