

THE MOST PROFITABLE HOG.

By SANDERS SPENCER, Holywell Manor, St. Ives, Hants, Eng.

Some weeks since Prof. Curtiss, of the Iowa Agricultural Experiment Station, wrote me that he was carrying on experiments to prove which of the various breeds of pigs were the most profitable to rear and fatten. He mentioned that he had a number of hogs of the Berkshire, Chester-White, Duroc-Jersey, Poland China, Tamworth, and large white breeds, and that the latter were descended from my stock. Such an experiment carried out with the great care which has always characterized Prof. Curtiss' work, could not be other than most interesting and valuable. To me his letter was pleasant reading, from the fact that some few years since I was presumptuous enough to occupy a pretty considerable amount of your space in discussing with eminent breeders on your side the value of certain breeds of pigs for the farm and the bacon market. My views were very hotly, but in the main courteously, contested. It is true that a little heat was generated at times, but nothing less is to be expected when an outsider has the bad taste to attempt to teach his grandparents either how to suck eggs or to breed the best and most profitable hog, more particularly when the outsider's remarks are not in favor of the particular kind of hog which we may be breeding, and which we look upon as well nigh perfection in the porcine world.

For opposition of this character I was quite prepared, as I was not unused to bringing down on my devoted head the blessings of those who did not appear to have quite kept up to the times in various parts of the fields of agriculture and stock breeding, and besides this I am inclined to look upon a fair amount of opposition as the salt of life; it braces one's energies and puts one on his mettle.

Your readers will readily understand how warmly I welcomed the results of these experiments, which go far to support my oft-repeated contention that the large white Yorkshire is the best general purpose hog. In almost every respect the large whites beat their competitors. It is true that the Chester Whites made a somewhat larger daily gain, the exact figures being 1.26 lbs. for the latter against 1.16 of the former, but this was made at an increased cost of some 10 per cent., as the Yorkshire made 1 lb increase at a cost of 1.9 cents, whilst the same gain of the Chester Whites cost 2.1 cents; and further, the meat of the large white was much superior. The gain of the Poland Chinas was somewhat less, as was also the cost per lb of increase, but here again the produce was of less value. The Duroc Jerseys proved slower producers of less valuable quality of meat at the same cost as the large whites; the Berkshires come out worse than I had expected, as the gain was small, 1.03 lbs. per day at a cost of 2.0 cts. per lb.; but the very worst figure is cut by the Tamworths, whose daily gain is only 1.0 lb at a cost of 2.1 cents.

If we examine the percentages of dressed meat from each of the breeds of pigs we find the Berkshires at the bottom of the list with 76.2 per cent., Duroc Jerseys 77.2, Poland Chinas 78.2, Chester Whites and Tamworths 78.4, and large whites far superior to all the others at 79.3 per cent.

There is only one other point to study, *i.e.*, the value of the hogs of the different breeds as determined by the quality, form, and leanness of the carcasses. In connection with this a curious circumstance is noticeable in that it proves that even the most experienced of the American pork packers are unable to realize the enormous value of the large white pig as a producer of a large amount of valuable meat in proportion to its appearance and weight when alive. When the pigs were sold at the show, one of the buyers of Messrs. Swift & Co., a most experienced man, estimated the value of the Berkshires and the Tamworths at \$3.80 per cwt., and the remainder at \$3.70 per cwt., live weight. How erroneous this estimate was soon became apparent, as the large white had over 3 lbs. of meat per cwt. of live weight more than the Berkshires, 2 lbs. more than the Duroc Jerseys, over 1 lb more than the Poland Chinas, and nearly 1 lb more than the Tamworths, whilst the carcass of the large white was declared to be quite the equal, if

SCIENCE IN FEEDING POULTRY.

By K. C. ALLEN, Coburg, Ont.

For some time past I have been in receipt of letters of inquiry upon all branches of poultry culture, and the question most frequently asked is, "What shall I feed my hens to get eggs?" The query naturally suggests itself, why have we not a feeding standard for poultry, from which anyone may compute the values of the foods he uses in constructing a complete ration for the production of eggs and the growth and fattening of market poultry?

Experiments along this line by private enterprise are necessarily slow, and often conducted under unfavorable circumstances. This may partly account for the dearth of information on the subject, but it is to be regretted that the directors of our experimental and educational farms have not yet seen fit to place the feeding of poultry upon the same scientific and intelligent basis as that upon which advanced dairy and stock men manage their feeding operations.

stances together with another group of substances called carbo-hydrates which are not found to any appreciable extent in the body.

