

OBJECT

The object of this project is to interest the boys and girls of Kentucky in producing beef animals of high quality. The experience and knowledge gained by conducting a successful project will help the boy or girl to become a successful feeder and breeder of beef cattle.

REQUIREMENTS.

1. Only members of Junior Agricultural Clubs are eligible for this project.
2. Each member must own a registered heifer of one of the beef breeds.
3. Each member shall keep a complete record of the feeding, care and management of the heifer as indicated in the record book. The records shall be used in judging the project.
4. Each member shall act independently in the feeding and care of his heifer and do all the work necessary during the project. Help may be obtained for hauling and weighing.
5. All animals must be weighed at the beginning of the project. Initial and final weights must be certified to by two disinterested persons.
6. Heifer must be exhibited at the close of Part A and with her calf at the close of Part B.
7. The judges for the show shall be determined by the county agent or club leader.
8. The club member shall send his record book to the county agent or club leader at the close of Part A and again at the close of Part B.
9. Basis of award:

Best exhibit	30
Smallest cost of gain	25
Largest rate of gain	35
Best story of project	10

CIRCULAR NO. 114

BEEF BREEDING PROJECT JUNIOR AGRICULTURAL CLUBS

Part A.

In order to make the project interesting and more convenient for the boy or girl to establish a herd, it is divided into two parts: Part A, starting with a young heifer about 8 months old and ending when she is bred, or about 20 months old; and Part B, starting when the heifer is bred and ending when her first calf is weaned.

SELECTING THE HEIFER.

The breed chosen should be one which is admired by the member, provided that another one has not been adopted by the community in which he lives. One should cooperate with his community in promoting the breed which is most popular there. A heifer that has just been weaned should be chosen. Heifers born between September 1 and December 31 are known as senior heifers, while those born between January 1 and September 1 are known as junior heifers. Heifers of either age may be used in this project.

The dam, or mother, and sire of the heifer should be seen when selecting the heifer because the characteristics of the dam and sire are transmitted to their offspring. It is required that a registered heifer possessing good individuality be used in this project.

Two important points to consider are type and conformation. The heifer should be typical of the breed. An animal that is off type is never selected by good breeders. Observe the animal from a distance of 10 or 15 feet, noting its size, fatness or condition, compactness of body and general disposition. When viewed from the front, the heifer should present a short face, large muzzle, wide forehead, short neck and a wide, deep chest, indicating a strong constitution. When viewed from the side, the back should be straight and level from the top of the

shoulders to the tail setting. The body should have a smooth, compact appearance, carrying down deep in the flanks. When viewed from the rear it should present a deep, wide appearance. The legs should be short and set wide apart. Common faults are a long, narrow head, shallow body, cut-up flanks, shallow heart girth, narrow chest, weak back, long legs and rough, open shoulders. Color typical of the breed should predominate.

EQUIPMENT NEEDED FOR GROWING THE HEIFER.

Nearly every boy or girl who lives in the country can arrange to keep a heifer. Nothing expensive is required in order to have a successful project. A shed or barn that is cool in summer, dry in winter, and gives protection from the wind and rain is sufficient.

The stall should be kept clean and dry. Frequently a wet condition exists. It should be remedied by using broken stones, gravel or clay to raise the surface of the floor. The reason for a dry bed is that the heifer is likely to become diseased if allowed to lie on a cold, damp bed. Use plenty of straw, leaves, shavings or other litter for bedding, so that the heifer may be induced to lie down a large part of the time.

A lot should be provided thruout the year in which the heifer may exercise. If this lot is muddy in winter it should be drained by ditches. During the summer the heifer should be allowed to forage on good pasture. If the heifer is watered from a trough or stream, the place should be kept clean. Very little mud should be allowed to accumulate. Overflow water from the trough should be drained off by ditches. If a stream is used the entrance should be filled with stone to keep it free from mud. Heifers should not stand in ponds from which they drink. There is danger of contracting disease of the feet as well as permitting disease-producing organisms to enter the body.

