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up, must stand straight and level on hocks and fetlocks. Size—A Lincoln is essentially a big sheep, but this is not to mean length of leg only. Length and Girth—Length of body consistent with a deep rib, wide spring. Head and Ears—A good masculine head with deep wrinkles on forehead, a clear bold eye, wide nostrils, blue skinned, not pink. Ears long and well placed, not

pointing too forward or "lopping"; white ears objectionable; color should be a blue-grey, mingled with darker spots. Bone and Substance—A Lincoln ram needs a strong bone to carry his weight. Activity—The ram must walk free and gaily. Mutton—Deep, firm handling flesh along back, a wide loin, no hardness of touch on top of shoulder, a good wide "scrag." Leg of mutton

well let down. Fleece—Of great importance. Great weight of wool without coarseness; a broad, clean staple of fine lustres, that is, a wavy appearance in the lock; soft or what is termed "mossy" wool objectionable; no harsh, straight, hairy wool on thighs; head to be well covered and a broad forelock; breast and inside the thighs to be covered.

Winter Care of Pregnant Sows.

While some swine breeders have particularly good success and are able to raise to marketable age a large percentage of the pigs farrowed, there are others who experience a heavy mortality in the piggery. A. A. Dowell, Professor of Animal Husbandry, University of Alberta, writes as follows regarding the wintering of brood sows: "Leading swine authorities have estimated that forty out of every one hundred pigs farrowed in Western Canada are either stillborn or die shortly after birth. A good many of them appear to be perfectly normal, but lack sufficient vitality. The greatest mortality is due to the appearance of the dreaded hairless pig. This trouble is not confined to Western Canada alone, but has also made its appearance in Ontario, and is very prevalent in certain hog-feeding sections of the United States." The Professor tells of a man who came to his office last spring with the statement, "I bred one hundred gilts last fall with the idea of raising my feeder pigs, instead of buying them at the stock yards. The first eighteen have already farrowed and practically every litter has been hairless. What can I do to save the other eighty-two litters?" The ration which this man had been feeding consisted largely of shorts and the gilts were over-fat. The question is, is the trouble due to the feed or to the gilts being too fat. Another breeder stated that he was going out of the pig business because his losses at the time of farrowing have prevented him from making any profit in the past three years. Experienced breeders agree that heavy losses follow years of early frosts, where large quantities of frozen grain are fed to the pregnant sows. For this reason many have been firm in the belief that frozen wheat contains certain poisonous properties which make it unsuited to the brood sow ration. Others contend that the greatest difficulty follows long, severe winters, where the sows have a tendency to remain in their sleeping quarters, rather than rustle for a living. This led them to conclude that lack of exercise, insufficient water, too little fresh air, and lack of sunlight are all important factors. Others lay the blame to lack of protein, a scanty supply of mineral matter, and the sows becoming too fat. Owing to the fact that practically every hog raiser has his own theory as to the actual cause of the loss, the Animal Husbandry Department of the University of Alberta are devoting considerable time and experimental space in an endeavor to ascertain the direct cause, and, if possible, a remedy for the loss. Many of the experiments require several years of careful repetition before results are of any considerable value. Certain phases of the work are far from settled, but some of the results obtained are definite and can be put to immediate use by the practical breeder. The objects of the experiment are to determine the suitability of frozen wheat as a feed for pregnant sows, also the suitability of a ration consisting entirely of whole oats, and the same of a ration of barley; the importance of sunlight, fresh air and exercise, the value of mineral matter in the ration, and whether or not brood sows should be given constant access to water, or will good results follow from eating snow. Thirty-six pure-bred sows of Berkshire, Duroc Jersey and Tamworth breeding were used in the experiment. The following gives a list of the feeds comprising the ration, the method of feeding and the results obtained by the use of certain feeds, and also the conclusions drawn from the experiments:

Feeds.

Frozen wheat—All frozen wheat used in this experiment was secured from a grain dealer at Rocky Mountain

House, Alberta—a district where hairless pigs have long been the bane of the swine breeder.