Water enters largely into the composition of the body and amounts to from forty to sixty per cent. of the living animal. The ash amounts to about five per cent., and exists principally in the bones.

Protein is the name given to a group of substances of which the white of an egg may be given as a type. All the machinery of the body, the brain and nerves, the internal organs, the organic part of the bones, the muscles and skin are largely composed of protein. The protein of feeding stuffs supplies the material for the growth of this tissue which may be either increase in bulk as in the growing chick, the maintenance of the body of the mature fowl, the growth of feathers or the production of eggs. For all these purposes no other ingredients may be substituted.

The uses of fat and carbo-hydrates are similar. They are burned in the body to produce the animal heat and to produce the force exerted in motion. If the supply in the food is greater than is needed for the production of heat and force the excess causes the laying up of fat in the body. One pound of fat is, however, equal to two and a quarter pounds of carbo-hydrates for these purposes.

Thus we find that protein serves a different purpose in the animal economy from what the carbo-hydrates and fats do; therefore the relative amounts of each in a given ration is most important. This relation is expressed by the term "nutritive ratio" and means the ratio of digestible protein to digestible carbo-hydrates, plus the fat.

A feeding stuff containing a large proportion of carbo-hydrates and fat as compared with protein, is said to have a wide nutritive ratio; a feeding stuff having a small proportion of carbo-hydrates and fat compared with protein is spoken of as having a narrow nutritive ratio.

It is plain that the proportion of protein in the ration should vary according to the purpose for which it is fed. If we are feeding for eggs sufficient protein to furnish raw material for this production, in addition to what is required to repair the waste of the body, must be supplied. If for fattening, only enough for the needs of the body, and the rest may be largely carbo-hydrates and fat.

In considering the component parts of a ration for laying stock, the aim of the egg-producer is to compound a ration which shall contain protein, carbo-hydrates, fat and mineral matter in proper proportions for the object he has in view. Eggs contain a large proportion of protein, about 16 per cent. together with 10.5 per cent. of fat, the shell being composed of mineral matter in the form of lime.

I have never heard that the digestibility of fowls in comparison with other farm animals has been determined, but it is reasonable to suppose that they assimilate as much of the digestible elements in food as other farm stock do. For lack of conclusive evidence on this point I have used the computation tables for farm animals and find that the rations giving best results in egg production have a narrower.



Exhibit of Jno. S. Pearce & Co. at the Western Fair, London, 1897.

not the superior, of the other two breeds more favored by the buyers.

The last and final stage of the experiment is yet to be carried out. It is the disposal of the various carcasses on the English markets. It was very possible that this may not be conclusive of the value of the different carcasses, as it will be dependent to some extent on the curing and the form in which the cured meat is sent over. The most valuable form is the Wiltshire cut, but then the whole of the carcasses are too large to realize the highest prices.

NOTE.—That our readers may better understand Mr. Spencer's letter we subjoin a table giving the results of Prof. Curtiss' experiments. We understand Prof. Curtiss intends repeating these experiments during 1898.

Breeds.	Average age.		Average weight.		Average daily gain per head.	Average cost of the feed for one lb. of gain.	Price paid by the packer on foot.
	Days.	Lbs.	Lbs.	Lbs.			
Berkshire	196	192	1.03	2.0	3.80		
Tamworth	212	208	1.00	2.1	3.80		
Yorkshires	221	225	1.16	1.9	3.70		
Poland Chinas	213	206	1.14	1.8	3.70		
Chester Whites	202	184	1.26	2.1	3.70		
Duroc Jerseys	209	207	1.09	1.9	3.70		

Bulletins are issued treating upon the computation of rations for dairy cows, sheep, swine and horses, but nowhere do we find anything for the enquiring poultryman. Much has been said about the importance of the Canadian hen, and surely the poultry industry deserves to have some of our leading poultry educators issue this information in such a form as will enable any poultry keeper to adapt his rations with some degree of accuracy to the object he has in view.

To go into the subject comprehensively would require more space than a short article would cover. I would like merely to place before your readers (so many of whom have written me about feeding for eggs), the result of a number of experiments and my own practical experience in feeding for egg-production during several years.

A brief synopsis of the general principles regarding the composition of animals and feeding stuffs, and the part served by the food in the animal economy will perhaps not be out of place. The body of a fowl is composed of water, ash or mineral matter, protein or albuminoids and fat. Feeding stuffs contain the same four sub-