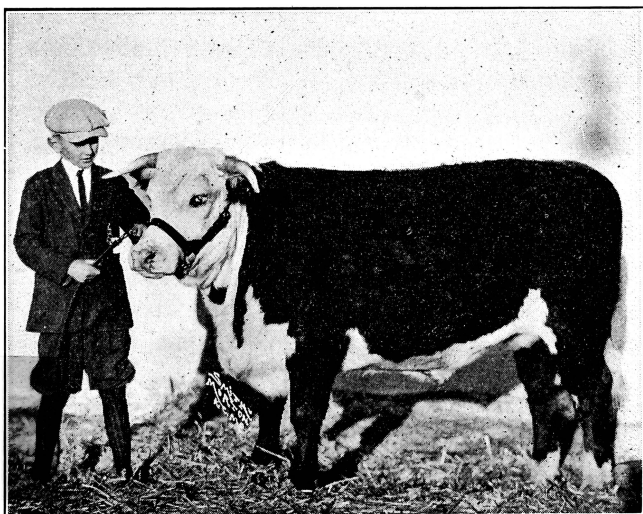


THE 4-H BEEF CLUB

4-H CLUB CIRCULAR 22

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COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS

UNIVERSITY OF MISSOURI COLLEGE OF AGRICULTURE AND THE UNITED

STATES DEPARTMENT OF AGRICULTURE COOPERATING

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THE 4-H CLUB IDEAL

You have or will select the best individual calf that you can find for your project. Having selected an individual you will proceed to study and apply the best principles of feeding, care, management, sanitation, grooming and training in its development. You will do this in an earnest effort to make your calf meet as nearly as possible the particular need which it is to fulfill. This is as it should be, for the production of a near ideal—be it a calf, a picture, a song, or any other worthy achievement—is a work of art and the producer is an artist. This is true of your project work. How infinitely much more of an artist you become, when you take yourself as you now are and by careful study and observance of the best known principles of nutrition, sanitation, personal habits, self discipline and education, you develop yourself into the healthiest, happiest, and most useful citizen of society that lies within your possibilities. The person you are to become is your job. The things you are doing now are determining what you are to be. Are you doing the things now that will make you what you want to become?

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THE 4-H BEEF CLUB*

INTRODUCTION

Missouri farm boys and girls have shown increased interest in the feeding of beef calves in 4-H club work during the past few years. The many clubs organized as a result of this growth in interest have afforded an opportunity for the members to cooperate in a study of the importance of beef cattle in agriculture and to gain practical information in feeding and showing. The need for beef cattle to utilize pasture, roughage and grain crops and to assist in maintaining soil fertility indicates that beef production will continue to be one of the state's important enterprises and that the coming generation should have a thorough understanding of the fundamentals of the industry. Changes have taken place in the beef cattle industry until today the markets are demanding a greater proportion of choice well finished yearlings and grain fed calves. This change in market weight requirement has popularized the 800 to 1050 pound finished animal for club shows.

This circular is for the purpose of providing information to members of the 4-H clubs who are feeding yearlings; after September 1st calves; and spring calves that are nursing their mothers. This division of calves on the basis of age and method of management really provides for three distinct clubs and while a member may have more than one calf no attempt should be made to show calves from the various groups in one class.

REQUIREMENTS

Object.—The object of the beef club project is to organize boys and girls into groups to demonstrate beef feeding and management, economy of production, use of balanced rations, cattle judging and exhibiting, and to train the members in leadership.

Work Required.—The 4-H Beef Club Project—For Calves to be Finished as Yearlings.

Each club member is required to feed, care for and exhibit a purebred or grade steer, born between January 1 and September 1 of the year previous to the one in which the calf is shown, with preference for April, May and June calves.

The calf must be started on feed on or before April 1, and fed for at least six months, separate from other farm animals, without the use of milk in any form, after eight months of age.

The 4-H Beef Club Project.—For Calves Born After September 1.—

Each club member is required to feed, care for and exhibit a purebred or grade steer born after September 1 of the year previous to the one in which shown.

The calf shall be started on feed by the time it is three months old, and fed until the time of the round-up, separate from other farm animals, without the use of a nurse cow, except that a calf may nurse its own mother up to 8 months of age.