A tight box of sufficient size to hold enough feed for the heifer for a month or longer should be made. This box should have a hinged lid in order to keep out the chickens, rats and other animals. In addition a small box in which to keep salt should be arranged in a convenient place.

Other items of equipment needed are a fork for cleaning the stable, a large basket for carrying silage, currycomb, brush, coarse-tooth comb, burlap blanket and halter for training the heifer to lead.

FEEDING THE HEIFER TO MATURITY.

Winter feeding differs from summer feeding. A standard ration, however, may be varied enough to be suitable for either feeding season. It is assumed that the heifer has been eating grain before weaning time; if not, she should be taught immediately. Begin by feeding as recommended in paragraph "Feeding the Cow and Calf to Weaning Time." In a month or six weeks after she is weaned the heifer should be eating from 2 to 3 pounds of grain, 6 pounds of silage and from 2 to 3 pounds of clover hay, with a small amount of other roughages in addition, such as stover or straw, unless pasture is available.

A standard grain feed consists of corn, oats and bran, equal parts by weight; or corn, 5 parts and oats or bran 3 parts by weight. One part of linseed oil meal should be added to either ration unless the effect seems too laxative. If these feeds are not available, it will be necessary to substitute other feeds. The following substitutes are recommended:

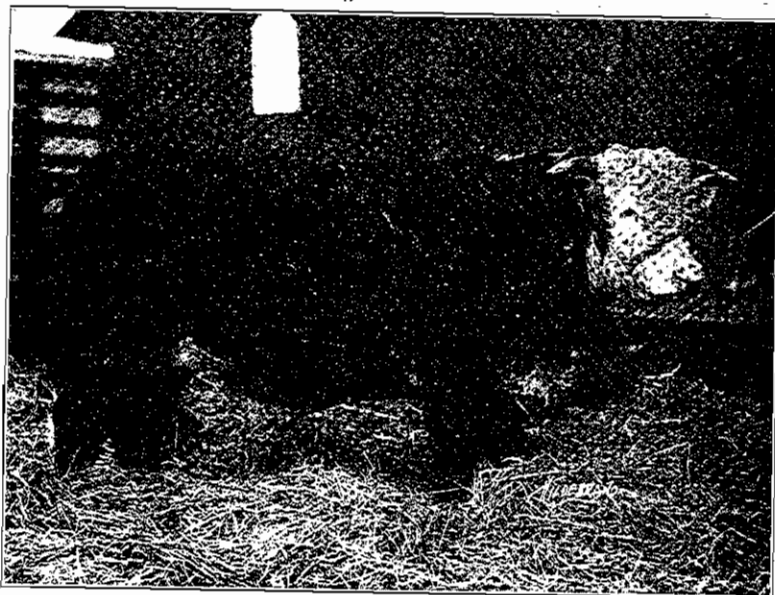
Feed	Substitutes
Corn	Barley, oats
Oats	Bran, ground oats, coarse middlings
Bran	Ground oats, coarse middlings
Linseed oil meal	Peanut meal, soybean meal
Corn silage	Sorghum silage, other silage, roots or mangles
Clover hay	Alfalfa, lespedeza or soybean hay
Corn stover	Oat straw, other straws

The quantity of grain fed should be determined at all times by the appetite of the heifer. She should be fed just what she will clean up in about 30 minutes and still have some appetite.

The beef heifer can use cheap roughages to advantage; however, leguminous hay, such as clover, alfalfa and lespedeza are more satisfactory. Care should be taken that bright, well-cured roughage is fed at all times. Moldy hay may cause digestive trouble. Corn stover or oat straw may be used to supply part

of the roughage needed. Fifteen to 20 months old heifers may be fed 5 to 10 pounds of silage.

