

Oats are very valuable for both growing and feeding swine, but should always be fed in connection with corn, peas or barley in order to get the best results.

SKIM-MILK, BUTTERMILK AND WHEY.—Numerous experiments and practical work done by individual feeders have proved the great value of dairy by-products as part of the rations for fattening swine. There is practically no difference in the feeding value of skim-milk, buttermilk, or whey, when all three are fed in prime condition, except that, of course, the skim-milk will be richer or poorer according to the care taken to remove the butter-fat in the separator. Five pounds of skim-milk per head a day is an economical allowance in fattening swine over one hundred pounds in weight when mixed grains are fed. Where corn was fed, as in Wisconsin, the best returns were secured with not more than three pounds of milk to each pound of meal. Prof. Robertson has found that one pound of mixed peas, barley and rye is equivalent to 6.65 pounds of skim-milk. The protein and ash in the milk are what are needed to give strength to the bones and develop the muscles sufficiently. As stated above, Prof. Day has shown the marked influence of whey and skim-milk, not only in causing rapid and economical gains, but in producing a fine quality of bacon, even when no exercise is given to the fattening stock, and in counteracting the tendency to softness produced by the too lavish feeding of shorts. The average results of experiments at the Guelph and Wisconsin stations show that 785 pounds of whey are equal to 100 pounds of grain.

MOLASSES—Molasses have been lately brought into notice as a feed for fattening swine, owing to the results obtained by an experiment in Germany. All the pigs were fed a basal ration of three pounds of buttermilk and twelve pounds of whey per head daily. They were divided into three lots. Lot 1 received barley in addition to the basal ration; lot 2 were fed barley and molasses feed in the proportion of 2 to 1; while lot 3 received barley and molasses feed in equal proportions. Two pounds of the additional feed were fed daily at first, which was gradually increased to four pounds.

The average daily gain in weight of the three lots was practically the same, ranging from 1.05 to 1.11 pounds. When the carcasses were cut up, the fat was found firm and of the best quality. The cost of one pound of gain in live weight was 56 cents cheaper when the molasses feed and barley in equal parts were fed than when barley alone was given. The conclusions reached were that molasses could be advantageously fed to pigs over fifty pounds in weight.

POTATOES.—Cooked potatoes can be profitably used with grain for the production of bacon without fear of injuring the quality of the meat. This is

proved by both American and Danish experiments. From four to four and a half pounds of potatoes are equal to one pound of grain in pig feeding. Artichokes have the same feeding value as potatoes.

ROOTS.—Eight pounds of mangels or carrots, and about the same weight or a little less of sugar beets, equal in feeding value one pound of grain. This is the consensus of opinion of the Ottawa, Copenhagen, and several American stations. At Copenhagen the mangels were fed finely cut and raw, and even when one-fourth of the daily feed was given in the form of roots, no injurious effects were noticed on the quality of the pork. The increase per head in ten days on a ration half grain and half whey, or milk, was 7.6 pounds, whereas, when the grain was replaced by roots after the proportion of 1 to 10, the increase was found to be 8.3 and 8.6 pounds. When half the grain food was replaced by roots in proportion of 1 to 8 the growth of the different lots was pretty nearly the same, viz., 8.5 pounds for the grain-fed pigs, and 8.6 pounds for those fed roots, thus showing a small difference in favor of the latter. It must be noted that the pigs in this experiment had been fed roots previously, and consequently took them readily.

BONE MEAL AND WOOD ASHES.—In experiments conducted by Prof. Henry as to the advantage of feeding bone meal and wood ashes to fattening pigs in combination with corn meal, it was found that the effect of the bone meal and wood ashes was to save about 28 per cent. of the total amount fed to produce 100 pounds of gain live weight. Bone meal doubled the strength of the thigh bones, while ashes were only slightly inferior in value in this respect. The results show the great usefulness of bone meal and ashes, especially where much corn is fed to hogs. In these experiments the pigs had been well started in their development when the trial began. They were divided into three lots of two each. Lot one received corn meal with salt and water. Lot two received in addition hardwood ashes, while lot three was fed a spoonful of bone meal at each feed in place of ashes. In one of the trials, which lasted 112 days, two pigs consumed 10.5 pounds of bone meal and 7.5 pounds of salt, and during the same time two other pigs consumed 33 pounds of hardwood ashes and 8 pounds of salt. The earth in the yards in which the pigs exercised was covered with boards to prevent the animals rooting in it and eating it, as they would otherwise have done, especially those which had no bone meal or ashes to resort to, and, consequently, would have impaired the results of this experiment.

When bone meal was fed 487 pounds of corn produced 100 pounds of gain; when ashes were given, 491 pounds of corn were required, while 629 pounds had to be fed to obtain the same gain

when neither bone meal nor ashes were given.

CHARCOAL.—In the corn-growing districts of the Western States corn cobs are made to serve a good purpose when reduced to charcoal and fed to hogs. Ordinary charcoal is also used by many. The method of reducing the corn cobs to charcoal is thus given by Theodore Louis: Dig a hole in the ground five feet deep, one foot in diameter at the bottom and five feet at the top for the charcoal pit. Take dry corn cobs and start a fire in the bottom of this pit, adding cobs so that the flame is drawn to the top of the pit, which will be thus filled with the cobs. Then take a sheet iron cover, similar to a pot lid in form, and over five feet in diameter, so as to amply cover the whole, and close up the burning mass, sealing the edges of this lid in turn with earth. At the end of twelve hours you may uncover and take out a fine sample of corn-cob charcoal. This charcoal can be fed at once if desired, but Mr. Louis prefers to take six bushels of it, or three bushels of common charcoal, eight pounds of salt, two quarts of air-slacked lime and one bushel of wood ashes, breaking the charcoal up well with a shovel or other tool, thoroughly mixing the various ingredients. One and a quarter pounds of copperas is then dissolved in hot water, and with a watering-pot sprinkled over the whole mass, which is again thoroughly mixed. The mixture is then put into boxes and placed where the pigs can get at it at their pleasure. It is not only excellent for the health of the pigs, but is considered by some as a preventive of hog cholera.

GAINS MADE ON VARIOUS FOODS.—One of the latest experiments on combinations of feed for bacon hogs was that held in Wiltshire, England, a short time ago. The results are figured out on the cost of every twenty pounds of increase. Corn meal and separated milk, which cost 4s. 2d. or just 2½d. per lb., gave the best results as regards increase of weight alone. Next came corn meal and bran, costing 4s. 5½d.; corn meal alone, 4s. 6¾d.; corn meal and pea meal, 4s. 7½d.; corn meal and bean meal 4s. 11d.; barley meal and bran, 5s. ¾d.; barley meal alone, 5s. 1¾d.; barley meal and separated milk, 5s. 3d. The value of the foods used was as follows: Barley meal, £5 per ton; corn meal, £4 10s.; bran, £4; pea meal, £7 15s.; separated milk, 1d. per gallon.

The carcasses of the pigs were subsequently tested by experts and perfection being represented by 1000, were graded as follows: Those fed on barley meal and bran 990; on barley meal and separated milk 988; on barley meal alone 974; on corn and bran 964; on bean meal 951; on corn and milk 939; on corn alone 939; and on corn and pea meal 908.

The highest average in weight was made by pigs fed on barley meal and