The 4-H Beef Club Project.—For Cow and Calf.—

Each club member is required to feed, care for and exhibit the calf produced by a purebred or grade beef cow which was secured before the calf was dropped. Cows which will drop calves in January, February or early March should be given preference; however, cows which will drop calves between October 1 and April 1 may be used.

The calf should be fed grain while nursing the cow. The calf should be sold the following November or December and the cow may be used for another year's work. The calves may nurse their mothers until 9 months of age.

The above Beef Club projects must be carried on according to the instructions of the Extension Service of the Missouri College of Agriculture.

A club member may feed not to exceed four calves as a club project and will be permitted to show in the 4-H club classes of only two Interstate shows. If the club member owns more than four calves, the ones to be shown must be designated by April 1 of the year in which shown.

Records Required.—Each club member is required: to keep a record of the weight at the beginning and at the close of the feeding period; to keep a complete record of feeds used and their cost; to keep a record of receipts and expenses; and to write a story of the club activities for the year.

Ownership Required.—Each club member is required to own the animal or animals used in the project and to provide the necessary feed and expenses.

Time Required.—Time is required: to feed and care for the animals used in the project; to attend six or more club meetings; for an all day tour; and for one day at the Round-Up at the close of the year's work.

Organization.—A beef club may be organized from September to March but should preferably be organized early enough in the fall to enable securing the best calves. Record keeping must start not later than April 1 and should preferably be started with the date of purchase of the project animal. Records may be completed any time after October

1. Standard clubs are required to have six or more regular meetings. These meetings should be held at least once a month. The meetings should be divided into the business, discussion, and social sections as outlined in the suggested programs. It is suggested that the subjects be taken up in the order outlined but local leaders and clubs are expected to change the suggested outlines to fit their local problems and conditions.

Suggested Programs for Meetings

I. Organization of the Club.

1. The business meeting.—The local leader in charge.
 - (1). Explanation of the duties of the club officers and members (See Club Secretary's Record Book.)
 - (2). Election of officers from the membership of the club; President, Vice-President, Secretary, Song Leader and Reporter.
 - (3). Selection of a time and place for regular club meetings.
 - (4). Selection of a name for the club.
 - (5). Setting up club goals such as: Every member attend every club meeting. Every member complete the project and turn in complete records.
 - (6). Adjournment of the business meeting for the discussion period.
2. Discussion—The local leader in charge.
 - (1). Distribution of club literature and record books.
 - (2). Standard club requirements and project requirements.
 - (3). Main club events for the year.
 - (4). Assignment of work for the next meeting; score card; terms used about the beef animal and topic for roll call, "Breed, cost and weight of my calf".
3. Social hour. (See Recreational Activities of 4-H Clubs)

II. Club Meeting.—Score card. Terms used about the calf. Selecting calves. Beef cows and calves.

1. The business meeting.—The club president in charge. See Club Secretary's Record Book.
 - (1). Meeting called to order by the president, who leads the club members in repeating the national 4-H club pledge as follows: "I pledge my *head* to clearer thinking, my *heart* to greater loyalty, my *hands* to larger service, and my *health* to better living, for my club, my community, and my country.
 - (2). Roll call.
 - (3). Reading of the minutes of the last meeting by the secretary.

