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4-H Swine Club Manual (revised) : Extension Circular 2-01-2

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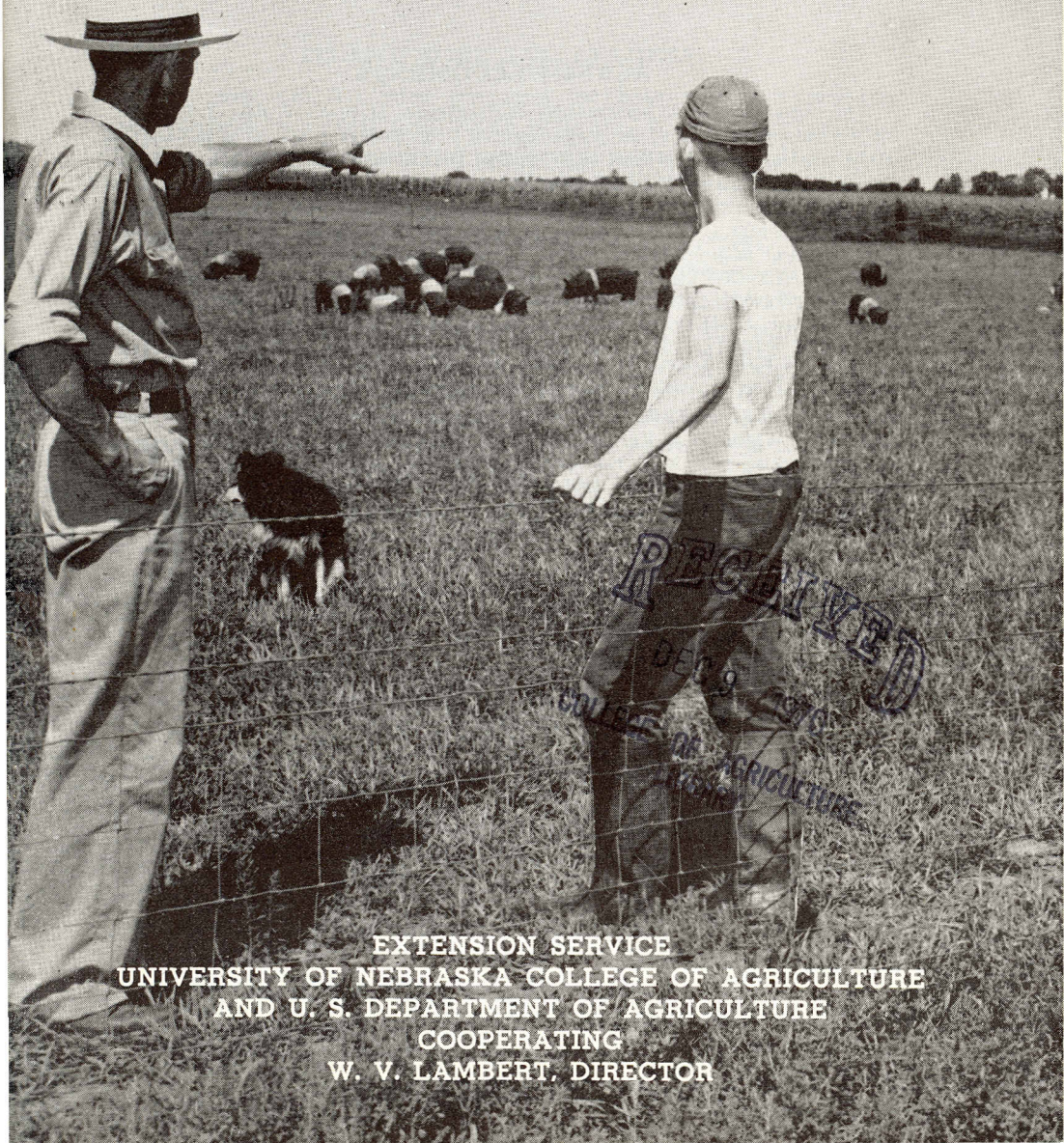
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EXTENSION CIRCULAR 2-01-2 (REVISED)

OCTOBER 1956

4-H Swine Club Manual



EXTENSION SERVICE
UNIVERSITY OF NEBRASKA COLLEGE OF AGRICULTURE
AND U. S. DEPARTMENT OF AGRICULTURE
COOPERATING
W. V. LAMBERT, DIRECTOR

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THE FRONT COVER—Guy E. McReynolds of Ashland, Neb., Hampshire breeder and nationally accepted swine judge, is shown with his son, Ed, checking their Hampshires at pasture. (Photo courtesy of the Union Pacific Railroad Co.)

THE BACK COVER—This is the entrance to the Ak-Sar-Ben Live Stock Building where Omaha's great civic organization, the Knights of Ak-Sar-Ben sponsors its annual interstate 4-H Livestock Show. (Photo courtesy of the Knights of Ak-Sar-Ben.)

OTHER PHOTO CREDITS—Grand Champion Barrow, Chicago, 1954 from Oscar W. Anderson & Sons, Leland, Ill.; Champion Duroc Barrow, National Barrow Show, Austin, Minn., 1951, from United Duroc Record Association, Peoria, Ill.; Grand Champion Pen of Barrows, National Barrow Show, Austin, Minn., 1951, from the Chester White Swine Record Association, Rochester, Ind.; brooder arrangement and pig marking technique from *Successful Farming* magazine; pig pasture, Union Pacific Railroad Co.; Nebraska 1951 Grand Champion Sow from Willard H. Waldo, DeWitt, Neb.; and First Prize Junior Gilt, Nebraska 1951, from Maahs Brothers, Walton, Neb.

TO SPONSORS AND LEADERS

This pamphlet has been prepared for boys and girls carrying home projects in a great rural youth program. It recognizes the standards or values each youth may apply of his own choice. It is to be expected that younger teenagers may not be influenced by economic values as much as the older teenage club member.

All youth anticipates with pleasure the opportunity of doing things together. They like competition because it involves wholesome, friendly keen rivalry. They like the recognition usually given a job well done. It is accepted that boys and girls have the right to this kind of experience in their teenage years. The use of improved practices has been learned by doing. It is not forgotten in later years when realistic or economic values are applied by the same youth as an adult. Anything that helps a youngster in competition is of value to him. This manual seeks to do that.

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4-H Swine Club Manual

K. C. FOUTS¹

INTRODUCTION

4-H club members carry one or more projects as a part of their overall program. A project is considered a demonstration of approved methods of doing things. A club member usually employs more added practices than a project may require to improve his opportunities in competition. You, as a club member, are entitled to place your own values on this extra effort. Experience in competition brings its own satisfactions. You will find it interesting.

There are many phases of Animal Husbandry projects when all classes of livestock are included. Here we wish to present information that will help you with the different phases of swine project work. Nebraska has three projects.

Purebred Pig—Keep record and grow out for breeding purposes one or more pigs for at least 100 days. Work starts on or before weaning.

Litter—Start with one or more sows before farrowing, and care for and keep records on sow until weaning time and on litter an additional 100 days. Sow may be dropped from record at time of weaning litter.

Market Pig—Feed one or more pigs (gilts and/or barrows, purebred or grade) for market with records for 100 days or more.

It is up to you when a project starts or closes. Some projects are carried at family convenience particularly when the activities, including judging and demonstration work, are to be emphasized in competition. Otherwise you will likely plan your project so that at closing time you are ready for some particular competitive event. Since shows are held in different places and in different months of the year, you will notice quite a variation in the project plans of members. Some will enlarge their project to have animals for more than one event, particularly in a market project, and when the animals are sold at the show. Fairs and shows make their own rules and these rules vary. This causes some confusion. Some shows have more requirements to meet than have Extension Service projects. Therefore, know the rules of your particular fair.

This manual tells you about the Market Pig project. There are several reasons for this. It should involve the least risk. The length

¹ Extension Animal Husbandman.

of time is short but it provides experience in all phases of 4-H club work. It makes good use of school vacation. If you are a beginner, the work with market pigs will prepare you for the more difficult phases of other swine work. If you need to meet your costs, your pigs should be ready to sell at the close of the project.

In club work we do things together, particularly with our family, our neighbors and our leader. You will enjoy planning far more if you share it. Work with someone with experience and interest. You will need pigs, a pen (or pasture with shelter), feed and water supply, and a consideration for the health and comfort of the animals and convenience to you. Your father, a brother, a neighbor and the encouragement of your mother can be a very welcome support in your effort.

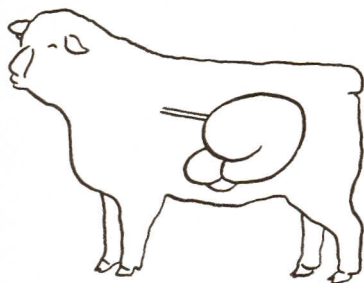
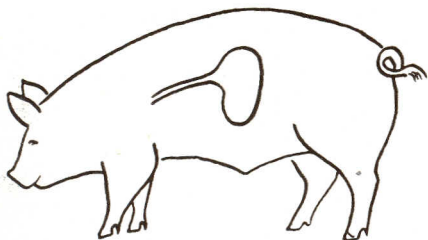
You are a member of a club. The club is organized as a group with officers and a leader. The club has a program of activities for the project year or season. These activities provide training in judging and demonstration work, and recreation and just plain fun. Cooperate in the club program. Carry out any part assigned to you to the best of your ability. Don't worry about whether someone else could do better, or that you might make mistakes. In club work, everyone makes mistakes because in learning one encounters new experiences. Through these experiences you acquire skills and information that help you avoid future mistakes. Every club member has been through, or is going through the same experiences that confront you. Club work develops a spirit of fellowship you will treasure a long, long time.

THE PIG—THE KIND OF AN ANIMAL HE IS

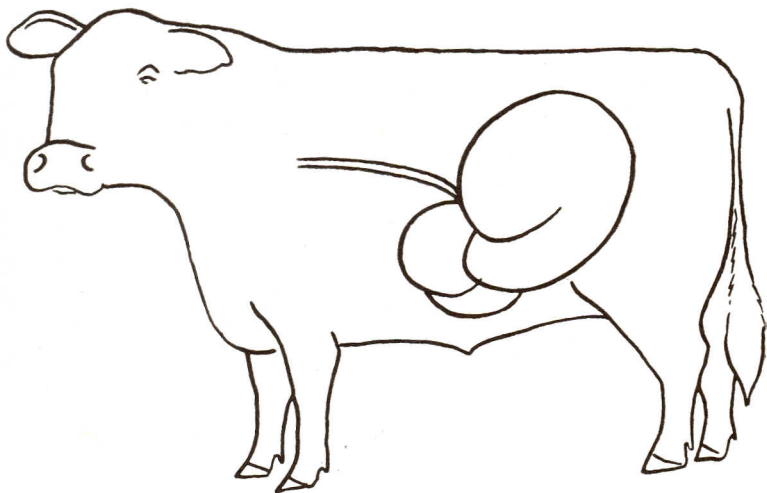
The pig is very much unlike other meat producing farm animals and in planning his feed, care and training it is well to keep this in mind.

Here are some differences you will note. The pig has a snout (for turning up the ground) at the end of which beneath the skin is an oval disc of cartilage called the button. The incisor teeth vary in number. The skin is thick but not elastic. The coat is of bristles or coarse hair and rather thin. The mouth is larger, proportionately, than in any other farm animals. The feet are the smallest among farm animals in relation to body weight. The tail is small and of little use. However a curled tail usually means a contented or healthy pig. The number of ribs in pigs is not constant. Variation may run from 12 to 17 ribs on a side with from 13 to 16 being common.

The hog has a simple, relatively small stomach and a relatively short digestive tract. The stomach has only one compartment. The hog is not a ruminant, that is, he does not chew the cud as do calves



The drawings at the left show the relative size of the pig, sheep and steer. They also show the comparative size of the stomach of each animal. The capacity of the stomach of the pig is 2.11 gallons. The sheep (or goat) has a stomach capacity of 7.81 gallons, whereas the steer's stomach has a capacity of up to 66.6 gallons.



and sheep. He eats often. He uses a high per cent of concentrated feed of both animal and vegetable origin. Because he is not a ruminant, he does not eat much roughage. The snout enables the pig to get insect life from the earth as well as roots and bulbs. When we pen him up we supply him with supplemental feed of animal origin to meet

Some Differences In Meat Animals

| Relationship of digestive system and food consumed to dressing percentage for: | Percent of live weight of average market animal derived from: | | Average dressing per cent of all animals slaughtered under U. S. inspection |
|--|---|----------|---|
| | Concentrates | Roughage | |
| SWINE | 90 to 92 | 8 to 10 | 69 |
| CATTLE | 22 to 25 | 75 to 78 | 54 |
| SHEEP | 2 to 16 | 82 to 98 | 48 |

this need. The hog yields a higher per cent of his live weight in the carcass than beef or sheep, due in part, to his small digestive tract.

The hog multiplies more rapidly than the other farm animals. The young of a sow at one farrowing is called a litter. Changes brought about under domestication prevent the sow from protecting her young as well as she could in the wild state. It is up to you to make the adjustments necessary to save as many pigs as possible.

Hogs have poor facilities for cooling themselves on hot days. They have very few sweat glands and they usually have quite a body covering of fat. They cannot stand the direct rays of the hot sun very long when the body is dry. You will have to supply shade. Some people think the hog is a dirty animal, but if he is given a choice on sufficient range, he'll keep quite clean.

PROJECT PROCEDURES

Get Ready

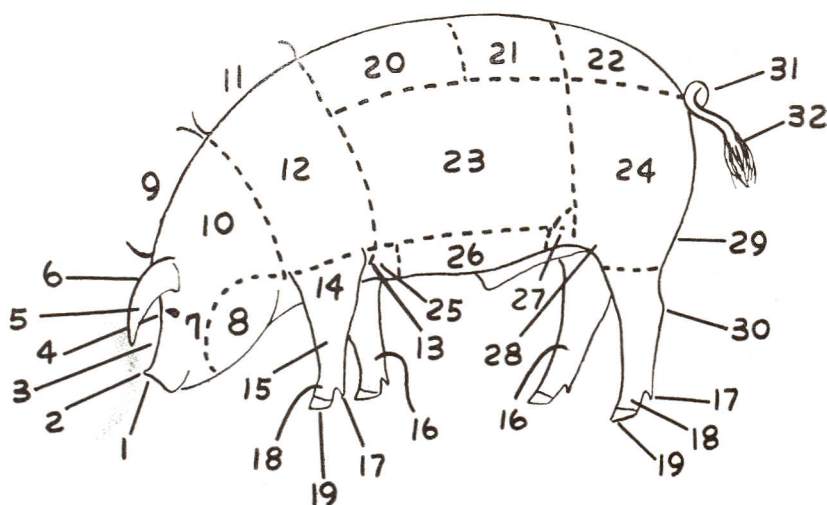
Planning the start of a 4-H project with your family and leader can be fun as well as work. It will very likely be summer so you should have some pasture and shade within a pig-tight enclosure, separate from other livestock. It is preferable to have more than one pig as companionship is desirable. Since the fairs where you may compete will likely permit you to show two, three or four pigs as individuals, you have some idea about the number. An extra pig or two would give you some choice in case all of the pigs did not turn out as well as you had hoped. A warm dry shelter should be available when

needed. Clean, fresh water should always be available to your pigs and storage for your supply of mixed feed should be convenient.

Your pig pasture may well include part of a grove for the natural shade afforded. But some cultivated ground should be included to provide pasture. Alfalfa is probably the most desirable pasture crop but most any pasture plants providing green feed throughout the summer will do. Sudan grass does quite well and blue grass with white clover is good. In case you have a rather large enclosure you will find a smaller pen enclosing your feeding place useful in case you want to catch your pigs. In case you have no natural shade the hog shed may provide shade as well as shelter. A sun shade can be made easily.

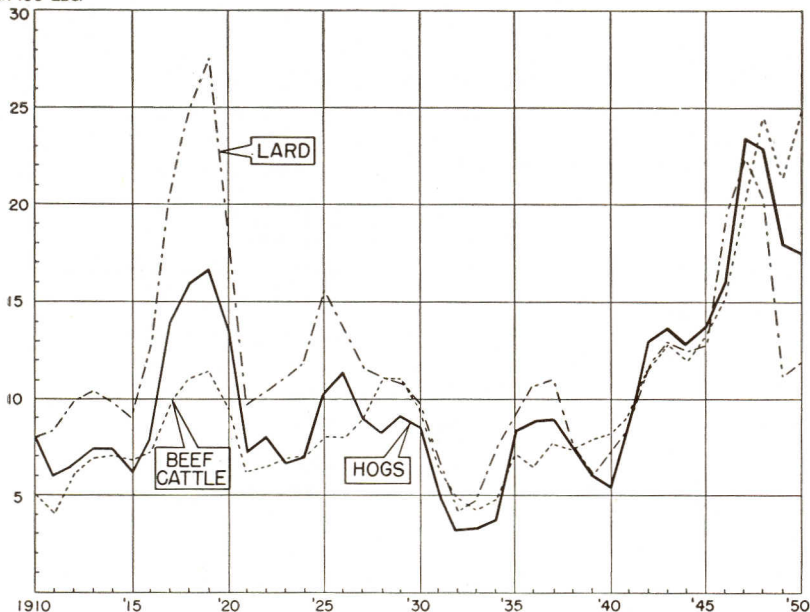
An automatic waterer attached to a barrel provides water. A

The Parts of a Hog



- | | | |
|------------|---------------------|------------------|
| 1. Nostril | 11. Top of shoulder | 22. Rump |
| 2. Snout | 12. Shoulder | 23. Side |
| 3. Face | 13. Elbow | 24. Ham |
| 4. Eye | 14. Forearm | 25. Fore flank |
| 5. Ear | 15. Knee | 26. Belly |
| 6. Poll | 16. Shank or shin | 27. Rear flank |
| 7. Cheek | 17. Dewclaw | 28. Stifle joint |
| 8. Jowl | 18. Pastern | 29. Twist |
| 9. Crest | 19. Toe | 30. Hock |
| 10. Neck | 20. Back | 31. Tail |
| | 21. Loin | 32. Switch |

DOLLARS
PER 100 LBS.



