Route 1
Mound, Minnesota
March 17, 1950

Dr. Ralph Manley
Director of Research
General Mills Research Laboratory
2010 East Hennepin
Minneapolis, Minnesota

Dear Dr. Manley:

As a final summary and estimate of our research on psychological factors in eating behavior in poultry, the following points are presented:

1. Color of feed does not appear to be a simple controlling variable in determining choice of feed or amount eaten. The results of our experiments on this factor were variable, and it is likely that we were dealing with more than a single factor. The problem has reached a state of perplexity with which we are not equipped to deal.

2. Similarly, our work on feeding schedules produced no positive findings. Several promising leads failed to materialize. The variables of quantities of feed and temporal intervals likewise appear to necessitate a more complicated series of experiments than we are prepared to undertake with our facilities.

3. We did find that chickens satiated on egg mash would eat more feed of another type (scratch grain in this case) and that furthermore, they would eat egg mash in order to obtain scratch grain, a feature of their behavior which might be exploited in an attempt to increase mash consumption.

4. Our work with the feeding problem in turkey poults has proved more rewarding. Eating behavior in poults seems to have two distinct components--seizing and swallowing. The optimal stimulus for seizing seems to be any small object moving in a horizontal direction. The seizing response may readily be elicited at marked strength by a bit of paper, tinfoil, etc., suspended on a thread and moved over the heads of the poults. In fact, the seizing behavior is so determined that a poult may be raised into the air before it will let go of the "bug." The response may be elicited in varying degrees by stimulus patterns that approach the optimal.

The swallowing response seems to be affected by the texture of the object seized. If the object is hard (wood, tinfoil, dry noodles, turkey pellets, etc.) the swallowing reflexes are inhibited. If, however, the object is soft, such as boiled noodles, soaked Cheerios, etc., then the object is readily swallowed.

We have attempted to get the poults to eat the regular Larro mash by constructing a device consisting of a rotating belt with wicks attached which after wetting were dragged through the water and picked up a film of feed. It was hoped that the poult would seize the wick

and as it slipped from its grasp, would rake the feed off into its beak. This contrivance was not very successful. The poults hung onto the string wicks with great vigor, but did not get much of the feed into their beaks. Subjectively, they seemed "disappointed that the bug had got away."

We then prepared a feed by breaking ordinary 3/16" noodles into pieces 1/4" to 1/2" long. The noodles were then cooked and placed in an oblong pan. The panful of noodles when placed in the poults' pen evoked no more response than the turkey mash. However, a "spearing brush" was constructed by inserting ordinary broom straws into a board at 3/8" intervals. When the brush was lowered into the pan of noodles, each straw speared one or more particles. When the brush was raised, the poults pursued the "bugs" with great vigor, seizing and swallowing them rapidly. It is a striking sight to see the poults standing in pans of turkey builder, to which they pay scant attention, while vigorously seizing and eating the "noodle bugs."

It is my observation that there is nothing weak about the poults' eating reflexes. The eating problem in domestic poults arises, I believe, from failure to provide the stimulus pattern required to set off the innate responses. Poults seem to have very little behavior available in response to a pan of feed. The soft morsel in motion seems, at this point, to be essential for the elicitation of the eating reflexes at full strength. Given this stimulus, the poults will show a vigor of eating response which, I believe other observers will agree, is equal to, if not greater than, that of chicks.

If these observations are corroborated by subsequent study, the problem of practical application would seem to be the development of a method of presenting the poult with a soft moving particle of food with perhaps a gradual shift over a period of days to the standard feeding practice.

I regret that we are unable to continue work on this interesting lead, since I feel that the phenomenon is sufficiently striking to warrant further investigation. I believe that with the information at hand, the staff at the Research Farm could carry the poult project on to completion, and should they be interested in continuing, I shall be happy to cooperate in any way necessary to brief them on our study here.

Very truly yours,

Keller Breland