Pasture should be provided at all times. Sufficient pasture may be obtained from such plants as bluegrass, lespedeza, clover and alfalfa. Fall and winter pasture may be had by using such crops as rye, barley or any of the legumes, such as alfalfa and clover. The first time the heifer is turned on fresh pasture she should stay only a short time, because she may bloat from over-



THE TYPE TO WHICH THE HEIFER SHOULD BE BRED

eating. After becoming accustomed to the pasture, however, the heifer may graze with safety.

Note. The foregoing instructions should be followed until the heifer is about twenty months old, which is the end of Part A of this project. A show should be held at the close of Part A and the heifer exhibited. Prepare the heifer for show as outlined in Part B under the paragraph "Preparing Cow and Calf for Show." Record books should be examined by club leader at this time.

Part B.

BREEDING THE HEIFER.

The heifer should be bred when about 20 months old, provided she has grown normally. She should not under any circumstances be bred before she is eighteen and one-half months old. The heifer must be mated to a purebred bull of the same breed. If there is no purebred bull in the immediate community, it is better to lead, haul or ship the heifer a long distance rather than use a scrub bull. The heifer should be in good condition at breeding time.

The gestation period, which is the period from the time the heifer is bred to the time she calves, is about nine months. To calve in April the heifer should be bred in the first part of July. If the calf is desired in September the heifer should be bred the latter part of November or early in December.

FEED AND CARE OF HEIFER FROM BREEDING TO CALVING.

The bred heifer needs a ration sufficient to maintain her own growth and develop the fetus or unborn calf. The mineral matter of the ration is important at this time. Mineral matter, especially lime, phosphorus and iron, is found in the legumes. Common salt should be supplied at all times as it contains the elements sodium and chlorine which are essential to the animal. If these substances are not obtained, a weak, small-boned calf will be dropt. The cow's development will be checked also if these needed elements are lacking, as she will try to supply them from her own body. The following rations are suitable for feeding cows weighing 1000 pounds when pasture is short or lacking. Increase the ration proportionately for cows weighing more than 1000 pounds.

1. Cottonseed meal	1½ pounds
Silage	40 pounds or full feed
Straw	2 to 3 pounds
2. Corn	3 pounds
Corn stover	20 pounds or full feed
Alfalfa or clover hay	4 pounds
3. Cottonseed meal or linseed meal	1 pound
Shredded corn stover	20 pounds or full feed
Clover hay	2 pounds

A month before calving time the grain, especially the bulky part of it, should be reduced and made slightly laxative. Wheat bran, oats, and linseed oil meal are desirable for this purpose. If the heifer is on pasture at this time no special attention to the grain need be given. During the winter, leguminous hays should be provided if possible, and such feeds as wheat bran mentioned above should be given before calving.

CARE OF THE HEIFER DURING CALVING.

If the heifer has been properly fed and cared for up to calving time and has had plenty of exercise, she usually will need no attention. This is especially true if the weather is favorable and she is on pasture. She should be by herself. The pasture should be free from ponds, streams or rough, steep hill-sides. In winter a well-bedded box stall should be provided. Do not tie her but give her freedom of the stall. Go into the stall only often enough to see whether or not she needs help.