The graph above shows the relative trends of beef, lard and pork prices from 1910 to 1950, and indicates the need for emphasis on production of lean meat in hogs.

wooden barrel keeps water cooler in summer and does not freeze up as quickly in the fall. A platform of old planks under the waterer is desirable to prevent a mudhole. Do not water pigs from a trough without a constant supply.

One or more steel drums provide water-proof and rodent-proof storage for mixed feeds for small projects. A good cover should be provided the drum. You may use a self feeder which you can make or buy. There should be a separate feeder or compartment from which your pigs get minerals. There are wooden or metal troughs available but you can probably provide one by making it from salvage materials.

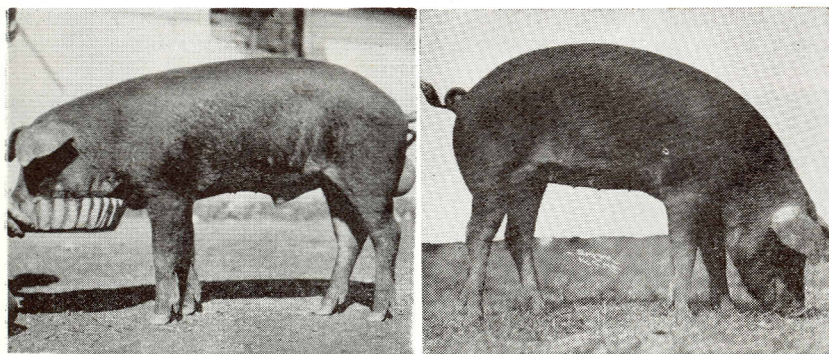
Plan your feed supply so that you never find yourself out of any of the parts of the ration you feed. Start your records when you get your first feeds. Reports may be made at any time but a record that is not kept currently is not worthy of the name. Tack a feed record card near your feed supply and record every feed batch as it is mixed. This does not apply to daily feeding, it means making a record of feed supplies as they are brought into your project.

Hog Types

Type is that body conformation with characteristics considered best to enable an animal to serve the purpose for which it is bred. In the past century and a half there have been two distinct types of hogs, each the result largely of the environment in which it was produced and of the requirements of the market. They are (1) the lard type and (2) the bacon type.

There has always been an important demand for lean meat. Breeding stock of a type suitable for producing bacon hogs is said to possess bacon type. It requires careful selection and feeding to maintain type because swine generally tend to develop fat. Bacon hogs are more common to Britain, Denmark and Canada where hard grains and dairy products are commonly fed. They have not been successful in the corn belt in continuing to yield a high percentage of lean meat to fat.

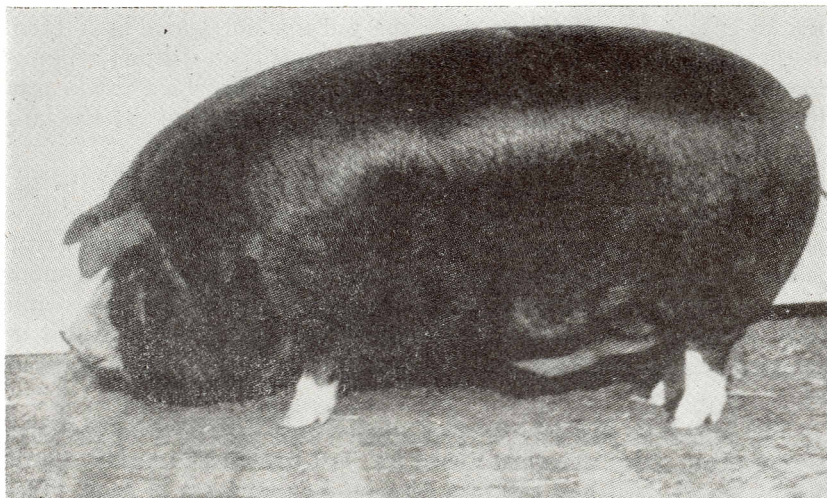
The lard type hog is a product of the corn belt. Before the days of petroleum there were many uses for lard unheard of today. Until World War I, lard had a broad demand in commerce as food. The



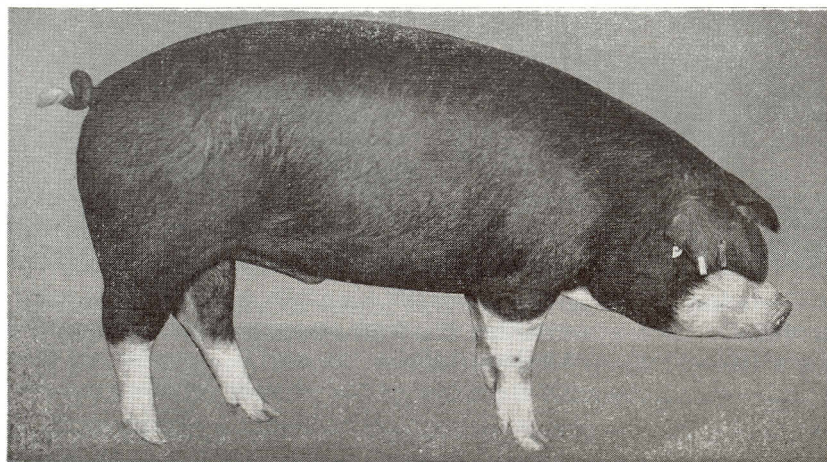
Here are two animals of the type it took to win a show twenty-five or thirty years ago. At the left is a Duroc boar pig. At the right is a sound, smooth and well balanced gilt.

response of the hog to soft grain, such as corn, was quickly recognized by the early colonists. During the nineteenth century the lard hog proved his value as a means of marketing the corn crop. While there was considerable variation in size and length, the lard hog was characterized by a compact, thick, deep, smooth body with rather good balance and symmetry. The show ring standards for this type in the present century have varied from a small chubby hog around 1900 to

The Hog Is Versatile



The Grand Champion Barrow at the International Livestock Exposition in Chicago in 1913 (the under 18 months class) was smooth, symmetrical and sound and a fine specimen of the feeding goal in those days. Both this barrow and the one below are Poland Chinas.

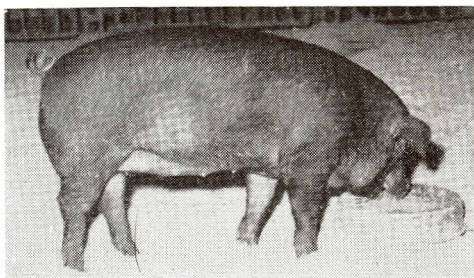


The Grand Champion Barrow at the International Livestock Exposition in Chicago in 1954 weighed 235 pounds. Under the careful management of man, the hog has been adjusted to lean meat production instead of lard—a fine example of the versatility of the species. This animal was shown by Rolland Anderson of Leland, Ill., in his last year of 4-H Club work.

a large, rangy, late-maturing animal of the 1920's. The brief popularity of the rather chubby hog was followed by a compromise in the thirties called the intermediate type. Some real progress was made in this period. It marked the first recognition of performance in production and attention was given a desired number of udder sections with respect to soundness and teat spacing.

Research, breed registry associations in annual type conferences, and processors are always seeking the characteristics desired in a hog of most economic importance. The loss of a good part of the market for lard and the preference of the consumer for red meat prompted a real effort by research workers and breeders to produce a hog that would meet this situation. Variation in muscling exists in the same

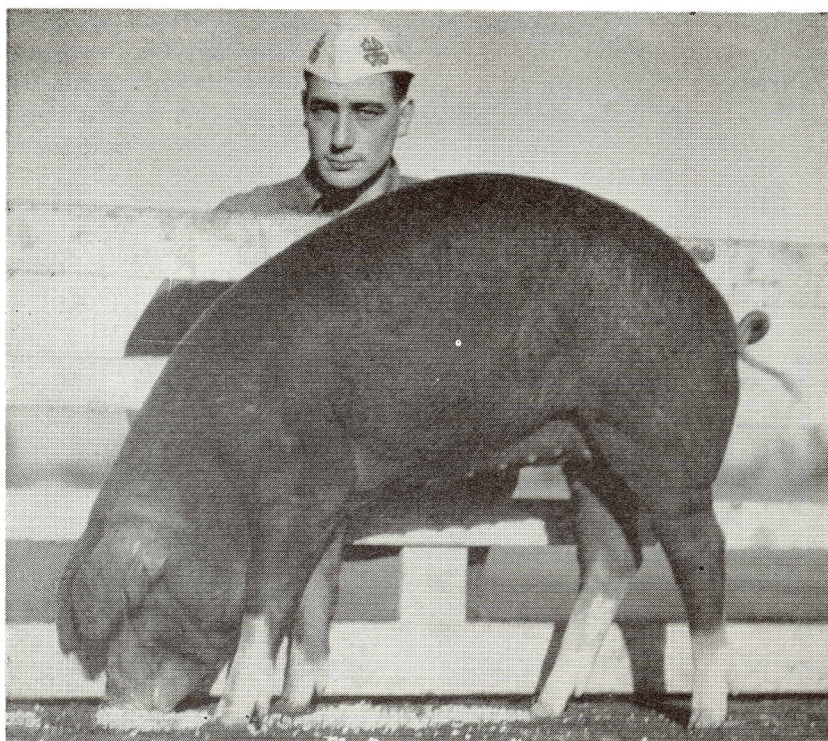
A first prize junior gilt at the 1951 Nebraska State Fair is another example of a breeder's accomplishment in attaining a desired goal.



manner that variation exists in other characteristics. The attempt to make use of the differences in muscling as a thing apart from the degree of finish is giving us what is now called the 'meat hog.' The meat hog is the type we are talking about in this manual.

The Meat Hog

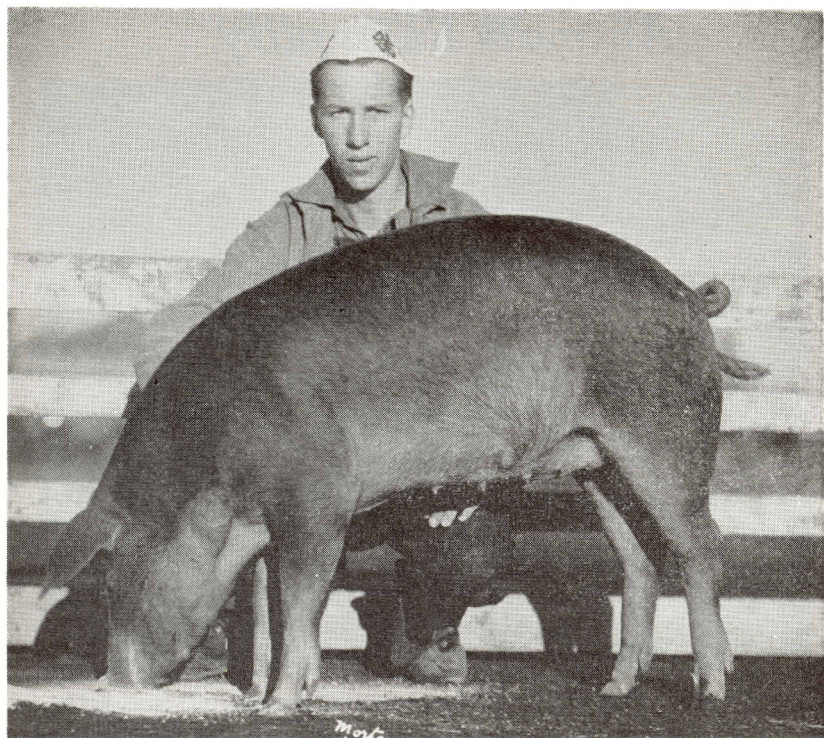
Progress in breeding and research indicates that there are hogs that we may properly call "meat type." Continued selection and record keeping may likely result in animals that should reproduce the desired characteristics in increasing numbers. There is no special breed of meat-type hogs. There are good meat-type families in all breeds. In defining the meat hog, new terms and specifications are met. A "meat-type" hog is one with a natural tendency to yield a high proportion of the higher priced cuts and less lard. It is a hog with muscling yielding a desired proportion of lean meat to fat. One definition requires a meat hog to yield 47 per cent or more of his live weight in the five trimmed primal cuts. Others say this yield should be 50 per cent or more. Meat type is not a matter of condition although a definite degree of finish may enable a carcass to more nearly meet the specifications. Some research workers say the meat-type hog



These two Seward County 4-H boys, Homer Eberspacher (above) and Harvey Barth (opposite page), are showing gilts of the type popular at shows in the late 1920's. While the reason for the type is not apparent, the smooth shoulders, clean and strong underpinning with balance and symmetry throughout were accomplished goals.

is one with a more fully developed, heavily muscled ham, a somewhat longer side with uniform depth, and a greater proportion of lean to fat in all cuts.

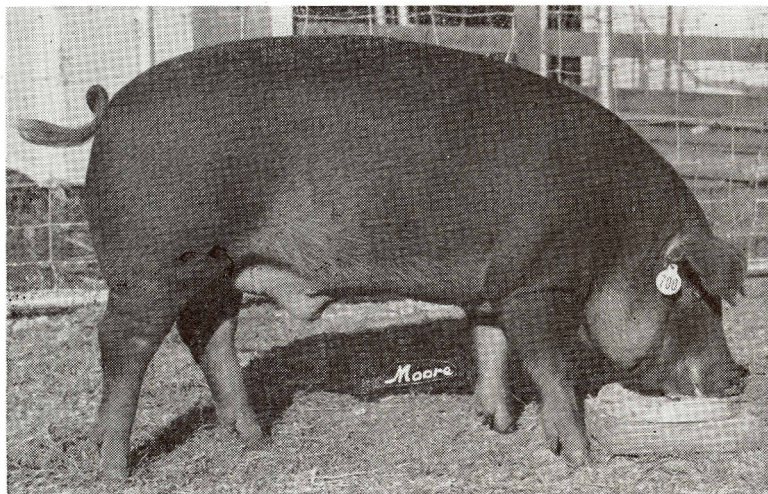
In developing the meat hog a great deal of study has been given to carcasses with respect to back-fat thickness, body length and size to the loin muscle. By associating the desirable carcasses with the type of the live animal that produced them, some advantage is gained by the breeder in selection. Research has shown that extreme length is not an advantage for with extra length the thickness of muscles is reduced. Body length longer than medium is desirable, however. The self service meat counter has shown that the public prefers lean meat from hogs weighing 180 to 240 pounds with those from 195 to 225 the most in demand. A hog should weigh 200 pounds in five and one-



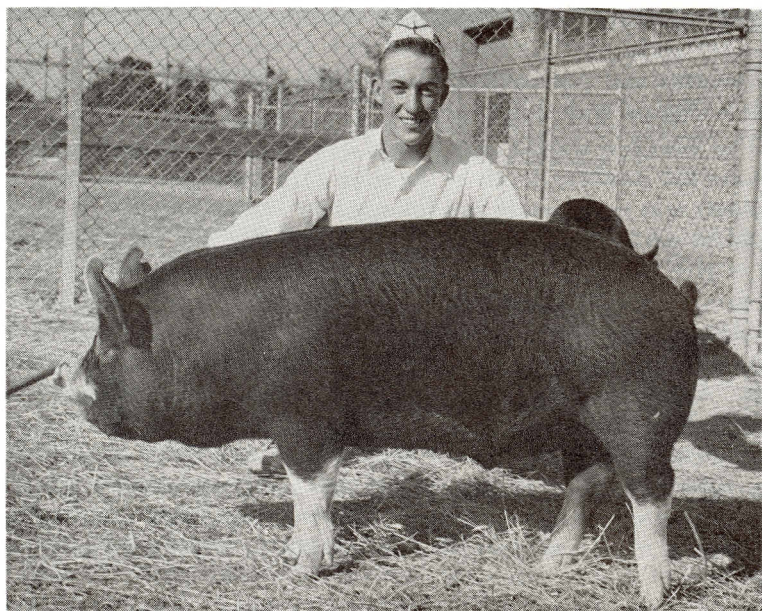
half months and put on a pound of gain with something over three pounds of grain with supplement.

The meat hog should have a good body length but not be extreme, medium but uniform depth in the sides with a straight underline, and shoulders laid in smoothly and followed by well sprung ribs. The sides should be parallel, with the width uniform along the top from end to end to give full wide loin and rump, while the ham should be plump and firm, long from hip bone to the rear and deep from top to bottom. The ham should let down well toward the hock and fill well in the twist. The hind legs should come down straight with the hocks well apart. A 200 pound hog should produce a carcass with nearly 3.75 square inches loin muscle area, with backfat thickness averaging 1.3 to 1.6 inches and have a body length of from 28.5 to 32 inches. Meat hogs have substance and their heavier muscling enables them to present a rather sturdy appearance, easily distinguished from size due to excess fat. They are definitely not spindly or too refined in appearance.