Oats and barley—Grown on the University farm and of good quality.

Wheat bran—Ordinary wheat bran secured through local grain dealers.

Tankage—Meat meal tankage commonly called tankage, a by-product of the packing plants, and containing 60 per cent. protein.

Garbage—Collected from the University dining hall—thoroughly cooked from four to six hours before feeding—weights taken in the wet sloppy condition as fed.

Coal—In all lots except five and six fine coal was available at all times.

Water—Provided each group except sows in lot 8.

Salt—Free access to common stock salt.

Sows in lot 1 were fed and handled under what was considered ideal conditions and served as a check on the limited exercise lot 7, the snow-fed lot 8, and the no-sunlight lot 12. The morning meal fed at 8 a. m. consisted of a mixture of equal parts crushed oats, crushed barley and bran with six per cent. meat meal tankage, fed at the rate of one pound per sow. Boiling water was poured over this mixture before being placed before the sows. At noon they were fed seven pounds per head of thoroughly cooked garbage; at 3.30, one and one-third pounds per head of whole oats were scattered on the ground to force exercise; and water, fine coal and salt were available at all times. Sleeping quarters were kept clean and comfortable and placed a considerable distance from the feed trough to ensure added exercise. These sows made an average gain of 87 pounds during pregnancy, were vigorous and thrifty and relished their feed at all times. They farrowed 22 strong pigs weighing an average of 2.579 pounds at birth, and raised 19 or 86.36 per cent. During the entire pregnancy period these sows consumed an average of .971 pounds grain and 2.63 pounds garbage per hundredweight per day. This ration of feed and management gives good results.

"In lot 2, the object was to utilize such feeds as are commonly available on most farms—hence, the meat meal tankage and garbage were omitted. The morning feed consisted of slightly over 2 pounds per head of a mixture of crushed oats five parts, crushed barley two parts and wheat bran three parts—scalded and fed in the form of slop. At 3.30 p.m. whole oats at the rate of one and two-thirds pounds per head per day were scattered on the ground to give ample exercise—water, coal and salt being available at all times. One sow in this lot proved to be not in pig—but the two remaining farrowed 12 and 14 pigs, respectively. They made an average gain of 66 pounds and came through in good condition with the pigs weighing at birth an average of 2.288 pounds. Though the percentage of pigs raised fell to 76.92 per cent., it would be considered one of the most successful lots in the experiment when the number farrowed is considered—the two sows raising 10 pigs each. The grain requirement of 1.068 pounds per hundredweight per day shows that old sows require less feed in proportion to weight than gilts, though the average gain per sow was less. This ration proved quite economical and ensures excellent results.

Barley.

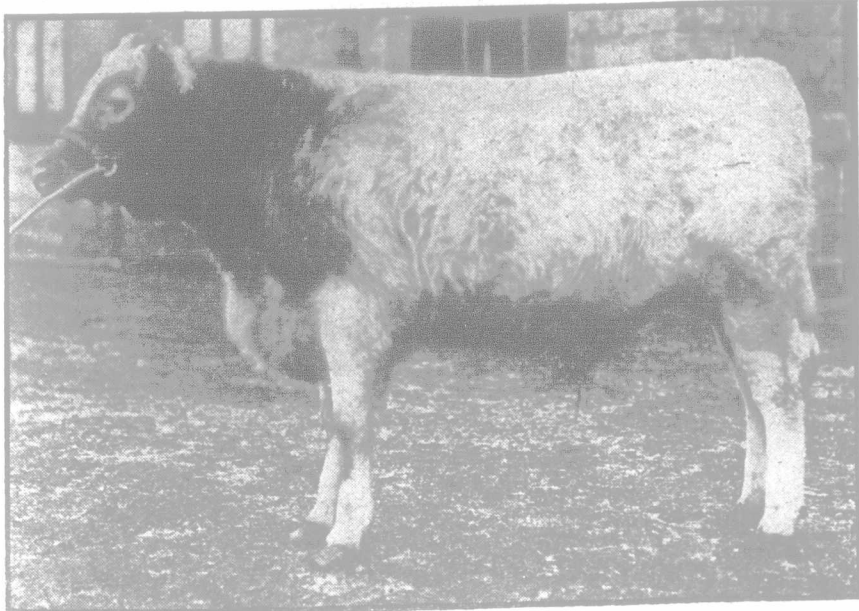
"That barley should be properly supplemented by a protein rich feed was clearly shown by results obtained from lots 3, 5 and 11. In the former two lots a ration of straight barley was fed while in the latter the barley was supplemented by 10 per cent. meat meal tankage.

