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KIRKHILL,
AYR.

17th June, 1950.

Professor Fisher,
Gonville & Caius College,
Cambridge.

Dear Professor Fisher,

Before commencing to write a memorandum for you on the husbandry aspects of the problem which you raised on Friday last, may I reiterate the point of view which you expressed? If I am in error, in this could you please let me know as soon as possible, for otherwise the remarks I might make would be completely pointless and of no value to you.

1. Main argument

(a) Gradual improvement of husbandry methods, control of disease, better management and general improvement of the environment will lead to increased in the yield of cows as has been demonstrated by experiment as well as by observation of the practices adopted by those farmers who attain high levels of production.

(b) Improvement of the milk production of cattle by methods involving the use of bulls purchased from the best herds and even progeny tested within the best herds will in general give an increase in productive level which is on the average small.

(c) The above two general methods of improvement are not mutually exclusive, for the interaction of hereditary make-up with the environment is of considerable importance. This is clearly shown by Bonnier & Hansson's identical twin experiments where the magnitude of an environmental effect - (plane of nutrition) was shown to be different in different genotypes. This aspect is well known to geneticists but unfamiliar to many animal breeders.

(d) It follows therefore from (c) that the average performance of a particular genotype, under unspecified average conditions (i.e. in a sample of herds representing an unspecified range of environments) gives no information of any value regarding the superiority or inferiority of that genotype under a particular environment regimen. Rigid standardization of the environment for testing purposes implied an increase /

an increase in the efficiency of selection of superior animals only within that particular environment.

3. Problems of measurement.

(a) Whether a particular animal is a good or poor producer of milk can therefore only be defined if it is allowed to "choose" its optimal environment and its yield assessed relative to other animals within the "chosen" environment. This statement implies no assumption that the yield so determined is entirely the result of gene effects: it may be due to prior nutritional and environmental history, or a combination of both.

(b) In the first place nutritional level will be selected as an environmental factor and an attempt will be made to measure that nutritional level which gives most economic production using methods of sequential analysis and the general methods involved in Wieners "feed back" theory. As criteria of economic production levels price ratios will be used.

(c) This involves the study of the individual cow's response to nutritional level; the more usual interest of experimenters in mean effects is necessarily of little importance.

I hope that this is not a travesty of the views you expressed. If it is please could you let me know as soon as possible.

Yours sincerely,



K.L. Blaxter.