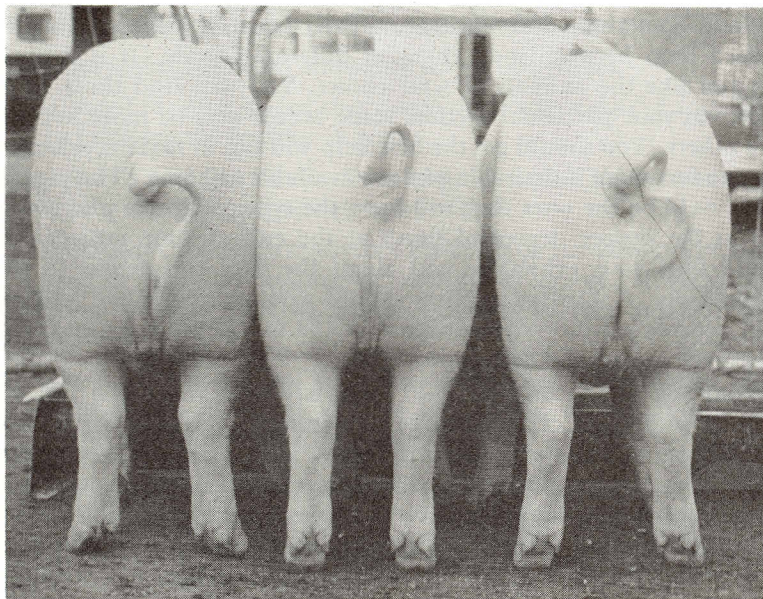
These Animals Exemplify



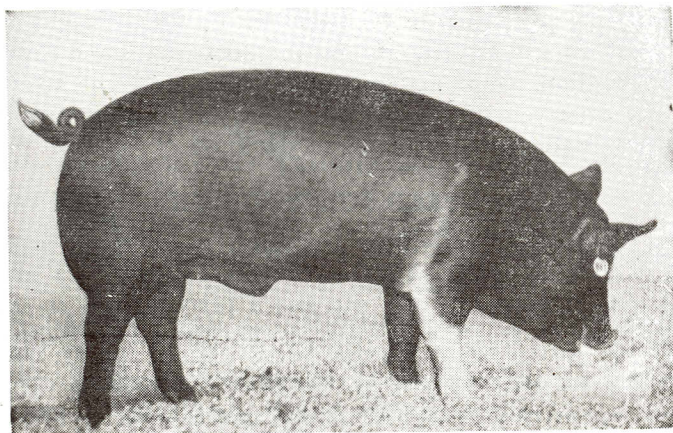
The Champion Duroc Barrow for 1951 National Barrow Show in Austin, Minn., is shown above. This is a fine type of market barrow. In the photo below Valdean Markussen, Lancaster County 4-H Clubber, shows his 1951 Ak-Sar-Ben Champion Berkshire market hog.



. . . . The Meat Type Hog



Above is the Grand Champion Pen of Barrows at the National Barrow Show in 1951. Note the straight, clean legs, uniform width and depth of ham, and full twist on the middle pig. Below is The Dark Horse, Grand Champion Barrow at the International Livestock Exposition at Chicago in 1955. Bred and shown by George F. McGuire of Wisner, this animal was Nebraska's first grand champion market hog at this show.



Selecting Your Pigs

You no doubt have your breed preference, whether it be purebred or grade. Sometimes differences are greater between individuals within a breed than between individuals of different breeds. It is desirable that you like the animals of your choice. You will find them in any breed. In your particular section, some breeds may be more available than others. You should get the best help you can in making selections. You are fortunate if desirable pigs are available at home. The pigs you seek should be the ones that will have the type, character and style as well as the proper degree of finish at the end of your project. You should time your project to end about the date you expect to meet competition. A thrifty-weanling should average about one and one-third pounds per day when finished at 190 to 225 pounds. The larger the pig the greater the daily gain.

Your pig at the finish should definitely be a meat-type pig with uniform width and depth of body, of better than average length, and smooth from end to end. Following a clean jawl, shoulders should blend in with the body and the sides should appear straight up and down rather than rounded. The loins should be full width at the top and the rump long and gently sloping with no fat rolling up around the tail setting. The ham should be deep, plump and firm but not bulgy. The value in a ham comes from depth and length for these provide the most center slices—the higher priced part. Bulginess at the bottom is trimmed as cheaper meat. The hind legs should come down straight with the hocks apart. The twist should be deep and full.

In selecting the weanling to finish out in this way one must consider that a pig is likely to thicken faster than he increases in length. So your pig should appear a bit narrow and long but his shoulders must be very smoothly laid in. He should be smooth all over and carry down deeply and firmly in the flanks with a firm, straight under line. Stay away from short, steep rumps, and hocks that stand close together. Legs of medium length are preferable. Pick for the character you want and not what you think may indicate it. Thick shoulders and bulgy hams won't give you a trim hog at the finish.

FEED FOR YOUR PIG

Pigs confined to a limited area must be provided with all they need in the way of feed. Different feeds are used so it is well to have some idea of the needs of a pig and a practical way to meet them. Here are some terms you will need to understand in feeding swine.

A *feed* is usually made up of more than one foodstuff.

An *ingredient* is a part of a mixture used to make up a feed.

A *nutrient* is a food substance.

A *component* is a part, an ingredient.

An *essential* is a necessary food substance.

A *ration* is the daily food allowance for an individual.

A *balanced* ration is a feed that meets the bodily needs of an animal in fulfilling the feeding objective.

Protein is a complex foodstuff made up of amino acids. Amino refers to the nitrogen in their composition.

A *supplement* is a feed or mixture added to larger amounts of other feed or feeds to balance or improve a ration. It commonly refers to feeds high in protein but may include minerals and vitamins.

A *mineral* is any natural substance that is not of animal or vegetable origin. Feeds of plant or animal origin contain minerals, however, that are readily available.

Vitamins are substances found within foodstuffs that are essential to body maintenance, growth, reproduction and health.

A *concentrate* is a feed high in total digestible nutrients.

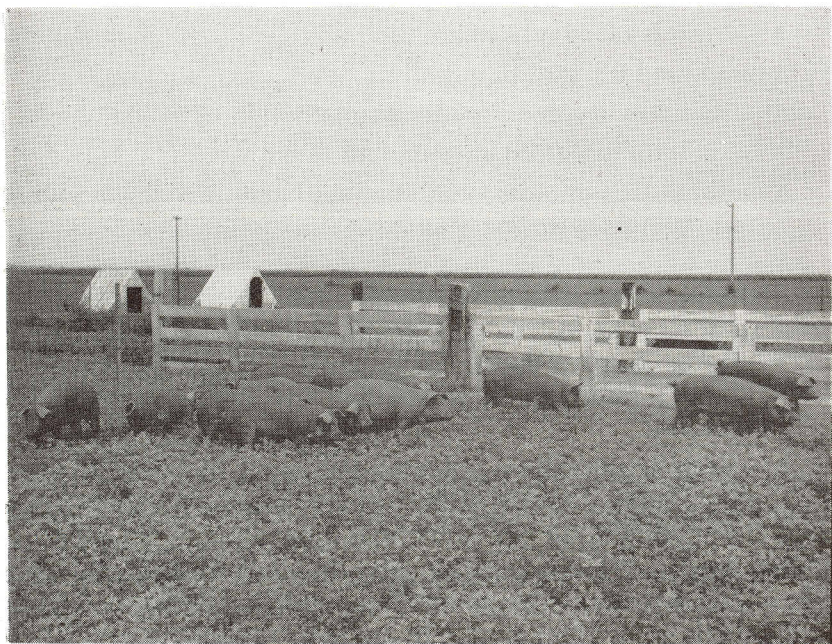
A *roughage* is a feed low in digestible nutrients due to high fiber content.

A hog has a simple, relatively small stomach, and for this reason cannot digest much roughage. Nutrients formed by bacterial action in the rumen of cattle and sheep must be added in available form in the rations for swine. Essential nutrients need to be present in adequate amounts for all nutrients to be used properly.

There are two general classes of hog feeds: (1) energy feeds which are represented largely by the cereal grains and (2) the protein supplements. Minerals and vitamins are essential and when not supplied in the feeds they should be provided.

Feed requirements of swine vary, depending on the age and the purpose for which they are fed. The value of a feed varies also when fed under different conditions. Some feeds are worth more in mixtures than when fed alone. Also, limited amounts of some feeds are good but their usefulness decreases when fed in large amounts. Some feeds are of more value to young pigs than to older swine.

Any feed ingredient must be considered as having value over that of the specific reason for its use. A so-called protein feed may have but 35 per cent protein but within the remaining 65 per cent may be found minerals and vitamins as well as other food values.



Pigs on pasture at the University of Nebraska Experiment Station at North Platte.

Cereal Grains

Corn. Corn is the most widely used of the cereal grains for swine. It is the richest in energy of our commonly used farm-raised feeds. It requires supplements of protein, minerals and vitamins.

Oats. Whole oats vary from about 65 per cent to 90 per cent of the energy producing value of corn. Except for brood sows, they should not make up over 25 per cent of the ration. They have too much hull for the simple digestive system of a hog if rapid gains are desired. Their high content of protein, minerals and vitamins makes oats desirable within reasonable amounts. Young pigs seem to prefer hulled oats to most other feeds. While the price may be high the benefit to young pigs from hulled oats may be worth the cost.

Barley. Barley is worth about 90 per cent as much as corn for fattening hogs. Diseased barley should not make up over ten per cent of the ration if fed at all. Barley should be ground.

Grain sorghums. Grain sorghums are worth 90 to 95 per cent as much as corn and may be used in any manner in place of corn.

Wheat. This is the only cereal with a feed value higher than corn. Unless its cost exceeds that of corn by no more than 6 to 10 per cent, its feeding is not justified in commercial pork production. Wheat should be ground for swine.

Rye. Rye is not usually palatable and should not be fed to hogs unless of good quality. It should be ground and fed in grain mixtures to hogs over 100 pounds.

Grinding Grains for Swine. There is no need to grind corn for market hogs up to 225 pounds. Older breeding hogs waste corn unless it is ground. Corn considered hard, as well as oats and barley, always should be ground or rolled. Most feeds, including grain sorghums, when hand-fed, in mixtures or in slop, should be ground.

Pasture. Pasture for swine implies green, juicy, growing plants. Good pasture supplies protein, some minerals, and vitamins that are likely to be short in cereal grains. Pasture-fed hogs require about half as much protein supplement as hogs fed in a dry lot. Hogs are usually thrifty on a clean pasture and labor needed to care for them is reduced.

In Nebraska, alfalfa is probably our best pasture for hogs. It is a palatable and nutritious legume and provides forage throughout a long growing season. Ladino clover, red clover, lespedeza and sweet clover are legumes providing good hog pasture but their use is limited by character of the plants and their adaptability under Nebraska's varying growing conditions. Rape is good pasture, but when wet causes blistering on thin skin areas of the hog.

Sudan, brome grass and fall seeded rye are good grass pastures. Sudan is fine for the hot, dry period in mid-summer but is too coarse for younger pigs. Brome grass is at its best in spring and fall and makes a fine mixture with alfalfa. Fall rye provides good green pasture in late fall, winter and spring.

Protein Supplements

Protein supplements for swine may be of vegetable, animal or marine origin. Mixtures are preferable, usually, to a supplement from one source. Soybean oil meal, linseed oil meal and alfalfa meal, or good leafy green alfalfa hay free from coarse stems, are the most commonly used protein supplements of vegetable origin for swine in Nebraska. Cottonseed meal may be used as part of the supplement, but not to exceed 10 per cent of the entire ration. Under some conditions cottonseed meal may be poisonous to swine so that undue risk is not justified.

Soybean oil meal. It is very palatable and considered the best of the commonly available protein supplements of plant origin for swine. However, a mineral supplement supplying calcium and phosphorus is desirable when pigs on pasture receive soybean oil meal as the only protein concentrate. Pigs in dry lot should receive alfalfa meal or chopped alfalfa hay in addition to the minerals to increase the efficiency of the soybean oil meal. Because soybean oil meal is very palatable to swine, it is best used in combinations of approximately two parts of soybean oil meal to one part of meat and bone scraps, or tankage, to avoid over-consumption of protein supplement.

Linseed meal. A product from the processing of flax seed. It should be used in combination with one or more protein supplements when fed to swine.

Alfalfa. Alfalfa pasture is a fine source for part of the protein in the ration. Alfalfa meal made from leafy, green, small-stemmed alfalfa is a good source of part of the protein. Ground alfalfa of high quality is desirable, especially where some bulk is wanted in the ration. Alfalfa pasture or high quality alfalfa hay is highly important as a source of vitamins.

Supplements of Animal Origin. Tankage, meat and bone scrap, buttermilk and skim milk are the most common protein supplements of animal origin. Fish meal is of marine origin. Tankage and meat and bone scrap are by-products of the meat packing industry although some tankage comes from rendering plants. Skim milk is a very good supplement from the dairy. Usually these are proteins too expensive to use as the only supplement. The supplement may be improved and the cost reduced at the same time by mixing with proteins of vegetable origin. Mixtures provide a more complete balance of amino acids.

Amount of Protein to Feed. The world has always been short of protein. Since some protein supplements usually have to be bought it is well to use them carefully. The following levels of protein are recommended for the various age and weight groups of swine. Young and mature boars receive the same levels of protein as gilts and sows during gestation. Gestation is the time between mating and when the female brings forth young. Lactation refers to the period a sow gives milk. Generally, rations for hogs on very good pasture may contain 2 per cent less protein than rations for hogs in a dry lot.

Parts of corn to protein supplements needed to obtain the desired level of protein in a ration.

Breeding Stock

| <i>Class</i> | <i>Per cent protein in ration</i> | |
|------------------------|-----------------------------------|----------------|
| | <i>Dry lot</i> | <i>Pasture</i> |
| Gestation-gilts | 15 | 12-13 |
| Gestation-sows | 12-14 | 10-12 |
| Lactation-sows & gilts | 15 | |

Market Stock

| <i>Weight</i> | <i>Per cent protein of ration</i> | |
|---------------------|-----------------------------------|----------------|
| | <i>Dry lot</i> | <i>Pasture</i> |
| Weanling to 75 lbs. | 16 to 18 | 14 to 16 |
| 75 lbs. to 125 lbs. | 14 to 16 | 12 to 14 |
| 125 lbs. to market | 12 to 14 | 10 to 12 |
| Beyond 220 lbs. | 12 | 10 |

| <i>Desired per cent of protein in ration</i> | | <i>Per cent protein in supplement</i> | | | | | |
|--|-------|---------------------------------------|----|----|----|----|----|
| | | 32 | 36 | 40 | 44 | 48 | 52 |
| 18 | corn* | 60 | 65 | 70 | 73 | 76 | 78 |
| | supp. | 40 | 35 | 30 | 27 | 24 | 22 |
| 17 | corn | 64 | 69 | 73 | 76 | 78 | 80 |
| | supp. | 36 | 31 | 27 | 24 | 22 | 20 |
| 16 | corn | 68 | 73 | 76 | 79 | 81 | 83 |
| | supp. | 32 | 27 | 24 | 21 | 19 | 17 |
| 15 | corn | 72 | 76 | 79 | 82 | 84 | 85 |
| | supp. | 28 | 24 | 21 | 18 | 16 | 15 |
| 14 | corn | 77 | 80 | 83 | 85 | 86 | 87 |
| | supp. | 23 | 20 | 17 | 15 | 14 | 13 |
| 13 | corn | 81 | 84 | 86 | 87 | 89 | 90 |
| | supp. | 19 | 16 | 14 | 13 | 11 | 10 |
| 12 | corn | 85 | 87 | 89 | 90 | 91 | 92 |
| | supp. | 15 | 13 | 11 | 10 | 9 | 8 |

* The values apply to corn containing 8.5 per cent protein.

Minerals

The soil producing feed ingredients supplies some of the minerals needed to complete rations while supplements of animal origin supply more. In Nebraska, calcium is the mineral element likely to be short while phosphorus is next for consideration. Ground limestone provides calcium while ground steamed bone meal is a source of both calcium and phosphorus. Pigs need minerals in small amounts but that small amount is very important.

Common salt is used in most of the body functions which makes it important. Swine rations should contain not over $\frac{1}{2}$ pound of salt in 100 pounds of feed. Check your supplement for salt content in making up your ration. Unless rations are very carefully formulated,

minerals should be self fed four parts of steamed bonemeal, with one part of iodized salt for palatability. The iodized salt may be replaced by trace mineralized salt if desired.

Vitamins

While vitamins as substances cannot be seen in a feed, they are usually present in feed ingredients. Research has identified a number of vitamins through the results of their functioning in life processes of the body. Most well formulated swine rations, especially if they contain leafy green feeds, will likely supply needed vitamins. Swine should have part of the ration of animal or marine origin unless some specific ingredient contains Vitamin B₁₂.

Antibiotics

Antibiotics are drugs and not nutrients. Their addition to good swine rations has been shown to increase gains and to reduce feed needed to produce a given amount of gain. Young pigs have shown a greater response than those near market age. Healthy pigs have less room for improvement than the less thrifty. Pigs on good pasture show less response to antibiotics in the feed than those in a dry lot. Antibiotics appear to stimulate increased feed consumption as well as decrease some, but not all, types of diarrhea.

Since only very minute quantities (10 to 20 grams per ton of complete feed) are used, mixing should be carefully done. A supplement or premix containing the drug can be purchased and mixed with the home grown feeds. Several theories have been advanced as to how antibiotics work but just how they function is not known. Research is after the facts.

Water

Weanling pigs drink water equal to over 12 per cent, or one eighth, of their weight daily. A finished market hog drinks less than half this proportion and the sow, before farrowing, a little more than the market hog. But the nursing sow will drink an amount equaling 6 to 20 per cent of her weight daily.

FEEDING MARKET PIGS

Pigs in the market pig project, whether fed as individuals or as a litter, require feed records for 100 days or more after weaning but most of them will be 180 days or more of age before they are shown and sold. Home grown grains should supply most of the energy feeds while good pasture, ground alfalfa and skim milk may supply part

of the protein supplement. The value of milk products is greater for young pigs while in the critical growth period although skim milk in thick slop the last few weeks before show certainly helps in acquiring that "pink" of condition called bloom. One gallon of liquid skim-milk or undiluted buttermilk is equal to one pound of good protein supplement. For most of the feeding period, dry feed of home grains with supplement will make up the ration. Here are some supplements that may be used, self fed, along with home raised grains.

| For use: | Some protein-mineral-vitamin supplements | | | | | | |
|---|--|------------------|------------------|------------------|-------------------|------------------|------------------|
| | <i>In dry lot</i> | | | | <i>On pasture</i> | | |
| | A <i>lbs.</i> | B <i>lbs.</i> | C <i>lbs.</i> | D <i>lbs.</i> | G <i>lbs.</i> | H <i>lbs.</i> | I <i>lbs.</i> |
| Soybean oil meal | 40 | 40 | 40 | 30 | 50 | 60 | 60 |
| Linseed meal | | | | 10 | | | |
| Tankage or | 30 | 20 | | 30 | 50 | | 20 |
| Meat & bone scraps | | | 30 | | | 40 | |
| Fish meal | | 10 | | | | | 20 |
| Alf. meal (sun-cured) | 30 | 30 | 30 | 30 | | | |
| Ground limestone or | | | | | | | |
| Steamed bone meal | 2 | 2.5 | | 2.5 | | | 2 |
| Iodized salt | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| | <u>104</u> | <u>104.5</u> | <u>102</u> | <u>104.5</u> | <u>102</u> | <u>102</u> | <u>104</u> |
| Approximate per cent crude protein content | 37 | 37 | 37 | 35 | 50 | 45 | 48 |

Should you wish to feed an antibiotic and you have but a few pigs it may be preferable to buy a prepared supplement containing the drug as well as protein, minerals, and vitamins. In case a larger number of hogs are being fed on the place, however, and so-called premixes are purchased to complete home prepared supplements, you should use the same feed to advantage.

