

and during the third period another of the same lot, were taken ill and removed from the experiment. Both seemed to be suffering from impacted crops, as the stomach and gizzard in each case were found to be empty.

The fact that the sick chickens disliked the nitrogenous ration, and that since the first period the amount of food eaten by the hens and chickens of Lot I. had continually decreased, led to the belief that their food might be too nitrogenous; and, as, during the last days of the third period, one of the hens in Lot I. was also ill, it was decided to discontinue the use of cottonseed meal, and to use linseed-meal instead. The hen recovered soon after the change in food.

At the beginning of the fifth period one-half of the linseed-meal in the ration of Lot I. was removed, and cottonseed-meal substituted. This combination was a happy one, for on this ration both hens and chickens made large gains.

At the end of the experiment little difference could be seen in the hens of the two groups; but the two lots of chickens were in striking contrast. While the chickens fed on nitrogenous food were large, plump, healthy, active and well feathered, the chickens fed on a carbonaceous ration were in general much smaller, sickly, and in several cases almost destitute of feathers. Two of them had perfectly bare backs, and so ravenous were they for flesh and blood that they began eating one another.

The inability of the chickens fed on a carbonaceous diet to throw out new feathers, and the ability of the chickens fed on a nitrogenous diet to grow an enormous coat of feathers, is a splendid illustration of the effect of the composition of the food in supplying certain requirements of animal growth. It was plain to see that maize, even when assisted by a small amount of wheat

and green clover, could not supply sufficient nitrogen for the growth of feathers.

While both lots of hens lost weight during the experiment, the loss was slightly greater with those fed nitrogenous food, but these produced by far the most eggs.

The chickens fed on nitrogenous food just about doubled in weight, while those fed on carbonaceous food only added about one-third to their weight.

During the first week the carbonaceous fed hens laid three eggs, while the others laid two. The two groups were therefore practically evenly divided at the start as to the condition of the laying stage. At the end of the first period the nitrogenous fed hens had laid forty-three eggs, and the carbonaceous fed hens had laid twenty. During the next twenty-five days the former laid thirty and the latter six. During the third period the former laid six, and the latter not any. From this time on, no eggs were received from either group. The decline in egg-production was probably due in large part to the fact that the hens began to moult during the second period, and continued to do so during the rest of the experiment.

The eggs laid by the nitrogenous fed hens were of small size, having a disagreeable flavor and smell, watery albumen, an especially small, dark coloured yolk with a tender vitelline membrane, which turned black after being kept several weeks; while the eggs of the carbonaceous fed hens were large, of fine flavour, of natural smell, large normal albumen, an especially large rich yellow yolk, with strong vitelline membrane, which was perfectly preserved after being kept for weeks in the same brine with the other eggs.

Samples of the eggs from each lot of fowls were privately marked, and sold to a boarding-house where the cook did not know that the eggs were undergoing a test. On meeting the cook several

days later, the following words were heard: "Do you expect me to cook such eggs as these? About every other one is spoiled."

On examination of the ovaries after slaughtering, it was found that in the case of one of the carbonaceous fed hens the ovules were in a more advanced stage, but, on the whole, the nitrogenous fed hens were much nearer the laying period. With this single exception, the cluster of ovules in the carbonaceous fed hens were uniformly small. Neither group would have laid under any probability for several weeks. It would seem from these facts, together with the fact that during the experiment the nitrogenous fed hens laid more than three times as many eggs, that a nitrogenous ration stimulates egg-production.

On Nov. 26th the fowls were slaughtered. Each fowl was weighed, wrapped in a bag to prevent floundering, and killed by severing an artery in the roof of the mouth. The blood was caught in a glass jar. The fowls were then picked and the feathers weighed, after which the body was laid open longitudinally by cutting alongside the sternum and through the back-bone. When all had been thus prepared, they were hung up in groups to be photographed, but the photographs were quite unsatisfactory so far as showing the relative proportions of fat and lean.

One half of each fowl was tested by cooking for flavor, succulence and tenderness, the other half was carefully prepared for chemical analysis by separating the meat from the bones. The flesh was thoroughly mixed and run through a sausage-cutter, mixed again, and the process repeated three times. From different parts of this mixture a large sample was taken, from which the chemist took his samples for analysis. The right tibia of each fowl was tested for strength by placing it across two parallel bars and suspending a wire on