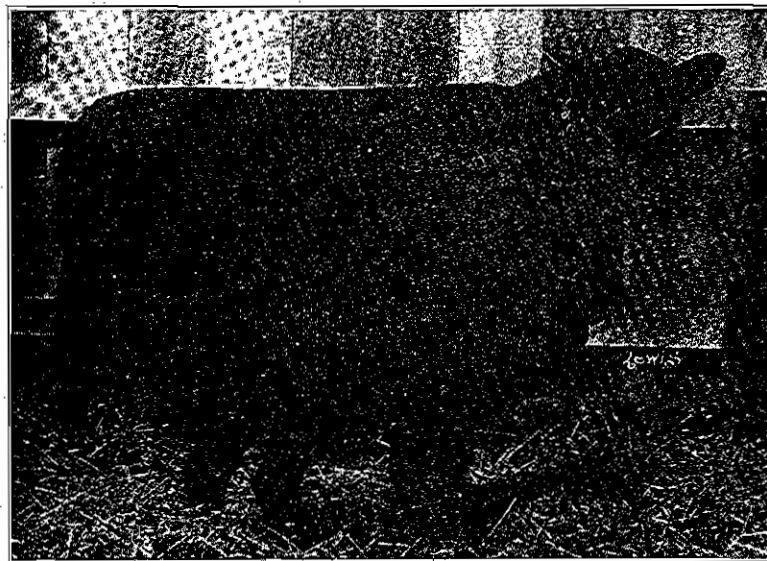
After the calf has been dropt be sure it is able to stand and suck, for it is important that the calf get the mother's first milk. If the calf is dropt in winter during extremely cold weather a blanket spread over it will help to prevent chilling. Perhaps a stove will be necessary if the quarters are not warm. Unless it is definitely known that the young calf is taking all the milk, the cow should be milked twice a day. This is done, of course, after the calf has sucked. As a usual thing the young calf will not take all the milk and if it is allowed to remain in the udder it may cause what is known as caked udder.

FEEDING THE COW AND CALF UNTIL WEANING TIME.

The feeding of the cow and calf from the birth of the calf to weaning time is a simple matter if the period comes during the summer months when the cow has good pasture. She usually will give enough milk to grow the calf to weaning age without any grain feed. Often the pasture is short and needs to be supplemented with a small amount of grain. It is advisable to let the calf run in the pasture with its mother until 4 to 5 weeks old, when it should be put into a separate lot and allowed to nurse only twice a day. Some shade should be provided in the lot.

If the calf is dropt in the fall or winter, it probably will be better to separate it from its mother following nursing, after the first week. A lot should be provided in which it can exercise each day, weather permitting. A warm, well bedded stall should be arranged for the calf at night.

When 4 to 6 weeks old a calf may be taught to eat grain. A good ration for the first few weeks of grain feeding is coarsely-ground corn, oats and wheat bran, equal parts, with a small



"LIKE PRODUCES LIKE."

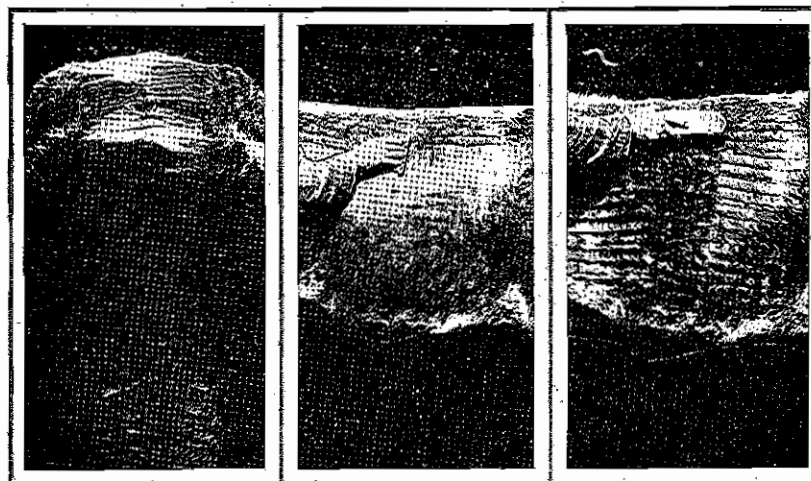
quantity of oil meal. One-fourth pound of grain a day, or just what the calf will eat up clean, giving one-half the amount at night and one-half at morning should be fed at first. After about eight weeks of feeding, the ground ration should be changed to one consisting of whole oats 4 parts, shelled corn 2 parts and oil meal 1 part, by weight. The amount fed should be increased gradually until the calf is 6 months old, at which time it should be getting 2 to 3 pounds of grain each day or from one-half to 1 pound of grain for each 100 pounds of live weight.