You may wish to hand feed near the end of the feeding period in order to control daily gains and have your pigs reach the desired bloom for a meat hog at time of competition. That means no excess condition but a finish that is smooth, even, firm and providing the proper amount of back fat. If skim milk is fed it may be sweet or sour but always the same way. Make fresh slop for feeding. Avoid a sour mess of feeds soaked from one feed to the next.

The Weanling Breeding Gilt

Gilts kept for the herd and not for early market are carried very much the same way as market meat type hogs. They may run together the first month or two after weaning. From then on they should receive less of a ration designed to produce finish. Should all pigs in the

project be breeding stock, boars and gilts may be fed together. At four months boar pigs should be removed from nearness to any sows or gilts and fed to gain rather than to fatten.

Sows and Gilts

A sow or gilt must be fed during gestation to provide for her maintenance, the development of her unborn litter and to build up body reserves for use in producing milk after farrowing. Gilts should be fed to gain from 90 to 125 pounds during gestation while sows in good condition should gain 65 to 100 pounds but the ration should be bulky enough to prevent excessive fattening.

Rations for self-feeding during gestation

| | A | B | C | D |
|--------------------------|-------------|-------------|-------------|-------------|
| | <i>lbs.</i> | <i>lbs.</i> | <i>lbs.</i> | <i>lbs.</i> |
| Ground yellow corn | 300 | 300 | ..... | 500 |
| Ground sorghum grain | ..... | ..... | 400 | ..... |
| Ground oats | 300 | 400 | 300 | ..... |
| Alfalfa meal (sun cured) | 300 | 200 | 200 | 400 |
| Meat and bone scraps | 50 | 50 | 50 | 50 |
| Soybean oil meal | 50 | 50 | 50 | 50 |
| Steamed bone meal | ..... | ..... | ..... | ..... |
| Iodized salt | 5 | 5 | 5 | 5 |
| | 1005 | 1005 | 1005 | 1005 |

Pounds of feed required per day for

BRED GILTS

| <i>Weight</i> | <i>First two thirds</i> | <i>Latter third</i> |
|---------------|-------------------------|---------------------|
| 250 | 4.0 to 4.5 | 4.5 to 5.0 |
| 300 | 4.8 to 5.4 | 5.4 to 6.0 |
| 350 | 5.6 to 6.3 | 6.3 to 7.0 |
| 400 | 6.4 to 7.2 | 7.2 to 8.0 |

BRED SOWS

| | | |
|-----|------------|------------|
| 300 | 3.6 to 4.0 | 4.2 to 4.8 |
| 350 | 4.2 to 4.9 | 4.9 to 5.6 |
| 400 | 4.8 to 5.6 | 5.6 to 6.4 |
| 450 | 5.4 to 6.3 | 6.3 to 7.2 |
| 500 | 6.0 to 7.0 | 7.0 to 8.0 |

Rations that may be hand-fed during gestation

| | <i>Dry lot (and in winter)</i> | | <i>On pasture</i> | |
|---------------------|--------------------------------|-------------|-------------------|-------------|
| | A | B | C | D |
| | <i>lbs.</i> | <i>lbs.</i> | <i>lbs.</i> | <i>lbs.</i> |
| Ground yellow corn | 725 | 385 | 455 | 875 |
| Ground oats | ..... | 360 | 440 | ..... |
| Sun-cured alf. meal | 150 | 150 | ..... | ..... |
| Meat scraps | 60 | ..... | 50 | ..... |
| Tankage | ..... | 60 | ..... | 50 |
| Soybean oil meal | 60 | 40 | 40 | 60 |
| Steamed bone meal | ..... | ..... | 10 | 10 |
| Iodized salt | 5 | 5 | 5 | 5 |
| | 1000 | 1000 | 1000 | 1000 |

Rations for self-feeding sows and gilts during lactation

| | A | B | C |
|--|-------------|-------------|-------------|
| | <i>lbs.</i> | <i>lbs.</i> | <i>lbs.</i> |
| Ground yellow corn | 525 | 545 | 395 |
| Ground oats | 150 | ..... | 150 |
| Wheat middlings | ..... | 150 | 150 |
| Alf. meal (sun cured or dehydrated) | 150 | 150 | 150 |
| Tankage or | 60 | ..... | ..... |
| Meat & bone scraps | ..... | 60 | 60 |
| Soybean oil meal | 100 | 80 | 80 |
| Steamed bone meal | 10 | 10 | 10 |
| Iodized salt | 5 | 5 | 5 |
| | <hr/> 1000 | <hr/> 1000 | <hr/> 1000 |

Suckling Pigs

Starters should be placed before pigs in a creep when they are a week to ten days old. A creep is any device or arrangement of equipment that makes feed available to small animals while keeping older or larger animals from it. A starter, for pigs, is a feed intended to be the first food consumed in addition to sow's milk. A starter should be very palatable, low in fiber, high in energy and contain 18 to 20 per cent protein. Fresh water should be available. Little pigs do not respond well to dusty or finely ground meal. Pellets and coarsely ground grains and rolled or hulled oats are palatable. Ten per cent of either sugar or dried skim milk in a starter improves palatability. Avoid bulky feeds.

The first three weeks a pig uses solid feed the total consumption is rather small so that commercial complete starters in pellet form may be desirable. When they can be purchased at a price consistent with proper cost of production, commercial pig feeds may well furnish the entire solid part of suckling pig ration. If antibiotics are desired they should be included. In the latter part of the suckling period, pigs may have access to a little cracked or shelled corn and supplement.

Here is a good pig starter:

| | |
|---------------------------|-----------|
| Clean cracked yellow corn | 32 pounds |
| Rolled oats | 33 pounds |
| Soybean oil meal | 8 pounds |
| Sugar | 10 pounds |
| Meat and bone scraps | 3 pounds |
| Fish meal | 4 pounds |
| Dried skim milk | 10 pounds |
| | <hr/> 100 |

Do not include alfalfa for young pigs.

(Much of the information in this section is adapted from Nebraska Extension Service Circular 253).

EQUIPMENT FOR RAISING PIGS

Buildings and Equipment

It is very desirable to keep your club project pigs by themselves. A short summer market project with a few pigs or a good sized litter does not present much of a problem. If you have one or more sows farrowing early, or you are feeding fall pigs, you will need more housing and equipment. In any case your setup should enable you to properly meet your needs. Fences must be hog tight, shelter must be adequate, and equipment should enable you to handle your animals easily, safely and with as little labor and effort as you need to do your work well. Planning well ahead of needs usually will help you to be prepared as well as enable you to keep costs in line. Improvising to meet emergencies is usually expensive.

Weanling pigs, whether for market or for the swine herd, need the same equipment. Enclosures providing pasture are desirable. Rectangular shape is most desirable in lots no larger than necessary with the length twice the width. Length leads to more exercise. Fence materials may be of wire or wood but must keep pigs from getting out.

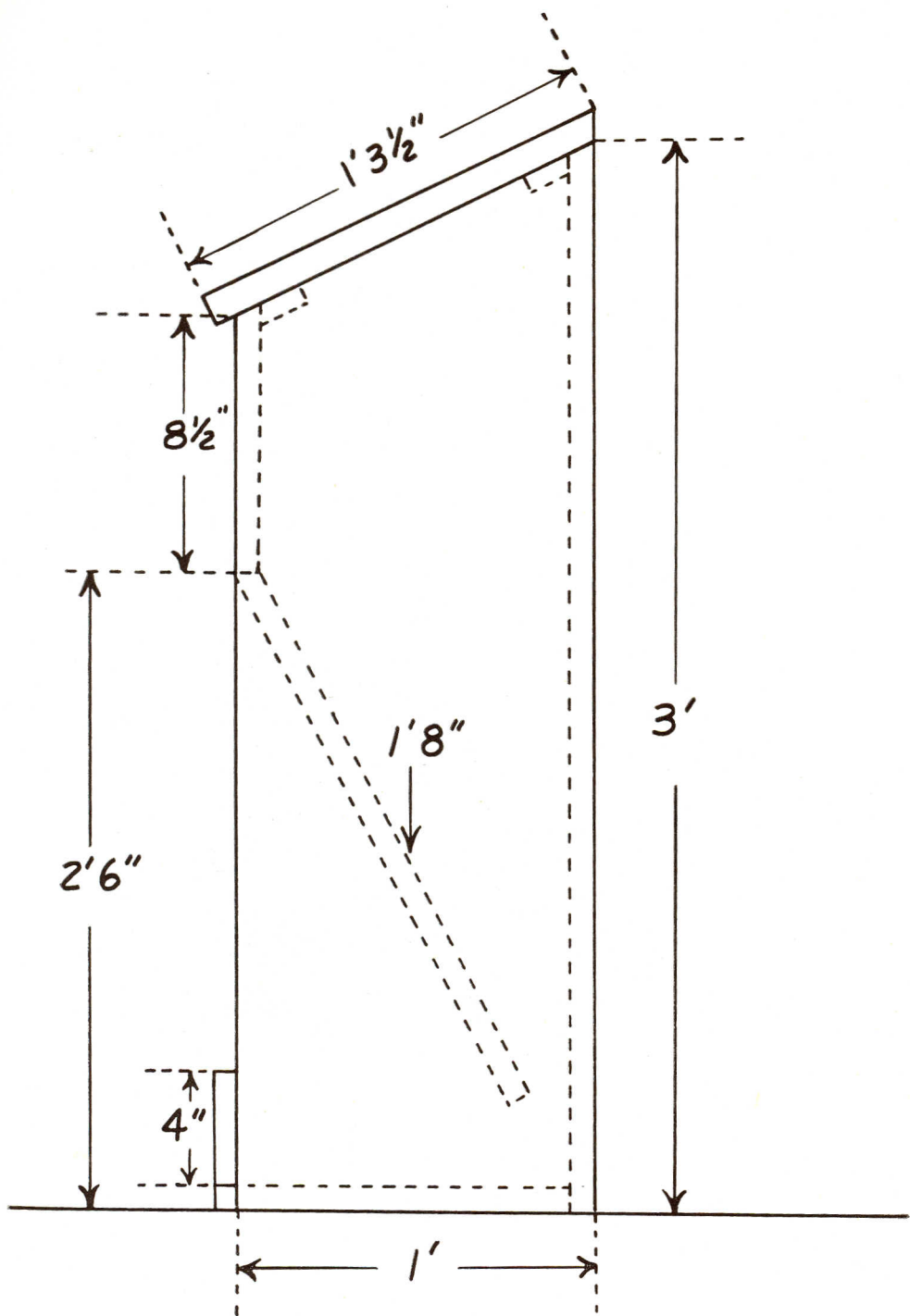
Make Sanitation Possible

Sanitation is any plan, procedure or practice that enables a grower to keep germs of disease and parasites from his hogs. One practice is to raise hogs on clean ground—ground on which hogs have not been permitted for three or four years. This practice requires that most equipment be easily portable by one man. Equipment need not be elaborate or expensive but the investment should be consistent with the opportunity for profit. Your county agent can usually supply you with a choice of detailed working drawings for most of the needed buildings and equipment.

If you used a colony house at farrowing time, it may well be used later for shelter and possibly shade. There are many types of colony, or individual sow and litter houses, that are very satisfactory.

If there is no natural shade from trees or shrubs in your lot, make a sunshade. Set posts eight to ten feet apart and attach cross pieces 3 to 3½ feet above the ground, to each row of posts. Across these place boards to make a tight roof for a shade or place boards or poles widely spaced, sufficient to carry brush or straw to complete the covering. A sun shade built on skids, with a good board roof, is easily moved and lasts for several years.

Self feeders should be made with lids pigs can lift in getting at the feed. A few feet of shed space can be built into the feeder to keep the

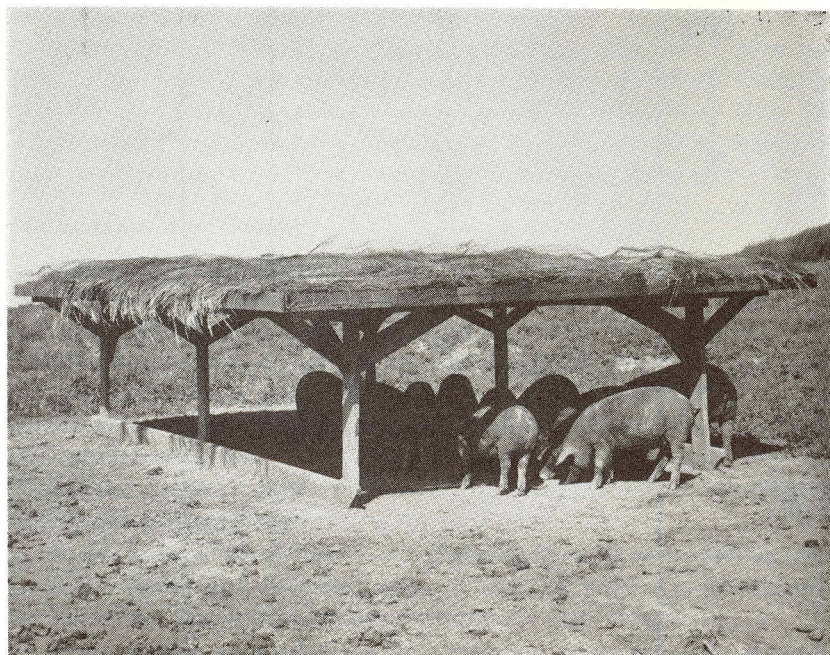


Mineral self feeder for swine.

wind from getting at exposed feed in the feeder trough. In either case there should be some platform space built next to the feeding space.

More Portable Equipment

While one can get along with a shallow watering trough it is recommended that water be available to pigs at all times and in a manner that keeps it as clean as possible. You will find the automatic two-cup waterer attached to a 55 gallon barrel on a wooden platform 5 or 6 feet square, a very satisfactory piece of equipment. The wooden barrel keeps the water cooler in summer and resists freezing more than the steel drum. In summer it is preferable to keep either drum or barrel in the shade.



A good portable sun shade.

A mineral feeder may be a small, separate piece of equipment or it may be one or more compartments of the larger self feeder. Sometimes the mineral feeder is attached to the end of the larger feeder. One compartment is usually sufficient for minerals, but only when salt is mixed with the feed. Two compartments are preferable so that

pigs may take of the mixture or salt as they desire. They may take but a lick or two every day or so but that small amount is important.

Hog troughs or feed pans are necessary in hand feeding. Their construction should prevent waste of feed and provide easy cleaning. The round shallow metal pan is good for one animal. Something larger is needed for litters. Footings of strap iron attached to half of a hot water tank makes a popular trough. Cross pieces of strap iron spaced at 8 or 9 inches prevent hogs from rooting feed out and also prevents them from lying in the trough. Similar troughs may be of wood with one or more cribbed openings 18 inches above the trough through which to pour thick slop. A 1" x 12" board as long as desired, boxed with 1 x 4's and joints strengthened with metal strips, makes a good trough to take to shows. It packs well, doesn't upset easily and is readily washed after feeding.

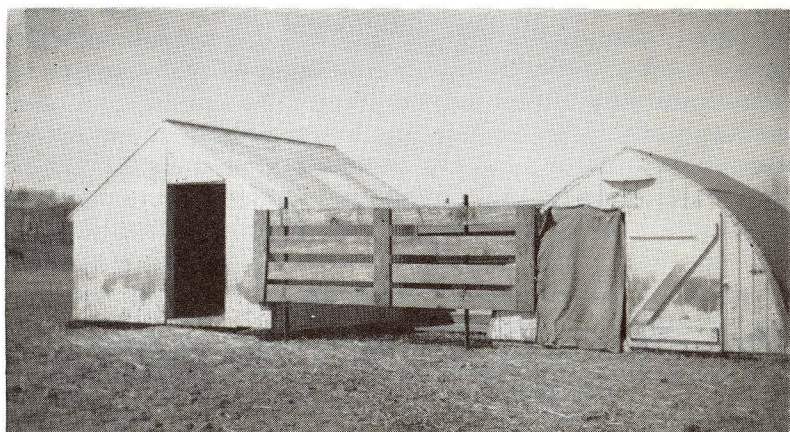
Handy Equipment

Short panels, sometimes called hurdles, and hinged longer panels are very useful equipment. They are made of lightweight, strong strips of lumber fastened to cleats at each end. The longer panels should have a middle cleat also. The height should be 28 inches for hogs familiar with them. Large hinged panels for home use only may be heavier and higher. Short single panels 3½ to 5 feet long are very useful in sorting and penning hogs any time. A very short panel, 24 to 28 inches long, cut from a piece of plywood or masonite with a hand hole cut in the top is useful in a crowded show ring or to separate fighting pigs. Two longer panels, 5 feet or more as desired, fastened with hinges at one end, offer a variety of uses. Two hinged panels fastened together make fine show pens for litters as well as feed and wash pens at the fairs.

