

Experiments on Eating Behavior in Chickens

Crop Pressure

As previously reported in the lead shot experiment, weight of crop contents is apparently not the factor which inhibits eating responses. The following exploratory experiment was conducted in order to test the hypothesis that pressure in the crop exerts the inhibiting action.

The chicken used in this experiment had been without food for 48 hours. Water had been available at all times.

An automobile inner tube valve stem was fitted into the orifice of an ordinary rubber balloon, and the hose of a bicycle pump was screwed into the valve. The balloon was then inserted into the crop of the chicken through the esophagus and was inflated by means of the bicycle pump until the crop was quite taut. The hose connection was then unscrewed and the hose removed, leaving the crop inflated with the balloon.

The chicken's eating responses were then tested by presenting it with a box of feed, including Larro pelleted mash, Larro growing grain,¹ and whole corn. At the sight of the feed, the chicken showed a brief flash of excitement, approached the feed in an eager manner, and for a moment it seemed that the eating responses might be at their normal strength. However, the instant that the hen began to emit a pecking response, the eating reflexes were completely inhibited so that the chicken seized one grain but released it without eating. Rattling the grain in front of the chicken caused the eager approaching response to be emitted again but the responses were so inhibited that the actual eating reflexes would not occur.

The chicken was then placed in her home cage with 80 grams of growing grain. The stimuli of the home situation where the chicken was usually fed were apparently sufficient to strengthen the response so that half a dozen pecking responses to the feed were emitted. However, this was the extent of all eating behavior, and after two hours in the cage the chicken still had consumed none of the grain.

The chicken was then removed from the cage and placed upon the experimental table. Grain was again offered, but no responses at all were made. A small penknife was inserted through the crop, puncturing and deflating the balloon. This required about 10 seconds. The hen was then placed on the table with the growing grain, where she ate energetically at once. This was a striking phenomenon: one moment, no eating responses at all; ten seconds later, very strong eating behavior, just as if a switch had been turned on. The hen was then returned to her home cage where she consumed her normal daily ration.

It appears, then, if we can trust these experiments employing only one chicken each, that the inhibiting mechanism for eating behavior is not the weight of the crop contents but the pressure exerted in the crop by the contents. It is true that there may be an interaction factor in which weight and pressure combine to effect an inhibition. We have not as yet tested this.

¹ This chicken is normally fed a ration of growing grain and pelleted mash.