The calf can be weaned when it is from 8 to 12 months old. Twelve to 15 days should be taken to wean it. When old enough to wean allow it to suck once a day for a week, then every other day for four or five days, then increase the interval until no milk at all is allowed.

PREPARING FOR THE SHOW OR SALE.

Regardless of whether or not the cow and calf are to be sold or exhibited at a show, it is advisable to have them in the best possible condition. The cow and calf should be blanketed and kept in the barn for about three weeks before the show. This will keep them clean and protect them from flies. They should be brushed each day, which softens and cleans the hide and makes the coat glossy. The cow and calf should be washed once a week with soap and warm water for a month preceding the show. In grooming, a soft brush rather than a currycomb should be used. About one week before the show the clippers should be used on parts of the calf. If it is an Angus, the hair about the head and ears, legs and tail should be clipped. Clip the tail, starting at the top of the brush and continuing up to the tail setting, where it should be clipped so as to blend with the hair on the rump. The hair from the hoof to the hocks on the hind legs and to the knees on the front legs should be clipped. In both places blend in with the hair about the knees and hocks. The object in clipping is to emphasize quality in the cow or calf. With Shorthorns and Herefords, the hair about the head and ears should not be clipped, except in the ears. The only places where the hair ordinarily is clipped on these two breeds are the tail and legs, as described for the Angus.

A month before the show the process of polishing the horns and trimming the hoofs should be started. In preparing the horns, first cut or scrape off the rough, scaly part with a knife, fine rasp, or piece of glass. After the horns have been worked down to a uniform surface by use of sandpaper or emery cloth, which may require several dressings, polish them with a woolen cloth and a little linseed oil or horn polish. The hoofs should be treated in much the same way using a farrier's knife to trim the sole so that the calf can stand squarely on his feet.



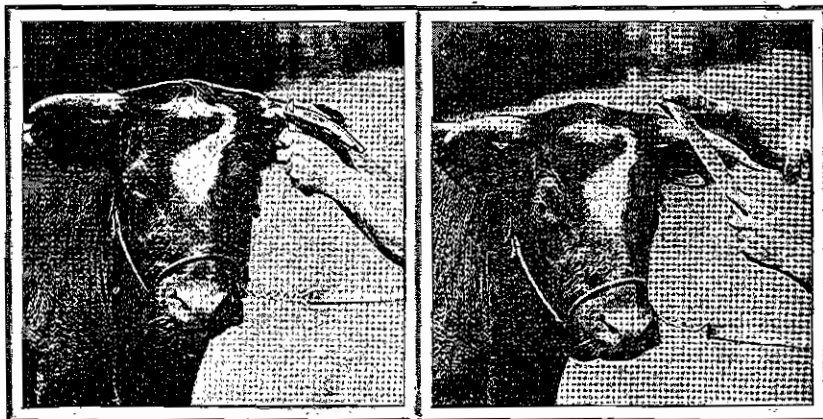
The hair is first parted along the back before curling.

Making the parallel lines along the sides to curl the hair.

Brushing up the tips of the hair to give the fluffy, wavy appearance.

Curling the hair makes the coat of the Shorthorn and Hereford cattle attractive. Seldom, if ever, is the coat of an Angus curled, altho, if the hair is long, curling may be advisable. In the other two breeds the condition of the calf determines whether or not his coat is curled. If he is smoothly and evenly-fleshed and his coat is fine, it is better not to curl, but if he is inclined to be rough and has long hair his appearance may be improved by curling. Curling is done by first washing the animal and then working the hair while it is damp. First brush it down straight and smooth; then give it a wavy appearance with a curry-comb. This is done by starting near the backbone and drawing the comb downward, waving it back and forth. Curling also may be done with a straight-back comb while the hair is damp, marking the hair with the comb or brush from in front of the shoulders to the tail or extreme back of the round. The lines should begin on the outer edge of the flat portion of the back so that the end of the hair will curl up even with the level portion of the back and make it appear wide. The other lines should be about two inches apart, the distance depending upon

the size of the calf, and parallel to the first line. After all lines have been made the hair that was combed back in making the marks should be brushed lightly up with a brush or currycomb. Curling and showing should be practised several times before the show.