A loading chute is a worth-while piece of equipment on any stock farm. When a permanent, fixed chute can be reached at any time by truck as well as livestock, the earth filled ramp is best. Animals move easily over a dirt footing. You will find a variety of portable chutes. The newer ones have steps instead of a cleated floor. Avoid overhead crossties even though the cost may be increased, for they interfere at building openings and truck entrances, as well as endanger you. A chute well balanced over wheels is moved with the least effort. In any type of chute *the sides should be tight* for if an animal can see through the sides that he is leaving the ground you will likely have trouble.

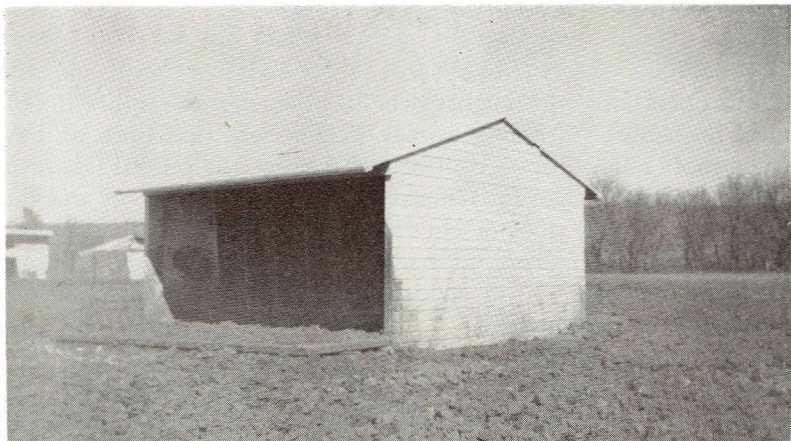
Caring for sows with pigs from farrowing to weaning time requires additional equipment. Animals in the wild state do not have offspring

Examples of Equipment

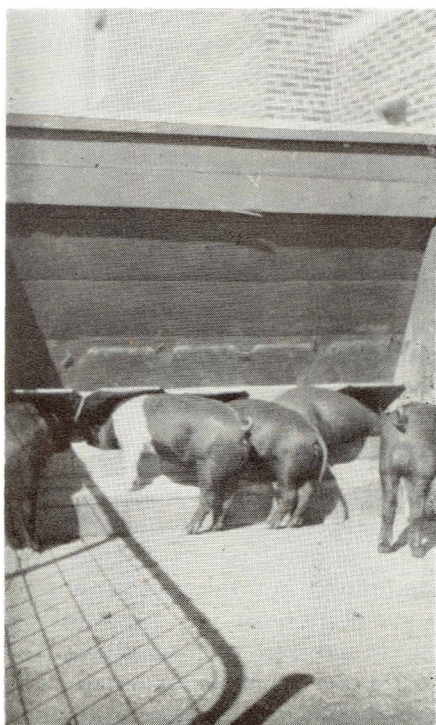


Two types of portable houses are shown above. It would be preferable to have a panel with openings rather than having pigs crawl under. A practical portable water supply is shown below at the left.

. . . . For Raising Pigs



Illustrated above is a large self feeder set well back in the shed. This feature will prevent a good deal of loss of feed. Below at the right is another example of a self feeder which pigs will always keep busy.



in cold snowy weather. Under domestication, the herdsman must make the adjustments necessary to provide what the sow could do herself in the warmth of the growing season.

Housing Hogs

Your operations will not likely be large enough to require the old central hog house. However, it may well be said that since we have learned more about disease control and feeding, the central farrowing house is used more than for some years past. Concrete floors and concrete slabs on three sides outside make the old central hog house a good place to care for sows at farrowing time. Modern ideas on use of equipment will help you in making use of space in almost any farm building for this brief period.

The colony or so-called individual hog house has been used for a long time so that many acceptable types have been developed. They are portable, warm and the cost is usually favorable. Some hog raisers favor two, three and sometimes four-pen portable houses. Use what opportunity best affords you.

You will want to save all the pigs you can from your litter. Whether you are using an individual or a central hog house, your litter is entitled to space equal to a good farrowing pen. There has been a lot of work done in recent years on ways to use this space in saving pigs from being crushed by the sow. (The domesticated sow is a far cry from the wild hog and in developing her for meat and fat production we have made her rather clumsy in protecting tiny pigs from herself.) Guard rails around the pen, 8 or 9 inches above the floor and extending 8 to 10 inches from the wall, have served well. Rails with open space next to the wall is preferable to solid boards for bedding packs under the latter and prevents free movement of the pigs.

Keep Young Pigs Warm

Since little pigs can't maintain body heat themselves in cold weather, several means have been used to help. The individual house well banked with straw enables the sow to keep the pigs from chilling. With the development of rural electrification have come the so-called pig brooder and the heat lamp over open pens. The brooder usually is made by covering one corner about four feet each way with boards one foot from the floor. A 1" x 4" is placed across the upper part of the opening leaving about 8 inches clear for the pigs to move in and out. A hole is cut in the top and covered with hardware cloth. Above this is fitted a deflector with a 100 watt light bulb. The

brooder must be made secure and the top fenced to keep the sow from getting on it and reaching the electric cord.

A 55 gallon steel drum with a door 8 inches high and 15 inches long cut in the side at the bottom, with a hole in the top over which may be placed a light bulb in a deflector, provides another practical brooder. A heat lamp or a light bulb in a deflector suspended by chain or rope, and not by the electric cord, over an area fenced off from the sow, provides the proper temperature by adjusting the height from the floor. Do not overlook safety measures. The sow may be electrocuted if she bites the electric cord. Pigs may be blistered and bedding set afire if temperatures are not checked and distances to source of heat properly adjusted.

Prevent Overlaying

Some statistics indicate that about one pig out of seven farrowed in years past lost his life by being crushed by the sow. Most of this loss happens the first week or ten days. The farrowing crate was developed some years back in an attempt to stop early crushing. It looked somewhat like a self feeder with the tall space for the sow and with low covered space on both sides and the rear end to permit movement of the pigs as well as to reach the sow in nursing. It works well but its cost is an item and it does not lend itself to any other service. It did, however, provide the incentive for developing what is now commonly referred to as the farrowing stall.

Farrowing stalls may be built as a unit to be used in any convenient building or they may be made as temporary installations in the pens of the central hog house. Two panels seven feet long and 24 inches apart provide the sow space. The top may be from 32 to 42 inches from the floor but the bottom of the panel should be 12 inches from the floor for sows and an inch or two less for gilts to permit suckling by the pigs. The bottom board of each panel should be of 2 inch lumber. One end is usually attached to a wall while supports need to be provided for the other. This is the end through which the sow enters. A loose panel, a hinged gate or a couple of slats properly spaced back of the sow keeps her in the stall. A one-foot board should form a pen for the pigs on each side. This board should be 14 to 16 inches away from the stall. Heat lamps are installed above this board to warm the pigs. When more than one stall is in use, the partition board serves two litters with but one lamp needed above it. After farrowing, panels are easily stored or available for other use and release the space at the same time.

A more recent addition to the farrowing stall is a platform 8 or 9 inches high, $4\frac{1}{2}$ feet wide and as long as the panel on which the pen

is placed at farrowing time only. It may be made in sections. At the rear of the sow is placed a box one foot high, two feet wide and three long. The end next to the sow slopes from the platform to the middle of the box. In forming this incline three 1 x 8's are used. The two joints are made by lapping. There is a one-half inch vertical opening at each lap. As a pig is farrowed the incline carries it away from the sow and by the time the pig has reached the bottom of the box he is free from the placenta with small chance of choking. The vertical openings permit most of the placenta to slide into the open space beneath so that it is out of the way of the next pig. The heat lamp properly placed above the box keeps the pigs warm and dry.

Hay racks are useful in feeding brood sows alfalfa hay in winter. Check with your county agent for working drawings.

If you plan a creep, have the vertical opening no more than 8 inches wide. Do not have pigs crawling under boards parallel with the ground in getting to a feeder. A panel, the height of other panels, made of top and bottom pieces with openings provided through 8 inch spaces between up-rights, does the job. A loose panel placed against the creep panel soon gives you a convenient catch pen.

MANAGEMENT OF HOGS

Be Observing

An old quotation reads "The eye of the master fatteneth his cattle." You will need to be very observing and quick to notice anything about your animals, or your supplies or equipment that is not right. Cultivate the habit of noting the way your pigs move, the way they carry their tails, the lustre of their coats, the manner in which they take to their feed and the usualness of their droppings. You may find indications of something that needs correcting. It helps you carry out good management practices.

You have started with weanling pigs for the market project. You'll likely use self feeders most of the time. Figure out your rations, carefully considering what you have. You may save on commercial protein if you can count on a definite amount of skim milk every day. Skim milk is good but it should be fed the same way each feed—if you can feed it fresh regularly, do it, but if not let it sour for each feed. Watch your feed supplies and do not get caught short and have to make big changes quickly in the kind of feed you use. If salt runs out, replace it promptly for if hogs get salt-hungry and are turned to a self feeder they may be poisoned by overfeeding. As for water, you simply cannot afford the poor business of letting your pigs get thirsty. If sheds need cleaning, do it once a week or more often.

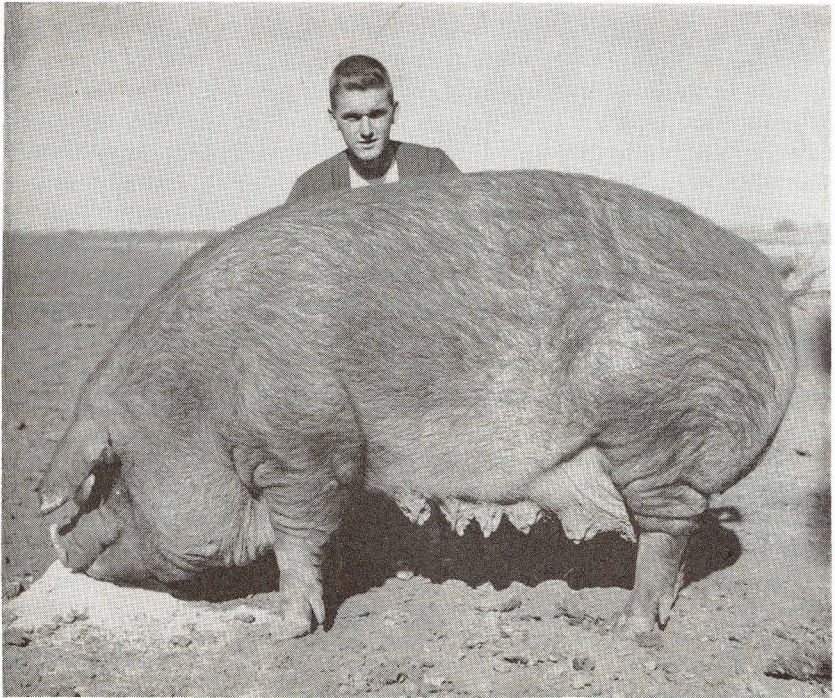
As show time draws near, watch your pigs very closely. In groups, you need uniformity of type, character and finish as well as size. Uniformity of finish of individuals may be your problem. You may need to reduce the feed for some and increase it for others. You may want to make that underline a little more nearly straight and the belly and flanks show a bit more firm. You may well go to feeding slop, if practicable, three times a day. You may need to divide your pigs for feeding. Here's where a catch pen comes in handy as well as your panels. Make the slop thick—so that it will flow slowly but not run. Some pigs are quick to let their pen mates have the thin slop and they clean up the heavy portion. Thick slop insures that they all get the same feed. Use of separate pens is the only way to control the amounts for each. Feed only what they will clean up promptly and less if they are too fat.

When you ship to the fair you may cut on feed but not on water, particularly in hot weather. At the fair, using warm water to mix slop usually gets a pig to eat unless he is plainly sick. Use feed pens away from exhibition pens. After each feed use water freely in rinsing feed troughs and other equipment that may have been smeared up with feed. At a fair your animals are on display. Cleanliness and neatness of the whole area makes a favorable impression on the public. It invites their visits. Keep walks, gates and any thing the public may touch, free from manure, grease, dust or feed. Your visitors should not be reminded after they leave your exhibit that they have acquired some of the stench of a neglected pig pen. Have your exhibit make the best possible appearance. Make it inviting through cleanliness.

Selection of Brood Sows and Gilts

You will be concerned with more than excellence in the points of the conformation you looked for in your market pigs when you select a gilt or a sow to produce your litter. You want to see characteristics that will enable her to be a good mother. First you should find out what available records of her family may tell you. Several of the breed registry associations sponsor production testing programs, usually referred to as "production registry," and you will want to learn from breeders whether or not these records are available. Untested ancestry does not mean your prospective sow or gilt will not be a good producer—it means that the producing ability of her ancestry has not been proven. Neither does testing mean that all stock from tested ancestry will be good producers but records will tell you whether or not your chances of good results are improved. A good number of farmers keep production records and they should be of help also.

Sex character in the female is called femininity. In the hog it is shown by refinement in the head as compared to that of the boar. The



Arley Waldo of DeWitt, 1952 State 4-H Swine Champion, shows his 1951 Grand Champion Sow at the Nebraska State Fair. This sow raised 60 pigs from five litters. One litter weighed 811 pounds at 56 days and 4,511 pounds at 180 days, a world record P. R. litter. A rear view of the sow confirms her meat type.

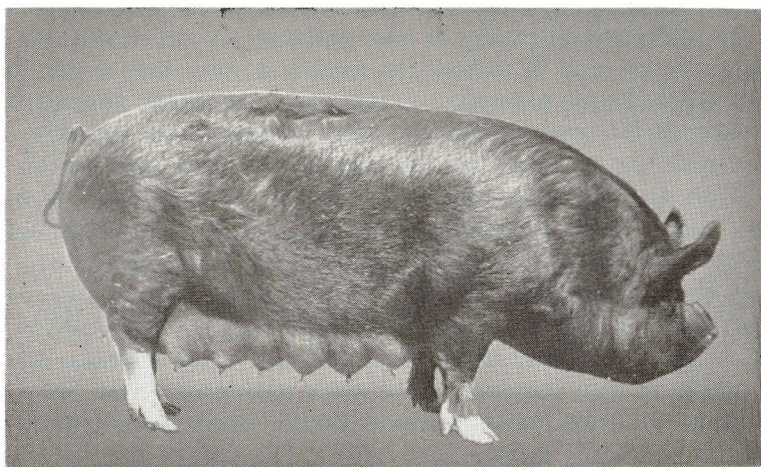
hair-coat should be smooth to give a cleancut appearance; the eye should be large, free from rolls of skin and flesh about it, and quiet; the neck and top of the shoulders should be free from any heaviness with the latter laid into the body smoothly; the body width uniform from end to end with no narrowing at the loins and enough thickness in a meat hog that across the top is a good half circle in width; the hams should be long and plump but not bulgy; the sides straight up and down, of better than medium length but not an overall length that gives an appearance of spindliness. There should be at least six teats on each side with the udder sections of equal size and spacing. Each teat should be sound and protrude sufficiently to indicate its ability to deliver milk. The disposition of the sow should be of

matronly quietness—free from easy excitement, and responsive to proper handling.

These things should be common to all brood sows. If you are keeping purebreds you will want to pay attention to color, markings, character and conformation of head and ear, body conformation as well as any particular disqualifications for registration for the breed. Should you be buying a purebred make sure you understand whether or not you are to get an application for registry or a certificate of registration with your sow or gilt. You may properly employ business methods to insure delivery of this paper to you promptly. Shortly after weaning your litter is none too soon to plan the registration of any pigs you count on showing as purebreds at summer fairs. Registry associations are very busy by mid-summer and your delay may inconvenience you. Fair officials appreciate registrations being correct and complete at the time entries are made. It saves time and does not disrupt the show program. It may mean an occasional special award for you.

Care of the Brood Sow

The first job of the brood sow is to produce young. The market pig's job is to convert farm raised crops into a marketable product to the best advantage. That has rather consistently meant that he is marketed at about 200 to 225 pounds in weight. Experience of swine growers and research has shown that mature hogs of this market top-



Here is a good type of brood sow. Note the unusually even spacing of the udder sections.

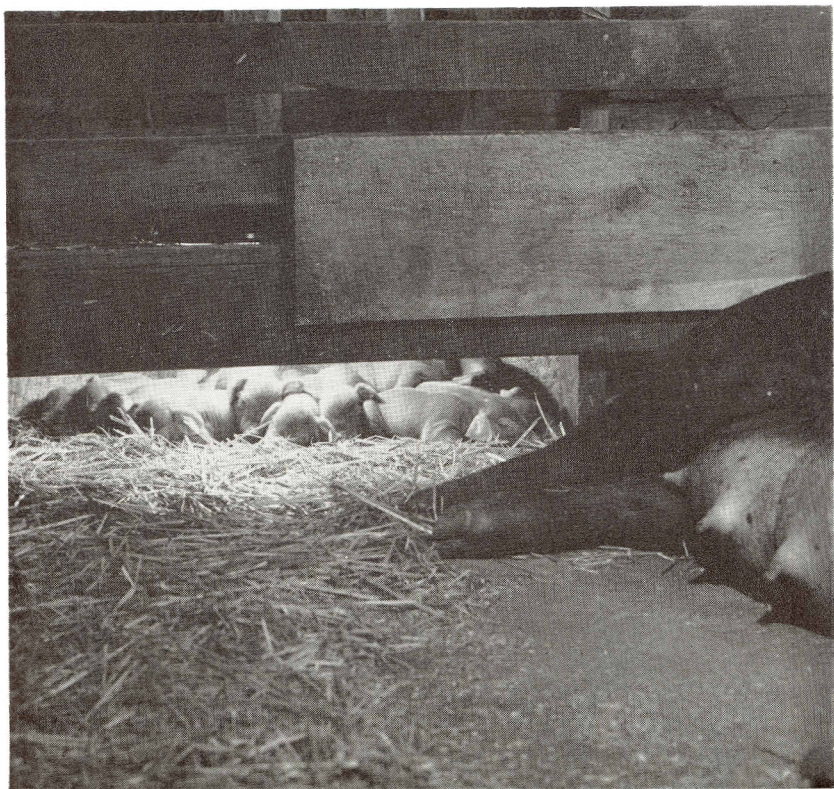
ping size cannot reproduce large litters of rapidly growing pigs. We must expect the brood sow to have much more size and, while she sells for a lower price when marketed, her high production rate justifies her being properly grown out. In feeding her well to develop her litter, you cannot expect to have anything to do in determining the number in the litter but you can influence the size and vitality of the pigs. Gilts make more growth than sows so they need more feed proportionately.

