

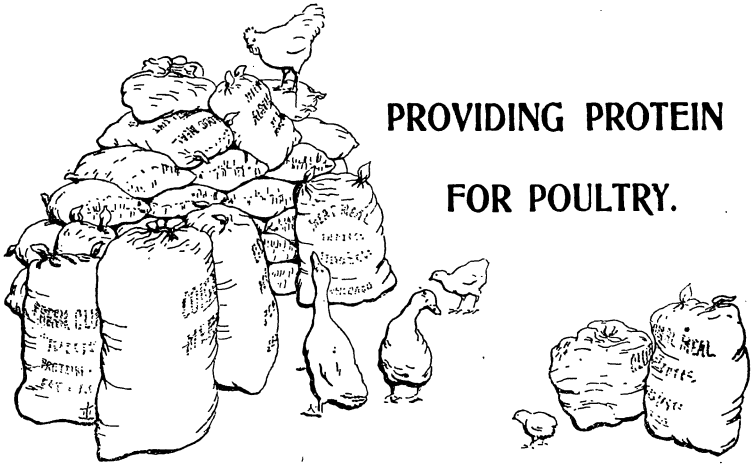
POPULAR EDITION.

BULLETIN No. 271.

DECEMBER, 1905.

New York Agricultural Experiment Station.

GENEVA, N. Y.



F. H. HALL AND W. P. WHEELER.

PUBLISHED BY THE STATION.

POPULAR EDITION *
OF
BULLETIN NO. 271.

PROVIDING PROTEIN FOR POULTRY.

F. H. HALL.

Protein essential for growth. An abundant supply of protein in palatable form is necessary for satisfactory growth of poultry. The development of blood, flesh and feathers is very rapid in young birds; and these parts and organs are rich in nitrogenous matters. These can come only from the food of the young chick or duckling.

Under farm conditions these indefatigable little foragers will supplement their allotted grain ration with grasshoppers, flies, beetles, worms, slugs and other forms of animal life that are rich in protein; but in confinement, especially where the flocks are large, the young birds can not secure a sufficient amount of protein, in the limited range of natural animal food that comes their way, to balance up the carbohydrates of the grains. When shut up, also, the birds lack the vigorous exercise that might enable them to utilize large amounts of foods low in protein so that they could secure the needed quantity of this essential requirement for rapid and profitable growth.

Supplements necessary with grains. The cereal grains, especially corn, are very starchy foods; and no combination of them will give a nutritive ratio narrow enough to develop the young bird rapidly. Some supplement must be used. Seeds of the legumes, like peas, beans or

* This is a brief review of Bulletin No. 271 of this Station on the Adaptability of Concentrated By-Products for Poultry Feeding, by W. P. Wheeler. Any one specially interested in the detailed account of the investigations will be furnished, on application, with a copy of the complete bulletin. The names of those who so request will be placed on the Station mailing list to receive future bulletins, popular or complete, as desired. Bulletins are issued at irregular intervals, as investigations are completed, not monthly.

cowpeas, are richer in protein ; but unfortunately, these foods are not well liked by poultry and will not be eaten in any considerable quantity.

Those materials that are richest in nitrogen are the concentrated by-products ; but these products are not, in a way, natural foods. They are refuse materials from slaughter houses, from creameries or from oil mills ; parts of grains from starch factories and glucose works, sprouted grains from distilleries and breweries, or other materials whose natural composition has been changed in some way. It is not safe to depend on the content of protein and fat in estimating the food value of such materials for poultry, as may usually be done in case of whole grains. Palatability, constipating or laxative effect, excess or deficiency of mineral matter are all factors that must be considered. The adaptability of such feeds can only be determined by actual trial.

Station tests.

The Station has fed several of these by-products to poultry and finds such marked differences in their effect that the results are well worth presentation.

Dried blood inferior for ducklings. In the test with ducklings three pens of from 25 to 30 birds were fed for nine weeks, starting when the ducklings were one week old. Three highly nitrogenous rations were fed, the basis of each being corn meal, green alfalfa and a mixture of four parts cream gluten meal, two parts each of pea meal and low grade flour and one part each of corn meal, wheat middlings and blood meal, with five ounces of salt for every 100 pounds of the mixture and with a liberal allowance of sand.

To this basal ration there was added about one-third the amount of the by-products to be tested : For Lot I "animal meal" and "meat meal," for Lot II blood meal and bone meal, and for Lot III "milk albumen" and bone meal.

Lot II made much slower growth than either of the other lots, I and III being about equal. The average gain for the birds in these lots in nine weeks was $5\frac{1}{7}$ lbs., for those of Lot II $4\frac{1}{4}$ lbs.; but each lot ate almost exactly the same amount of dry matter for a pound of growth. That is, the ration for Lot II was of the same productive value as the other rations, when eaten; but it appeared

to be unpalatable so that the ducklings would not eat it freely enough to make a rapid growth.

The ration containing the "milk albumen" was the most satisfactory so far as the general appearance of the birds was concerned, as the plumage developed more rapidly and evenly under that ration than under "animal meal" and "meat meal;" but the relatively high cost of the "milk albumen" made the ration less profitable to use.

Gluten meals unsatisfactory for chicks. In another test, 40 to 50 chicks in each of 4 pens were fed for eight weeks. The by-products tested were: For Lot I "animal meal," for Lot II "milk albumen," for Lot III gluten meals, and for Lot IV, gluten meals with ground bone to make up any deficiency in ash. The growth of the chicks was slow. Most of them were Leghorns. Lot I on "animal meal" and Lot II on "milk albumen" did fairly well, the increase being about equal for the two lots. The chicks of Lot III on gluten meals gained only one-third as much as those in Lots I and II, and those in Lot IV, with ground bone to supply the ash deficiency of the gluten meals, about two-thirds as much. The gluten meals appeared to be unpalatable, cream gluten meal less so than Chicago gluten meal. The use of anise and fenugreek to disguise or flavor the gluten meals resulted in but little better consumption of food. The "milk albumen" here, as with the ducklings, was palatable, being somewhat superior in this respect to the animal meal, and was the more healthful food; but its cost made the ration unprofitable.

Give proved foods only to young birds. It was observed in both of these tests, as in many other tests along different lines, that the unfavorable effect of a ration was most marked during the first few weeks of the bird's life. Differences tended to disappear as the chicks or ducklings became older.

It is essential that young poultry be fed rations made up of foods known to be palatable and healthful. Older birds can utilize to better advantage some more questionable materials.