POLISHING THE HORNS

With a sharp knife first remove the rough, scaly portions of the horn, cutting toward the tip and using care not to cut too deep. The rasp is then used, filing on the upward stroke only, lifting it off the horn on the downward stroke. Finally, the smooth horn is polished with a woollen cloth moistened with linseed oil.

COMMON DISEASES ENCOUNTERED.

Constipation. Occasionally, when the newborn calf fails to get the colostrum or first milk from the cow, its bowels remain inactive and constipation results. To the young calf two tablespoonfuls of castor oil may be given and the dose repeated if necessary. The dropping of an older calf should be observed daily. When solid, the animal is constipated or feverish. This condition may be relieved by feeding linseed oil meal or bran. If this does not give relief, give one-fourth pint of castor oil or raw linseed oil.

Diarrhea or "Scours." If constipation is not relieved, diarrhea or scours may follow. This condition is indicated by thin, washy, offensive droppings. Things that may cause it are over-feeding, improper feeding, irregular sucking and feeding damaged grain to either the calf or cow. If diarrhea occurs in a calf not yet weaned, reduce the milk allowance and withhold all grain. In severe cases, withhold all feed 12 hours. Castor oil is a satisfactory remedy. One tablespoonful to one-fourth pint, depending on the size of the calf, should be given as a drench with warm, sweet milk, followed by one teaspoonful of a mixture of one part salol and two parts of subnitrate of bismuth. Home remedies which are good include the whites of two raw eggs or a weak mixture of lime in water given in doses of one or two tablespoonfuls. The best method, however, is to prevent the disease.

Blackleg. Of the true bacterial diseases, blackleg probably is the most common among calves. It most commonly afflicts cattle 6 months to 2 years old; however, calves under 6 months and cattle over 2 years may contract the disease. Blackleg infection is believed to occur thru barbed wire cuts or other wounds. Infection no doubt can occur thru the digestive tract, being taken in with the food or water. The most important symptom of the disease is the formation of a tumor-like swelling under the skin. When the swelling is handled a peculiar crackling sound is heard, caused by the collection of gas under the skin. Few remedies are effective after the animal has become infected with blackleg. Vaccinating calves while still healthy to

prevent them from contracting the disease is the only satisfactory way of combatting the disease. The calves should be vaccinated when about 6 months old and the vaccination should be repeated within 6 months.

Cattle Lice. These are animal parasites which do most damage during the winter months. Lice can be destroyed by dipping the cattle in coal-tar dips, one part dip to thirty of water. The dipping should be repeated within a week or ten days to kill the lice which may be hatched from the eggs or "nits" already on the hair of the animal at the time of the first treatment. Dipping is advisable in large herds, but with only one calf lice can be killed by the application of a suitable spray mixture with a small spray or brush. An emulsion of crude petroleum is effective. The proportions for making it on a large scale are 5 lbs. soap, 20 gals. petroleum and water enough to make 100 gallons. To make a small quantity, dissolve an ounce and a half to two ounces of soap in about a quart of hot water. Add 3 pints of crude petroleum and shake or churn well until an emulsion is formed. Dilute with water to make 2 gallons, for use. Kerosene may be substituted for crude petroleum.

Cattle Mange. This is caused by a small mite which attacks the skin and causes it to become scurfy. Mange spreads from one animal to another by contact or may be caught from infested stables. Stalls, fences and posts which the animals may touch should be whitewashed as a preventative measure. Mange can be cured by dipping or by the application of the dip solution already mentioned with a small spray or brush. Washing or dipping the animal with a two-per-cent water solution of "liquor cresolis compositus" is a good remedy. Application of petroleum emulsion is even more effective.