The pregnancy period is from 112 to 115 days. Sows will have more of a tendency to fatten than gilts so they should be encouraged to exercise by having to travel some distance to reach their feed. Gilts need $1\frac{3}{4}$ to 2 per cent of their live weight per day in feed while older sows should have $1\frac{1}{4}$ per cent to $1\frac{1}{2}$ per cent. By hand feeding you can exercise control of this part of your program. In case you self feed, watch gains and have bulk in the ration in the form of ground alfalfa. Make the ration satisfying without permitting sows to get too fat. Have mineral available, free choice, as well as water at all times.

You should be ready for farrowing time when it arrives. Nature never intended little pigs to arrive during a snowstorm in subzero weather. That was your arrangement so it is up to you to meet the situation. First, clean up the farrowing quarters. Get rid of all dust and any loose dirt whether contaminated by hogs or not. Your first concern should be making the farrowing pen sterile, at least as far as worm eggs are concerned. Scrub the pen with boiling lye water. Use one pound of lye to 30 gallons of water.

The last few days before farrowing watch the droppings closely. At this stage droppings may be hard and dry. Try to correct this with a little exercise and if necessary by feeding a warm bran mash. Droppings should flatten somewhat but not flow. Use, clean, short-cut straw or shavings for bedding. Wheat straw is much more desirable than oat straw. Use no more than is needed for a good mat for the sow.

Wash the sow before you permit her in the clean pen. Wash the lower half of her body well with a good soap suds and the whole body washed is preferable. If you are using the farrowing stall or pen with guard rails, give her a few days to get used to it. Let her out for feed, water and exercise. Note the character of her droppings before you return her. Use a panel in handling her gently. She will soon respond by returning with but little help. This training gets the sow accustomed to you being around and she usually is quiet then at farrowing time.



A clean, warm pig brooder affords safety and contentment.

Farrowing Time

The ration should be made more bulky the last few days before farrowing and if any unusual behavior or restlessness is apparent, reduce the feed sharply. The first twenty-four hours after farrowing do not attempt to feed the sow. She will be feverish and she is sick. However, should she indicate she wants feed, give her a few handfuls of bran in warm water. She may be satisfied with water alone but do not give it to her cold. Watch the feverish condition and note whether the udder sections soften before starting to increase the feed. Start gradually, taking at least ten days to get her on full feed. Let the sow out of her pen and hand feed during this period. When the

pigs are very young they will not need the milk they will shortly. You may slop, using skim milk in place of dry supplement, but allow no sour feed to remain in the pans. After ten days to two weeks, and the sow and pigs are apparently doing well, the sow may be put on full feed at a self feeder.

Care of Suckling Pigs

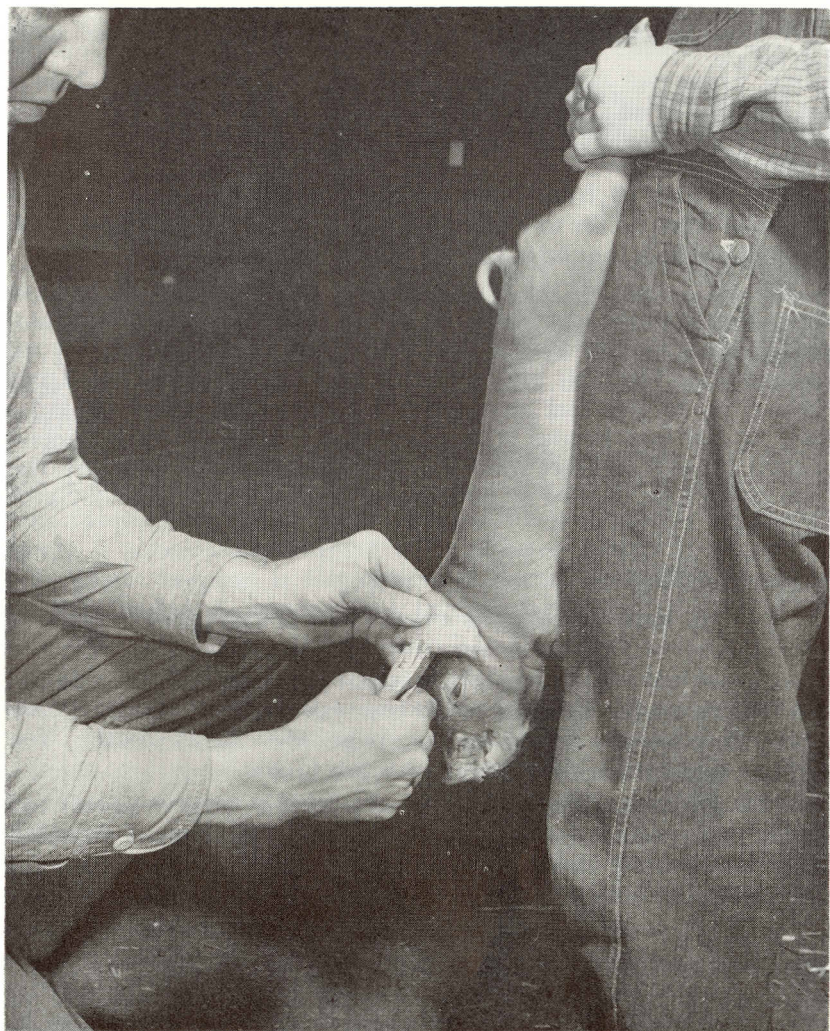
The little pigs themselves require some attention. If the hog house cannot be warmed sufficiently, try to have a canvas covering to place over the pen. You will probably have a brooder or use heat lamps. Check the temperatures in order to place these lamps or bulbs to give you 80 to 85 degrees Fahrenheit at 4 or 5 inches above the floor. See that the pigs are placed under the lamps as they arrive so that they are soon warm and dry. Observe the pigs the next few days and increase the height of the lamp from the floor as less heat at the floor is needed. In case you do not have these facilities, fill a jug with hot water and place it in a bushel basket or box under a cloth cover and keep the pigs there until they are warm and dry. Note that each pig has nothing to obstruct its breathing as soon as it is born.

Within the first day, take a wide mouthed bottle or small jar containing iodine. Place the cord on the little pigs belly in the opening and press the jar against the pig. Hold the pig and the jar firmly, but gently, together and turn them upside down for a second. This permits the iodine to get at any infection that may cause navel disease.

Should there be any fighting by the pigs that may cause wounds about the mouths of the pigs or the udder sections of the sow, take sidecutter pliers and nip off the long black teeth that do the injury. Be careful not to crush the teeth to form openings for germs to the gums. Paint with iodine promptly.

Some purebred pigs will need to be ear notched and should you plan on showing a market litter they will need to be ear marked too. Do it promptly, holding each pig in the same manner and in the same relative position to the one doing the marking to avoid mistakes. Use only the lower soft tissues of the ear if you can. At any rate avoid cutting the cartilage supports in the upper side of erect eared pigs. Make U shaped marks rather than sharp V marks. In fall pigs particularly make marks deep because in slop feeding in winter much of the outer edge of the ears are lost by freezing and the marks destroyed.

Little pigs that come when they cannot be in a nest in clean soil in the growing season may become anemic. A small spade of clean sod put in the pen each day is of some help in supplying the iron and trace minerals needed. This may be sprinkled with a solution made



Hold each pig in the same relative position to the marker to reduce any possibility of mistake.

by dissolving $\frac{1}{2}$ pound of ferrous sulfate (iron sulfate) in two quarts of warm water. This may be sweetened and made sticky by adding half of a cup of molasses. Another way is to use a paint brush and apply this solution to the sow's udder every day until the litter is

moved out to pasture or until they are taking liberally of feed at the self feeder.

Part or most of the tail on some pigs may dry up and drop off; not much is known about the cause. It occurs less when pigs are kept warm, dry and clean.

Scours may be from some infection or from sudden changes in feed. Cut down on the sow's feed for two days and work back gradually. Employ methods that help prevent scours.

Fix up a creep for the little pigs shortly. The sooner they can use feed other than the sow's milk the better. They will play around with feed in their mouths after a week. After ten to twelve days they will be eating it. The little pig's digestive tract cannot handle much fiber. Do not try to give him anything but a good feed. The first kind of feed he can take besides milk is called a starter. Since the amount needed is small and very good pellets are available commercially, they may prove best. Rolled or hulled oats are relished by pigs but avoid oat hulls.

Castration, Vaccination and Weaning

Anytime after ten days or two weeks of age, the boar pigs not intended for keeping should be castrated. The earlier this is done the less the set back to the pig. Show pigs in which castration is delayed too long develop coarseness and excessive heavy skin after the operation. This leaves a condition the judge refers to as 'rough.' Your father or leader can demonstrate this job to you.

Vaccination against cholera is considered a proven practice. It should be done two weeks before weaning. Vaccination should be done in a manner enabling you to meet health requirements of any sale or show you wish to make. State health requirements vary widely.

In a 4-H project, weaning at eight weeks will be more desirable than trying some of the earlier weaning programs. However, that is up to you. When you wean, plan to take the sow from the pigs and not try to remove the pigs from the range with which they are familiar. The suckling period is referred to as the most critical of a pig's life. Certainly he is then able to do the least by himself. He is quick, however, to respond to conditions that give him the best chance in life.

SWINE HEALTH

The possibility of a disease outbreak is a constant hazard to the swine raiser. Some of these hazards can be reduced by proper management and by preventive treatments. There are some diseases of hogs for which no specific treatment has been developed. These diseases

must be avoided by management with special emphasis on sanitation and care when securing new animals. Disease control through management must be planned—it doesn't just happen. Greater profits are secured from healthy, thrifty pigs. Some diseases may occur under the best management program. In that case you have a problem for your veterinarian. Diagnosis of disease definitely belongs in the field of the veterinarian.

Diseases of Swine

Hog cholera is a disease attacking swine of any age and for which there is no cure. Fortunately pigs can be made immune to the disease through vaccination. Pigs in good condition are vaccinated for prevention of this infection by owners or by the veterinarian. In either case sanitation must be combined with the vaccination to prevent spread of the virus.

Tuberculosis in swine has not been eliminated to the same degree that it has been in cattle largely because the source of most of it is from tuberculous fowls. Diseased cattle likewise can be to blame. Rarely is tuberculosis detected in hogs before slaughter except by test. When infection is found to exist in the herd, determine the source by testing the poultry flock or cattle herds.

Hog "flu" or swine influenza is now recognized as a distinct infection. It is a respiratory disease seen rather commonly at fairs, usually during the latter days and particularly when the weather has been cold and damp. Nursing is the best known treatment. Put hogs in warm, dry quarters and prevent them from being disturbed. Provide plenty of good drinking water. The loss in flesh in the herd from this disease makes it prudent to safely quarantine any returned show or purchased stock until danger is passed. This disease is responsible for most market hog shows being shortened to prevent the disease from developing.

"*Necro*" has been a common term used to indicate necrotic enteritis and inflammation of the intestines. Modern research indicates the trouble may be any one of several causative agents. Let the veterinarian decide what to do.

Bull nose is not as prevalent as formerly, possibly due to a greater appreciation of sanitation. It is a bacterial disease indicated by sore mouth, gums, and lips, with sores and swelling of the nose, followed by deformities of the nose (see atrophic rhinitis).

Swine erysipelas is second to cholera as a swine disease in this country. It affects swine principally but does affect other animals and

handling diseased meat is a source of the disease in humans. Good management can only assist in prevention. Erysipelas may attack swine of any age and be chronic or acute. Pigs having had the disease frequently develop large joints, sloughing of skin and a general stunted condition. Consult your veterinarian about the program to follow for, in the case of swine erysipelas, you may have to live with it for some time.

Brucellosis is an infectious disease that causes abortions, dead or weak pigs, as well as other troubles which can be determined by your veterinarian. It is responsible for a high per cent of undulant fever



A thrifty litter results from keeping pigs and germs of disease apart.

in man—a situation worthy of serious consideration by anyone handling hogs, particularly at farrowing time. There is no known cure. Reactors may be detected by a blood test. Management that includes an understanding of the problem is the best prevention.

Pneumonia results from some form of irritation of the lung tissue, mechanical or infectious. It may be a disease caused by a specific infection, but more often it accompanies some other disease. Sanitation and good management help in prevention, but its presence usually justifies competent diagnosis.

Caked udder usually refers to swollen, warm, painful udders following farrow. It is a non-infectious form of mastitis quite often brought on by cold, damp quarters and probably improper feeding.

Constipation is indicated by scanty, hard, dry droppings. Feed and management are usually at fault, although constipation may be a symptom of illness. More laxative feeds usually provide a remedy.

Piles is a condition noted by a part of the rectum protruding through the anal opening, caused by excessive irritation of the lower bowel. It may be associated with constipation. Find and remove the irritant. Severe cases may require veterinary service to correct.

Rickets is a disease of young animals resulting from malnutrition; from excesses as well as deficiencies. Usually minerals and vitamin D need checking in pig rations. Lameness and irregular size and shape of the bones in the legs are apparent.

Scours or *diarrhea* is a condition characterized by rapid and prolonged discharge of the bowel, and unthriftiness develops. It should be considered a symptom of some definite infection rather than a disease in itself.

Rupture, or a *hernia*, is the protrusion of an organ, or part thereof, through an abnormal opening. The tendency to rupture is hereditary and pigs from litters in which it occurs should not be kept for breeding.

Paralysis of the hindquarters may be due to vitamin and/or mineral deficiencies, infectious diseases, or parasites. Treatment is unsatisfactory so rely on prevention.

Abscesses beneath the skin in the soft tissues in the region of the throat from ear to ear are not uncommon. The cause of this condition should be determined, particularly in the anthrax area. Some abscesses result from unknown causes.

Nutritional anemia is a condition common in suckling pigs kept indoors, usually apparent about the second or third week of age due to depletion of the body reserve of iron. When an inadequate intake of iron and copper occurs, a decrease in the red blood cells and hemoglobin develops. Pigs usually lose flesh rapidly. The liver may be pale. A spade of 'clean' pasture sod in each pen for the pigs to root helps. An approved preventive is to swab the sow's udder each day with a saturated solution made of one pound of iron sulphate (copperas) dissolved in one gallon of water. Apply with a paint brush.

T.G.E. or *transmissible gastro-enteritis* is a disease causing large, quick losses of baby pigs and may attack older swine. Adult hogs usually recover in from three to ten days. Little pigs show weakness, unsteady gait, roughness of hair, emaciation, listlessness and vomiting. The disease may cause a very high death loss in pigs under ten days of age. There is no known successful treatment. Sows apparently

develop immunity after having the disease. Prevent all traffic from going through pens or buildings and do a thorough job of cleaning and disinfecting the building and equipment.

Infectious atrophic rhinitis is a serious threat to profitable production of swine. The causative agent is not known and there is no effective treatment. Understanding management appears to offer the most promise in control. Unthriftiness is the way in which the grower notes his loss. Pigs sneeze, the hair coat is rough while the eyes are usually inflamed and there may or may not be a nasal discharge. Destruction of the bony tissue of the nasal passages sometimes causes irregular shaped snouts. The disease is not to be confused with "bull-nose." Death may occasionally result from pneumonia.

Vesicular exanthema is a virus disease which was first recognized in 1933 as a separate disease. It is difficult to distinguish from foot and mouth disease. The disease is most frequently found in swine fed or raised on garbage. Blisterlike vesicles around the claws (toes) cause lameness. They appear also on the snout, lips and tongue. There is no known cure. While the hogs recover, there is an economic loss from a delay of about a month in reaching market, or from a fifty-pound loss in weight. There will be a continued presence of infection unless there is a rigid cleanup program. Be sure to call your veterinarian at once. Your neighbors will thank you for it.

Common Parasites and Pests of Swine

There are two kinds of mange that infest hogs, *sarcoptic* and *demodectic*. The former is by far the more common. The sarcoptic mange mites are parasites about one-fiftieth of an inch long. A life cycle is completed in two to three weeks. Advanced cases are indicated by dry, scurfy, scabby areas over the body, particularly about the eyes, ears, nose and under parts of the body. Rubbing by the hogs seeking relief causes areas to become raw. The easiest effective remedy is to *completely* spray hogs with a 25 per cent solution of the gamma isomer of benzene hexachloride (20 pounds of wettable dust of BHC containing 10 per cent of the gamma isomer in 100 gallons of water). Do not treat sows suckling young pigs and do not use BHC within 30 days before slaughter.

The demodectic mange mite is smaller and there is no known treatment that will clean it up. Regular dippings will hold it in check. Better sell off and disinfect the premises.

Lice. The hog louse is the largest blood sucking louse that attacks livestock. They spend their entire lives on hogs and can live but 2 or 3 days when separated from them. The average life cycle is about

35 days. Use the same spray as for sarcoptic mange at one-half the strength. The treatments for either kind of mange will get the lice too.

Fleas may be easily controlled by a good job of dusting pigs with a 3 per cent DDT dust.

Stable flies may be controlled by a 2 per cent DDT spray (34 lbs. of a 50 per cent wettable DDT powder in 100 gallons of water) applied to the hog house walls and overhead construction and the lot fences. Should your flies fail to respond to this, use methoxychlor, pyrethrum or allethrin following instructions on the container.

Internal Parasites of Swine

Internal parasites may not seriously interfere with the health of mature swine, but they cause serious injuries to little pigs. The loss may be through death, failure to make profitable gains, or carcass rejection by meat inspection. Some parasites of swine are also transmissible to man.