In lot 3, the barley was fed under the very best conditions possible—it was crushed and scalded for the morning feed, scattered on the ground whole in the afternoon to ensure exercise, and the amount limited so that the sows were always kept a trifle hungry. They were given constant access to water, coal and salt. Lot 4 was allowed just about what they could clean up of straight whole barley without preparation. Furthermore, coal was withheld from this group of sows. Lot 11 was fed under exactly the same conditions as lot 3 with the exception than 10 per cent. meat meal tankage was added. This tankage was fed with the barley slop in the morning, and in the afternoon fed separately in a little warm water. Results are striking. Sows in lot 3 made an average gain in 111 days of 82.83 pounds; in lot 5, 70.33 pounds and in lot 11, the remarkably high gain of 105.66 pounds. A point worthy of note in this connection, is that the gain in weight in lot 3 was to a large extent due to fat rather than body growth, while the sows in the latter lot developed strong rugged frames along with reasonable condition. These gains were made on an average daily grain consumption per 100 pounds live weight of 1.461 pounds in lot 3, 1.788 pounds in lot 5, and 1.723 pounds in lot 11. Lot 3 farrowed 27 pigs, weighing at birth an average of 2.37 pounds and raised 23 or 85.18 per cent. These litters were uneven and a trifle undersized showing that sufficient protein was lacking to properly develop strong, vigorous pigs. Lot 5 farrowed 28 pigs, and raised but 16 or 57.14 per cent.—average birth weight being 1.723 pounds. In this lot two pigs were born totally hairless, five with scanty covering, while others were decidedly lacking in vitality.

"The hairless condition of these pigs, low average birth weight, and unthrifty condition of the sows gives every evidence that whole barley is unsuited to the proper nourishment of either the young growing sow or her unborn litter. The barley-tankage lot 11 farrowed 23 strong, vigorous pigs, weighing the high average of 2.587 pounds, and raised the entire number or 100 per cent. This proved to be the highest percentage of pigs raised of any lot in the experiment. These figures are well worth a little consideration. Whether the advantage of lot 3 over lot 5 was due entirely to a lighter feeding of barley or to the mineral matter provided in the form of coal, or to both, we cannot definitely state. Results obtained in lots fed frozen wheat, under identical conditions, seem to indicate that the heavy feeding is especially dangerous. It is evident that barley alone, even when fed under the very best of conditions, should be avoided as a ration for pregnant sows, but if properly supplemented with a protein rich feed, such as meat meal tankage, it can be fed not only safely but successfully.

Frozen Wheat.

"To answer definitely the question as to whether frozen wheat contained certain poisonous properties, which made it responsible for the large number of hairless pigs following seasons of early frosts, three lots were devoted to this part of the work. Lot 4 was fed straight frozen wheat under the very best of conditions—crushed and fed as a warm slop in the morning, scattered whole on the ground for the evening meal and in addition salt, coal and water were available at all times. The three sows in this lot made an average gain of 81.66 pounds, but their coat was harsh and wiry, showing that the feed was lacking in certain constituents for proper nourishment. Of the 29 pigs farrowed, but 14 were raised or 48.27 per cent. Their average birth weight was 2.086 pounds. These pigs lacked vitality—one was



Hillcrest Lad.

Champion Shorthorn steer at Guelph for J. K. Campbell & Son, Palmerston, Ont.



Jubilee Jilt.

Champion Shorthorn female at Guelph for Jas. Douglas, Guelph, Ont.