EQUIPMENT NEEDED AT THE SHOW.

1. A light blanket and strong halter for the cow and calf.
2. A water pail, brush and soap for washing.
3. Bluing to put into the water to clear the white markings on the animal.

4. Sweet oil and a sheet of fine sandpaper for polishing hoofs and horns.

5. A white suit to be worn by the club member.

6. A cardboard sign eight by twelve inches stating the name of the calf, age, weight, rate of gain, and the name and address of the exhibitor.

RECORDS.

It is easy to keep records if one is careful to write down all the items each day. Calculate the expenses of each operation as soon as the work is done and write it in the record book. Keep up the record and when the project is completed there is no doubt concerning its correctness. It will give you an interesting true story about the cost of producing breeding animals and the profit of the undertaking.

STORY OF THE PROJECT.

Subject: "How I Raised My Cow and Calf."

Instructions: In the back of the record book is a space in which to write the story. Pen and ink must be used. The story must be the work of the club member. Neatness, spelling, punctuation and completeness of story are points that will be considered by the judge.

The following outline is suggested:

1. Name and location of club.
2. How and where heifer was obtained.
3. Name, breed and age of heifer.
4. Weight and cost of heifer and gain made.
5. Date on which heifer calved.
6. Amount and cost of feeds, profit made.
7. Things of most interest learned in this project.

REFERENCES.

Farmers' Bulletins No. 811, The Production of Baby Beef; No. 1135, The Beef Calf; No. 612, Breeds of Beef Cattle; No. 812, Livestock in the Blue Grass Region of Kentucky.

THE SCORE-CARD.

The following is the score-card used by the College of Agriculture, University of Kentucky as a standard in judging cattle. All boys and girls expecting to be successful should study this score-card.

Beef Cattle	Breeding
STANDARD OF EXCELLENCE	
	Perfect Score
A. General Appearance—45 Points.	
Weight according to age—	
Estimate.....lbs.; actual.....lbs.	6
Form , straight top and underline; deep, broad, lowset, compact, symmetrical	9
Quality , hair fine, bone strong, not coarse; skin pliable; mellow, even covering of firm flesh, free from rolls; features refined not delicate; stylish	9
Constitution , chest capacious; brisket well developed; flanks deep, bone strong	9
Condition , thrifty, well fleshed but not excessively fat, deep covering of flesh	5
Disposition , quiet, gentle	5
Breed Type , having all characteristics of breed	2
B. Head and Neck—7 Points.	
Muzzle , mouth and nostrils large; lips thin	1
Eyes large, clear, placid	1
Face , short, quiet, expressive	1
Forehead , broad, full	1
Ears , medium size, fine texture	1
Neck , thick, short; throat, clean according to breed	2
C. Forequarters—9 Points.	
Shoulder Vein , full	1
Shoulder , covered with flesh, compact	4
Brisket , well developed, breast wide	1
Dewlap , skin not too loose and drooping	1
Legs , straight, short, set well apart; arm full, bones smooth, strong, neither too coarse nor too fine	2
D. Body—24 Points.	
Ribs , long, arched, thickly fleshed	6
Back , broad; straight, thickly and evenly fleshed	8
Loin , thick, broad, deeply fleshed	8
Flank , full, even with underline	2
E. Hindquarters—15 Points.	
Hips , smoothly covered, width in proportion to other parts	2
Rump , long, level, wide and even in width; tail head smooth, not patchy	3
Pin Bones , not prominent, width in proportion with other parts	1
Thighs , full, fleshed well down to hock	3
Twist , deep, plump, indicating fleshiness	4
Legs , straight, short, set well apart, bones smooth, neither too fine nor too coarse	2
Total	100