The internal parasites of swine make up four general groups commonly known as *roundworms*, *flukes*, *tapeworms*, and *protozoa*. The first three are worm parasites and the most common of these are the roundworms. The latter two are of less importance. Protozoa are one-celled animal organisms. They may be serious under certain conditions but in pigs these are not well understood. The most important protozoan disease of swine is coccidiosis.

There are two general methods of combating parasites. One is to expel the parasites from the body of the hog, but usually much damage has been done before expulsion. The other method is to raise pigs under management plans that prevent infestation. The idea in the latter is to break the life cycle of the parasite at its weakest point—the stage on the outside of the host or on the ground. The practices that will accomplish this with respect to parasites, are referred to as sanitation.

The large roundworm (*Ascaris lumbricoides*) is the largest, most common, and most injurious worm parasite of swine. Larval worms migrate extensively in the body and often cause severe damage to the lungs and liver. Pigs may get pneumonia, "thumps," from severe lung infestation. The adult worms cause damage during the time they infest the small intestine which is indicated by slower growth of the pig, unthriftiness and wasted feed. Since 1944, sodium fluoride has been found to be a safe and efficient worming chemical when properly administered. It is a poison and should be handled as such. Its low cost does not warrant keeping it around except for immediate use. Follow Nebraska E. C. 251 closely in its use.

FITTING FOR SHOW

Most 4-H Club programs include exhibition and competition at community, county, state or interstate shows. It is pleasing to exhibit animals well trained and properly prepared. In showmanship as well as in feeding and caring for livestock, one displays most clearly his sympathetic understanding of animals. In your project program you should plan this phase carefully and try to do each step at the proper time. The last three or four weeks calls for specific work to be done.

While 4-H club members usually show pigs only six to eight months of age, it may be well to check the feet. In case the hoof tissue has not worn off, the feet should be trimmed two or three weeks before the show. Should you wait until the last few days before showing your pig may be troubled with sore feet. The hoof tissue softens some after it has been wet from rain or dew for a few hours. Then the wall of the toe can be easily pared off with a pocket knife until flush with the sole of the foot. Trim so that, as the foot rests on a smooth surface, you see no evidence of trimming.

A pig definitely should have a sound healthy skin, free from roughness or any bare places due to rubbing. Check for mange, and lice, and treat for what is found.

The pig should be shown with a firm straight underline and smooth sides that have the appearance of being straight up and down. You do not want rounded sides. You can do a good deal to attain this effect as well as an overall smoothness and firmness by your program and procedure for feeding. Watch the gains closely and particularly watch for any excess finish in a meat hog. Note that no fat appears about the tail setting to give the tail the appearance of having been "plugged in." A self feeder supplies dry feed but at this stage if you wish to exercise more control over feeding, you may use wet feed or slop. In slopping, do not add excess liquid. Whether skim milk or water, use just enough to allow the slop to spread out freely but not flow. Feed of this consistency has to be eaten and not drunk. All pigs of the lot gain more uniformly and full middles are avoided, giving a firm straight underline.

Training a Pig

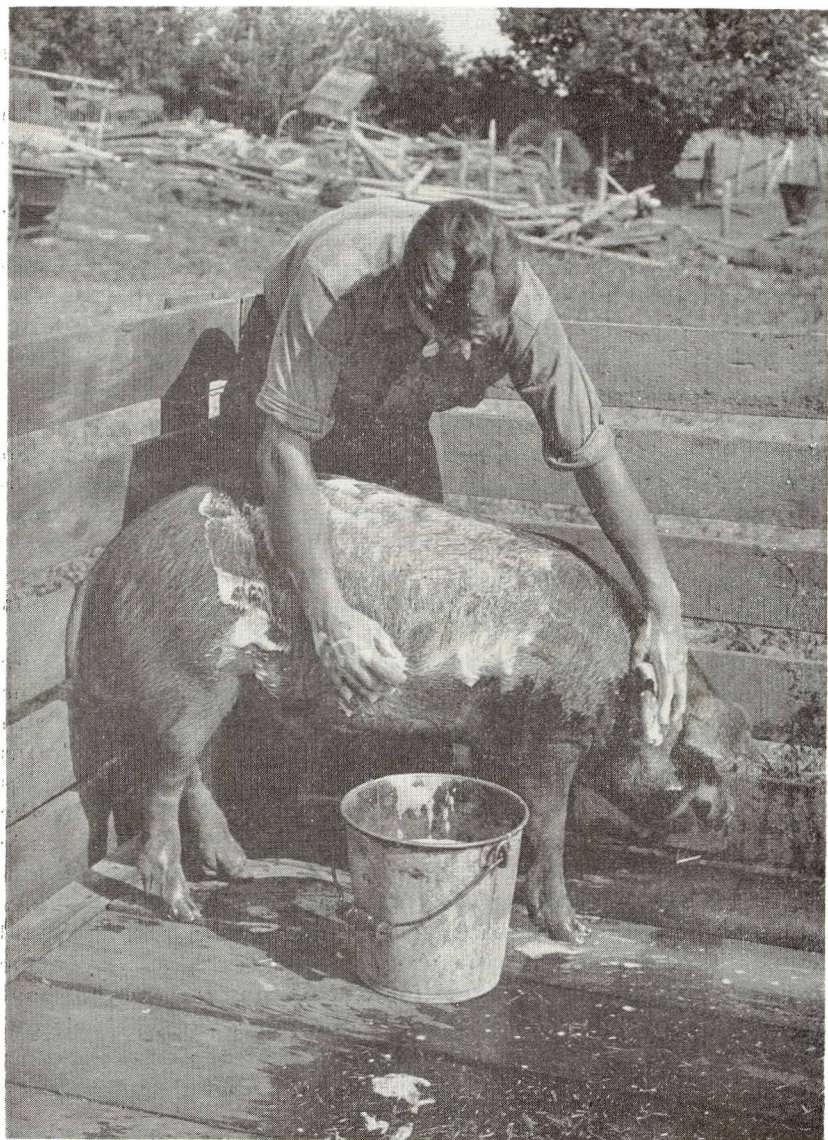
The following refers to showing pigs under one year of age and definitely does not apply to showing boars one year or over. Showing boars is not without danger and young persons doing this should have both training and understanding, and preferably be working with an experienced adult who understands the team work necessary.

In training a pig you should know what you want to do and how to do it. Since the pig is not handled or haltered you cannot expect to control him through fear. The first essential is to win his confidence. He must have no fear of you. A short time of hand feeding, in which pigs have received no abuse, usually accomplishes this. Respect the element of time and allow several days at least for the job.

The equipment needed is simple. Some youthful showmen carry a panel or hurdle (short section of a fence), or a whip, or a walking cane. Others rely on their hands. All may get the job done yet each has limitations. A whip used over-anxiously soon has a pig moving awkwardly in fear of it; the hurdle is fine for pushing between fighting pigs but certainly is not a convenient tool in presenting an animal, while placing the hands on the body usually takes the curl out of the tail and causes the pig to assume a huddled position.

Experienced showmen consider the cane the proper tool to use in showing pigs and sows. A cane is not used to excite fear but to convey your wishes to the pig. There are four signals your pig will learn. It is up to you to always use the cane in the same way when a given response is desired. When a pig is lying down, always announce your presence by speaking to him before you touch him. Tapping him gently to firmly, but not striking, across the middle of the back means to get up. When on his feet, the same signal is used when you desire him to move forward. In using the cane about the head within the pig's field of vision, train him to watch the end of it. A hog with badly drooping ears has a restricted field of vision and quickly learns to watch the end of the cane when it is placed within his view. Hogs with erect ears usually learn easier to watch the cane. Placing the end of the cane across the snout is the signal to stop moving. A gentle pressure with the tip of the cane just above the right cheek indicates a left turn. The same slight pressure against the left cheek indicates a turn to the right. Do not be disappointed if the cane is pushed away or ignored at first. Results come and they are gratifying. Some well-trained pigs will pose when the end of the cane is held about two feet in front of them, or follow it when it is moved slowly forward. Once the pig has learned the meaning of the uses of the cane, you will no longer need to touch him about the head but simply move the cane close to the places touched in training.

Do your training just before feeding time. Turn pigs onto ground that is strange to them but preferably another enclosure of some size. The first time or two out, herd them quietly and slowly over the new ground but end up back at the pen at feed time. Each succeeding day employ a little more of your methods until you definitely can control your pigs. Then start taking them one at a time. Now you should be-



When you wash your pig, make a good lather—then rinse well.

gin to study each individual and find out the poses and positions your pig should or should not be allowed to assume when before the judge. Never crowd a pig backwards. A gently arched back is enough while a high back usually opens the shoulders on top, makes the rump ap-

pear short and steep and the hams thin and drawn under. A pig looks his best walking naturally with the mouth several inches above the ground and a leg neatly placed under each quarter. In this position you can best show smoothness of shoulder, parallel sides, length, depth, and fullness of ham, straightness of underline, length of body and overall balance. Training should be done at home well ahead of show time. Your "know how" will be admired by those competent to appreciate your showmanship.

Washing and Grooming

The thing we seek in any fitted animal is the appearance of natural luxuriance. It is secured through cleanliness and luster of the coat. Skins and coats vary and require different treatment. Swine have colored or pigmented skin, as well as skin without pigment. The latter are called white. Spotted hogs, or those with rather definite markings, have both.

Preparation for washing should include plans for getting a pig clean and keeping him clean. Several days before washing it is well to oil colored skins. It loosens the scurf and overcomes an ashy dullness that may show up on skins that have not been entirely healthy. The exhibition pen for a summer fair should be bedded very lightly preferably with a grass hay. A matted bed an inch thick is enough. Prairie hay releases very little chaff to detract from a pig's appearance. Wash on a solid floor and try to have clean driveways to and from the wash rack. Almost any soap will do, except some soaps which may give a yellowish tinge to white hair. Detergents are rapid in action in loosening dirt as well as oily secretions of the skin. They are very good cleansing agents but they are not soaps and you should work fast when using them. Do not use them too often or the coat may acquire a fuzzy appearance and not respond well to grooming.

There are three distinct steps in washing: (1) wetting the pig well all over, (2) lathering the pig well in applying the cleansing agent and (3) rinsing well to remove all of the soap or detergent left on the pig. In applying water it is best not to use excessive pressure and never permit water under pressure to strike any animal in the ear. It makes them difficult to handle and your pig may be carrying his head on one side on show day if all the water has not been gotten out of his ear. Your pig may resist applying the cleansing agent with a brush if your training has not been well done. Hold him to a small area with a panel. Do not use a brush that is harsh enough to scratch. White skins particularly must be worked on carefully. A skin well soaked should have coarse material well loosened. Start with the brush away from the head and work on areas difficult for a pig to

scratch himself—the twist, tail setting, flanks, feet and legs, over the body, working forward between the forelegs, progressively—then behind each ear. By this time you can usually bend the ear back on the neck and scrub the inside of it. Lastly approach the face from the top of the head, advancing in your work slowly. Here's where having "won" the pig pays off.

The skin of a hog is naturally dull and glistens only when oily or wet. Pigmented skins may be oiled lightly to overcome an ashy dullness but it should be done at least the day before showing so that the appearance of oiliness is gone. Do not oil white skins.



Walter Bohling, Nemaha County Club Leader, shows 4-H members how to trim feet. Note that the legs of the pig are held straight instead of being bent at the knee and hock joints.

Oil may be applied to the bristles or haircoat as a dressing but only enough to give lustre. The oil should be thinned so that it will not cause two hairs to stick together. Either mineral (petroleum) or vegetable oils are used. Mineral oils cause white hair to have a yellowish tinge so oil for white skin areas should be of vegetable origin.

Olive oil is expensive but its freedom from gumminess makes it desirable over the heavier oils—castor, linseed and others. Number ten engine oil is about as practical as higher priced colorless mineral oils for colored skins. Only the thinnest possible film of oil is needed. To get thinness, mix one part of a lighter oil with three parts of rubbing alcohol. More alcohol is used with the heavier oils. Some club members like to use bay rum in place of part of the alcohol. Oil and alcohol separate quickly so the mixture should be well shaken. Take a flannel cloth about fifteen inches square. Soak the cloth with dressing but not to the point where you can squeeze the liquid out with your hand. Work rapidly, stroking with the natural direction of the hair but without wetting the skin. The alcohol evaporates promptly leaving a thin film of oil. Do not use dressings that rub off easily and soil white skins, other hogs, the clothing of showmen, or that feel greasy and dirty to the hands of the judge.

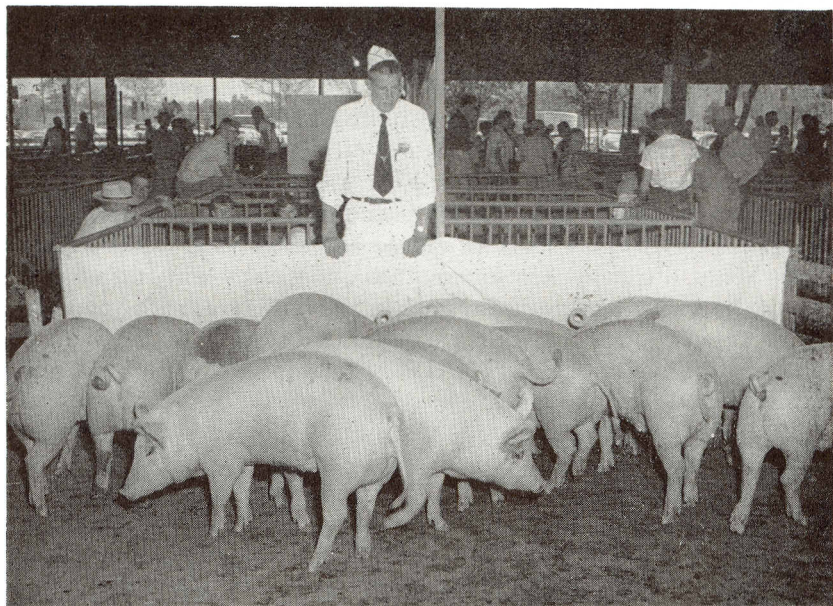
In washing white hogs there may be reddish areas due to mange, rubbing, or too severe scrubbing in washing. Sift on powdered soapstone or French chalk. Both are lower priced forms of talcum powder. Apply the powder freely. Then brush out evenly and get rid of the excess by using a brush with soft fibers. You may or may not apply dressing to the hair. It can be done without removing the talc from the skin. Only dressing with vegetable oil should be used on white hair.

It is the custom at some shows to clip the bristles from the ears, inside and out, as well as from the tail just ahead of the switch to the body. In Nebraska it is not regularly done but may be followed at interstate shows if desirable.

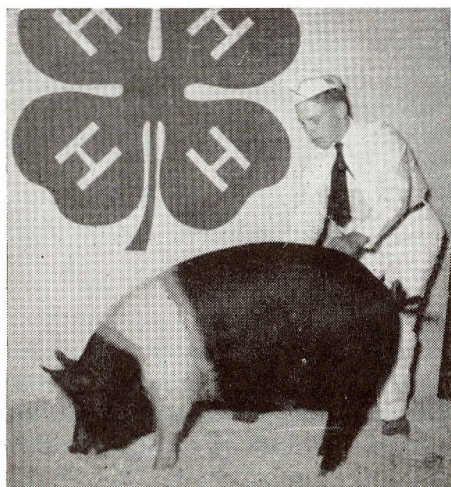
Lameness from injury in transit and danger of over heating are the most common fears in getting pigs to the fair or market. Avoid crowding, handle carefully and provide shade, ventilation and wet sand for bedding in hot weather. Sand prevents slipping anytime. It is well to have hinged panels for your own feed pen besides your feed trough, feed pail, water pail, cane, cleansing agent, brush and cloth, coat dressing, fork or shovel, feed, bedding and probably a short panel or hurdle.

At the Fair

The pen for your pigs at the fair is an exhibition pen and should be considered as such. Keep that pen and your area of the quarters as an attractive display. Do not feed in the exhibition pens. Take your pigs out morning, noon, evening and later at night, and allow them to exercise and relieve themselves. You will have a remarkably



Here is Robert Dannert of Knox County with his purple ribbon market litter at the Nebraska State Fair.



John Knabe of Nehawka demonstrates excellent handling methods which won for him the 4-H Showman championship at the Nebraska State Fair in 1951. His animal is a purple ribbon purebred gilt.

clean pen and your pigs won't be squealing for feed everytime a pail rattles. Neither will you have a problem in keeping them cool on hot days.

Before the Judge

The last feed before show time should be watched closely. It is well to observe each pig separately. Avoid thin slops and permit the pig to fill only until the underline and the sides appear straight and free from any fullness. A trained pig that is just a bit hungry is easier



Watch the judge—he's watching you! Here's an example as Wilbur L. Plager of Iowa judges showmanship at the Nebraska State Fair.

to handle. Final touches in grooming may be quickly done with a brush and dressing cloth.

When your class is called, it is well to be familiar with the showing procedure. Follow instructions of arena stewards. Be sure the clerk records the presence of the particular pig you are showing. The judge usually follows one of two procedures. Some judges do not move about and expect pigs to be driven to them. In large classes this results

in confusion but, with patience and courtesy to your competitors, carefully get your animal before the judge. The other type of judge prefers to move about the arena in an orderly manner, giving each showman an opportunity to present his animal in a natural position. In this case seek the high ground and the best light. Pose or move your pig slowly at a natural walk, staying in the same area so that whenever the judge glances your way he finds you ready. Always keep your pig between you and the judge. In moving, avoid sharp turns as they cause the shoulders to open. Give the judge the view from any angle he wishes. A good showman presents his animal at its best and spends little time trying to conceal what a competent judge should see anyway. Avoid pig fights. It is a lot better than getting out of one. Be courteous and ignore discourtesy. When the judge is through be sure records of awards are correct and follow instructions of stewards in leaving the show ring.

SWINE TERMS

The following terms are generally correct although some are correct only as they are applied in the context. Some apply to swine only; others to other classes of livestock as well. Much of the hog-talk of swine breeders, growers and processors is colloquial and while these informal terms are not literary they are characteristic of men handling hogs.

Terms Used in Reference to Swine

PIG. A young swine before reaching sexual maturity.

SHOAT (or shote). A young swine of either sex usually well after weaning and up to a hundred pounds in weight.

SOW. An adult female swine that has produced young.

GILT. An immature female hog.

SIRE. The male parent of an animal.

DAM. The female parent of an animal.

PROLIFIC. Producing young abundantly.

BOAR. A male hog.

BARROW. A male hog that has been castrated before reaching sexual maturity.

STAG (hog). A boar that has been castrated after reaching sexual maturity.

RIDGELING or **RIDGLING.** A half castrated male animal. Usually occasioned by cryptorchidism.

CRYPTORCHIDISM or CRYPTORCHISM. A condition when a testis is not carried normally and particularly when it cannot be reached for castration.

PORCINE. Pertaining to swine or to a characteristic of a hog.

PEDIGREE. A record of ancestors.

APPLICATION FOR REGISTRY. A form used in supplying information needed by a record association in issuing a certificate registry.

CERTIFICATE OF REGISTRY. A pedigree that has been accepted and recorded by the proper agency, usually an association interested in a particular breed. In some foreign countries registration is a government function.

BREED. A term applied to domestic animals in the same sense that species or variety refers to wild life for a group perpetuating its distinctive characteristics from one generation to the next.

FARROW. The birth of swine; also to designate a pig crop farrowed within a definite time.

BREEDER. A person who keeps a herd in production.

Definitions Relating to Character of Breeding

PUREBRED. A purebred animal is one of a definite recognized breed and both of whose parents were purebred of the same breed. It must be either registered, eligible to registration, or have such proven lineage.

THOROUGHbred. This term is accurately used only in referring to a specific breed of running horses and to no other livestock.

STANDARDbred. This term applies to a distinct breed of light horses and to poultry but never to hogs.

CROSSbred. The progeny of purebred parents of different breeds of the same species.

GRADE. A grade is the offspring resulting from mating an improved animal with a scrub.

SCRUB. An animal of mixed or unknown breeding without definite type or markings.

HYBRID. The offspring from the union of two distinct species.

HYBRID-HOG. The progeny of a cross between two unrelated stocks that differ in their hereditary makeup.

Parts of the Hog

SNOUT. Nose (long nose).

SNOOT. Used for snout; snout is preferable.

NOSTRIL. External opening in the end of the nose for breathing.

BUTTON. Disc of cartilage covered with skin at the end of the nose through which the nostrils open.

FACE. That part of the head of a hog from between the eyes to near the end of the snout.

CHEEK. That part below the eye at the side of the face.

JOWL (jōl). Cheek to cheek under the jaw. Includes cheeks and jaw in a hog.

KNEE. The joint below the forearm and above the shank of the foreleg.

FOREARM. That part of the foreleg between the elbow and the knee. It is called 'shank' in the carcass.

ELBOW. The joint of the arm above the 'knee'.

SHANK (or shin). In the live meat animal it is that part of the leg directly below the knee and hock. In the hog carcass, the shank is that part of the leg directly above the knee.

DEWCRAW. The small hoofs at the top and back of the pastern that do not reach the ground.

PASTER. The part of the foot above the hoofs and below the fetlock joint.

PASTER JOINT. The joint between the two bones of the pastern.

HOOF. The horny covering of the foot.

TOE. One of the terminal digits of the foot.

POLL. Top of the head at the back.

TOPLINE. Outline of the top of the body, from head to tail.

CREST. Top of the neck.

SHOULDER. The muscle and bones of that part of the body working between the trunk and the forelegs.

BACK. That part of the body within the topline above the ribs.

LOIN. That part of the body within the topline between the hipbones and the ribs.

RUMP. That part of the topline to the rear of the hipbones.

HAM. The thigh of a hog.

HOCK. The angular joint of the hind leg below the thigh.

TWIST. The fleshing between the hind legs where the thighs come together at the bottom.

FLANK. The hind flank is that part of the lower side next to the ham while the fore flank is that part of the lower side opposite the elbow.

STIFLE. The first joint above the hock and near the rear flank.

UDDER. The milk gland of a female animal.

NIPPLE (teat). The small extended part of an udder section through which milk is drawn.

Descriptive Terms

TYPE. That body conformation with the characteristics considered best in enabling an animal to serve the purpose for which it is bred.

TYPY. Having a pleasing general conformation approaching the current goal.

STYLE. Pleasing appearance due to attractive conformation, animation and grace in movement.

FLASH. Lots of style.

COMPACT. Parts jointed closely and firmly.

LOW-SET. Body carried on short legs.

RANGY. Too long and tall.

LEGGY. Term used to indicate legs too long.

CHUFFY. Too thick, fat and compact in parts and with short legs, in body type.

CHUNKY. Short and thick.

SCALE. Size.

SUBSTANCE. This term refers to the amount of bone. Too much bone of poor quality indicates coarseness. Too little bone, although of good quality, results in extreme refinement.

COARSE. Rough, parts larger than desired, lacking in clean-cutness and not of tough substance.

QUALITY. In a hog, quality refers to freedom from undesirable characters with respect to the body makeup. Coarse bone, rough or curly hair, heavy jowl, creases in the shoulders or sides, wrinkles that stay; all indicate lack of quality.

RUGGED. Strong and sturdy, but not necessarily coarse.

FLABBY. Loose flesh or skin; lacking firmness.

SHIELDS. Thick, heavy skin covering the shoulders of some boars.

WASTY. Excess fullness of the middle showing on the underline; excess finish, heaviness in the jowl and excess loose skin at the bottom of the shoulder and ham.

UNDERPINNING. All the feet and legs of an animal.

OPEN SHOULDERS. Shoulder blades not smoothly laid in, usually with a depression between the blade tips.

SPRING OF RIB. Ribs that extend well from the backbone before curving down.

DISHED FACE. Line of the face showing depression.

ERECT EAR. Position of the ears directly upward.

BROKEN EAR (or drooping). Outer one-third to one-half of the ear hanging uncontrolled.

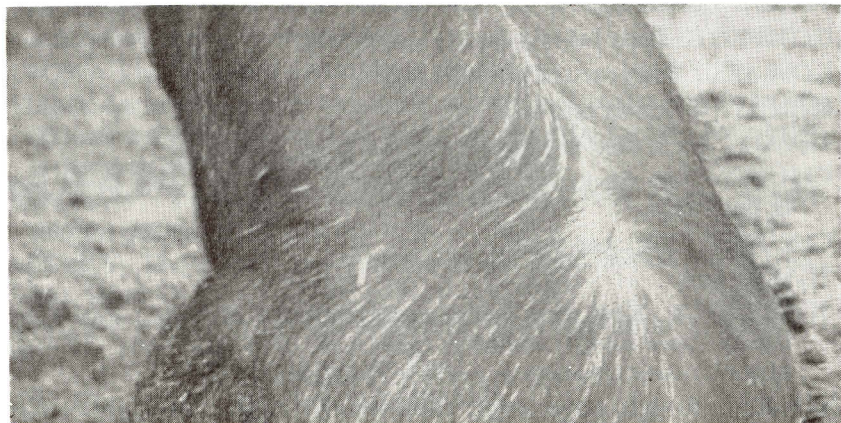
STRAIGHT EAR. An ear that is straight but not erect.

CLOVEN-FOOTED or **CLOVEN-HOOFED.** The foot divided.

CLEFT. The crack between the toes of a cloven foot.

BRISTLE. Rather short, coarse, stiff hair.

HAIRCOAT. A smooth, even covering of a hog free from bristles of undesirable coarseness.



This is a whorl, commonly called a "swirl."

WHORL. Commonly called 'swirl.' An area of the body where the hair grows in an abnormal direction, usually away from a central point but may be away from a line. It may be on any part of the body but is most common any place along the topline. With most breeds a whorl is a disqualification for registration. In market classes at shows whorls usually do not disqualify.

'HOT-BLOOD.' Small, thick, compact, lardy hogs of 1890-1910.

'COB-ROLLER.' Same as 'Hot-Blood.'

'BLIND.' Inability to see for rolls of fat about the eyes.

'BLIND-TEAT.' An inverted nipple; it leaves the underline appearing nearly smooth. They do not function.

CONDITION. Degree of finish with reference to amount of fat.

FINISH. Satisfactory degree and character of fatness.

BALANCE. Good proportion between the parts of the body.

SYMMETRY. The parts of the body in proportion and blending smoothly, one into another.

TRIM. Pleasingly symmetrical.

TIDY. Neat.

BREED CHARACTER. The degree of development of the qualities that identify an animal as a representative of its breed. Color, shape, carriage and placement of the ear, shape of the face, style and body outline all contribute.

SEX CHARACTER. Masculinity refers to characters regularly distinguishable in the male. It is characterized by ruggedness, vigor and thickening of the neck and shoulders with an appearance of massiveness about the head. The absence of this together with refinement about the head and forequarters is called feminine character or femininity in the female.

Carcass Terms

CARCASS. The part of the body of a meat animal retained as it is prepared for use as meat, but before it is cut up. Also, the dead body of any animal.

PORK. The flesh of a hog as used for human food; either sex of any age, fresh or cured.

CURED MEAT. Product obtained by subjecting meat to a process employing dry salt, or brine, with or without the use of nitrates, nitrites, sugar and spices.

SMOKED MEAT. The product obtained by subjecting fresh meat, dried meat, or cured meat to the direct action of smoke from burning wood or sawdust.

BUTT. The upper part of a pork shoulder.

PICNIC. The lower part of a pork shoulder.

BELLY. Under part of the body in the live animal; the cut from the carcass from which side pork is trimmed out.

BACON. In the United States the term bacon commonly refers to the side meat of a hog, cured and smoked. It is the trade name for what the packer refers to as belly. In some countries it means the entire side of a bacon hog, less parts removed in a special trim, cured and smoked.

LEAN CUTS. Ham, loin, picnic and butt.

PRIMAL CUTS. Four lean cuts plus the side (belly).

LARD. The rendered fresh fat from hogs.

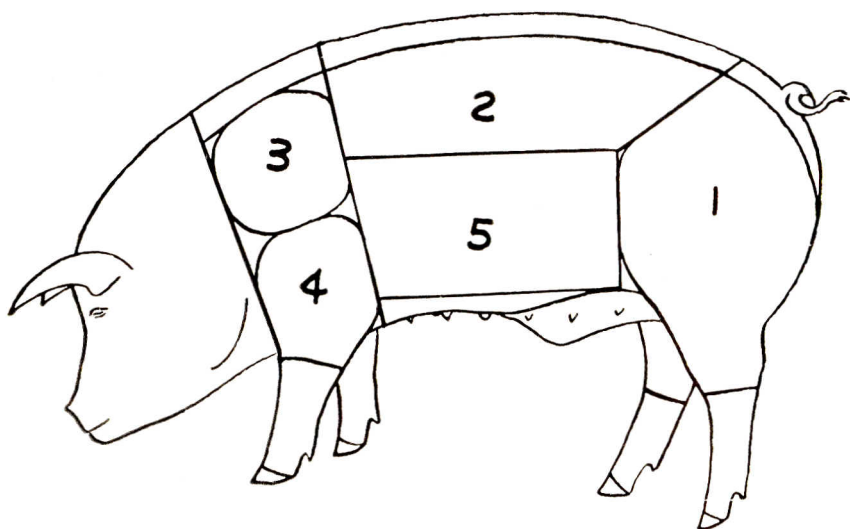
OFFAL. The products obtained from an animal at slaughter other than the carcass.

VISCERA. All organs of the abdominal and chest cavities.

DRESSING PERCENTAGE. The percentage of the weight of the live animal in the carcass.

CUT OUT VALUE. Value of the wholesale cuts from the carcass.

SHRINKAGE. The difference in the live weight of an animal between two weighings but usually means between time of shipment and time of arrival at destination.



The drawing above shows the location in a live animal of the principal trimmed wholesale cuts from the carcass. No. 1 is the ham, No. 2—loin, No. 3—Boston or shoulder butt, No. 4—picnic, and No. 5—belly. These are sometimes referred to as the “primal” or preferred cuts and should equal about 50 per cent of the live animal in total weight. The first four are referred to as the lean cuts and their total weight from No. 1 live hogs should be about 50 per cent of the weight of the carcass.

AITCHBONE. The bone exposed on the inside of the ham when the carcass is cut up.

CARCASS LENGTH. Measured inches taken on the inside of a side of pork from in front of the first rib to the aitchbone.

WHERE OUR HOGS CAME FROM

History of man frequently alludes to the hog without being specific as to its origin and domestication. No one knows with much certainty whether or not the domestic hog is descended from one or several species of the wild boar, or what people first tamed him. The earliest historical references indicate that southwest Asia and Egypt domesticated hogs first, but there is some evidence that Africa played an early part. The hog was in China nearly 5,000 years B.C. and history tells of swine breeding there about 3,500 B.C. History discloses the hog was domesticated and bred by most people of the civilized world from about 3,000 B.C. It would appear that selection and environment would account for many of the differences in characteristics of hogs in different parts of the world during the centuries following. The northern countries of Europe used stocks presumably from the wild boar, while the countries along the Mediterranean used the Asiatic hog.

The Britons bred swine successfully in 1500. When explorers came to the New World they found no hogs but Columbus brought eight swine on his second trip, in 1493, to the West Indies. These were supposed to be the progenitors of the hogs that ran wild and populated the islands. In 1524 Cortes on an expedition from Mexico City to Honduras, used a drove of hogs for food and at the same time provided for the introduction of swine to Mexico. By the end of the century descendants of these had reached what is now New Mexico. DeSoto brought hogs from the West Indies in 1539 and during the three-year trek hog seed stock was scattered as far west as the Mississippi River. The Indians raised them and an abundance of feed and shelter on wooded land provided mast—acorns and nuts. Four hundred pigs were brought to Florida in 1565. Descendents provided swine for the Indians who let them run wild over their hunting grounds.

The French in 1699 brought hogs to Mississippi and other gulf states and kept them separate for nearly 200 years from the hogs brought by the Spanish. Less than a half century later, hogs from China were found in the Spanish colonies of California, presumably brought by trading ships. British swine stock was first brought to Virginia in 1585. History doubts the survival of any of it. Hogs were brought to Jamestown in 1607 and a rapid increase followed. In 1609, three ships sailing for America were shipwrecked on the shore of Bermuda. The sailors found hogs running wild and the next year they loaded a good number on their ship bound for Virginia. From 1627, hog numbers in the middle Atlantic states were classed as "innumerable." Hogs adapted themselves to running wild. They received little care from the colonists.

The first shipment of swine farther north followed the arrival of the Pilgrims in 1620. All animals of the shipment were allowed to reproduce for four years before any reduction by slaughter. Other shipments were made shortly afterward. Most of the swine ranged in the woods. Wolves caused some trouble but the Indians "raised" hogs too so that ear marking systems came into use. Hogs were well spread over New England by 1635. New Amsterdam began raising hogs during this period with stock possibly from Massachusetts. Maryland got hogs from Virginia. Swedes brought swine to Delaware in 1638. English settled early in New Jersey and Germans in Pennsylvania. By 1700 the middle Atlantic States and New England were well colonized. Hogs were shipped from one colony to another. Fairs, which for the period were largely market places, helped distribution of swine. During the 18th century the practice of finishing hogs on corn was accepted, particularly in areas of abundant field crops near market places.

The eighteenth century was a period of development of American commerce, stimulated by the Revolutionary War. Pork played an important part. While additional swine stocks were brought to our shores by ships, for the most part they contributed to the stocks already here. Their identity was usually lost in a few generations in the absorption process. By 1800, hogs were well established up and down the coast among the some 250,000 inhabitants. In the Pacific northwest, a shipment of one hundred hogs of Asiatic type from the Sandwich (Hawaiian) Islands reached Oregon in 1811 and was followed by later shipments by trading companies. Slave traders from Africa and sea captains with tea from China also brought hogs. Shipping by water had scattered the hog over the earth and his establishment in this country was being aided by inland waterways. The eastern colonists settled along the waterways and developed the adjacent farm land. After the American Revolution settlers moved west. Most of them followed the waterways and took hogs with them.

Since the hog had become the means of marketing the corn crop, differences in ability to fatten brought recognition to the China and Siamese hogs for superiority in this respect, while the European hog excelled in grazing and in the production of lean meat. Differences promoted selection with the result that the foundation of what later became recognized American breeds was laid in this Revolutionary period. Historical references indicate the characters seen in hogs today were present at that time, leaving the breeder in later years a great deal to work with. There were large and small hogs, long and short bodies, deep sides and shallow bodies, narrow and wide backs, sagging backs and coarse shoulders, short and long—dished and straight faces, large and small—erect, straight or broken ears, coarse and fine bone in the legs, strong and weak feet. Colors ran black, red, sandy,

slate, spotted and white with some definiteness of marking at times. There were curly coats, straight coats, and fine or coarse bristles. Some hogs had heavy skins with creases in the sides, or wrinkles. In seeking a goal, individuals were imported from Europe, particularly Britain, of recognized established breeds and these were used in crossing. During the nineteenth century some of this was done in developing the lard hog breeds—the most significant contribution of the United States to the modern domesticated breeds of livestock.

Settlers moved west with large numbers of them floating their possessions in flat bottom boats down the Ohio River in the early 1800's. These boats brought the progenitors of the Poland China hog where the breed was developed in the Miami Valley above Cincinnati. The Chester White was developed along the Delaware River in Pennsylvania while the Duroc-Jersey (Duroc) was developed along the Hudson River in New Jersey and New York. These were the three early American breeds. Several other American breeds have been developed since the recognition of these three. At the same time we have several breeds popular today that were imported as established breeds and have been maintained as separate breeds. Registry associations can best supply the history of their respective breed from some time prior to its recognition as a distinct breed and the first records kept of the ancestry of individuals.