- (4). Unfinished business.
 - (5). New business.
 - (6). Adjournment for work.
2. Discussion and demonstrations.—The local leader in charge.
Score card, terms used about the beef animal, selection of project animal, beef cows and calves, demonstration on scoring.
Assignment of work: feeds and feeding, topics for roll call, "How I started my calf on feed," and demonstration on mixing rations.
 3. Social hour.
- III. Club Meeting—Feeds and Feeding.
1. Business meeting (Follow suggested outline for II meeting).
 2. Discussion and demonstration.—The local leader in charge.
Composition of feeds, feeds for beef cattle, rations and feeding problems.
Demonstration, "Mixing rations."
Assignment of work; care and management; parasites and diseases; topic for roll call: "Development of my calf to date," or "What I am feeding my calf," and demonstration on treating for lice.
 3. Social hour.
- IV. Club Meeting.—Care and Management. Parasites and Diseases.
1. Business meeting.
 2. Discussion and demonstration.
Care of feet, skin, hair and horns; finishing calf; parasites and diseases, demonstrations may be given on trimming feet, care of horns and leading calf.
Assignment of work; grooming; fitting for show; judging; and topic for roll call, "How I am training my calf".
- V. Club meeting—Grooming; Fitting for Show; Judging.
1. Business meeting.
 2. Discussion; care of feet, horns, hair, curling, clipping, and washing. Judging should be done, if possible; demonstration on fitting for show.
Assignment of work; every member to have calf ready for inspection on day of tour, with a complete weight, feed and cost record report on calf to date, ready to give at time of inspection.
 3. Social hour.
- VI. Club meeting—Tour.
1. Business meeting (May be held any time during day).

2. Tour to visit all calves, if possible. A demonstration on grooming may be given and an opportunity for judging should be afforded, if possible. Plans for the round-up should be discussed.

VII. Club meeting.—Round-up.

The club round-up should be held at the close of work for the club year. The round-up consists of a club show of animals, a judging contest and a public program.

Suggested Public Program

1. A typical club meeting.
2. A brief summary and a short statement of the club's achievements by a club member or the local leader.
3. One or more demonstrations by club teams.
4. A talk on 4-H club work.
5. Awarding 4-H club achievement pins.
6. Announcement of next year's plans.

II. TERMS USED ABOUT THE CALF, SCORE CARD, SELECTING CALVES, BEEF COWS AND CALVES

Terms Used About the Calf

The successful club member is one who is thoroughly familiar with all terms used about cattle, their carcasses and feed. The diagrams showing the location of the various parts on the live animal and the

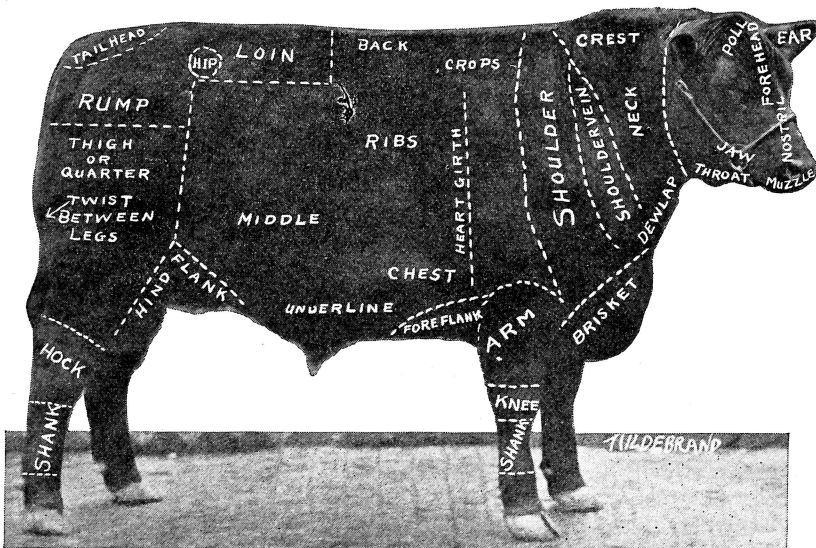


Fig. 2.—Diagram showing location of various parts of beef calf.

corresponding carcass cuts and the score card giving the numerical value of the various parts of the animal will be helpful to every member and should be studied until learned. As soon as this information is acquired each member will know how to evaluate his or her calf and compare it with others. The use of the above information will be valuable as the feeding period progresses and in selecting calves for future projects.

Score Card

The score card gives 22 points for the hindquarters while there are only 12 points given for the forequarters. This difference is due to a large percentage of the hindquarters being sold as round steak and rump roasts which are more valuable cuts, containing less waste than the brisket, chuck and plate, which are cheap cuts obtained from the forequarters. Cuts from the forequarters are usually sold for roasting and boiling because of the large amount of bone and waste. It will also be noticed that 32 points are given to the body with 7 points to each, the back, ribs and loin. Such a large number of points is given to the parts because they contain some of the high-priced cuts of the carcass, the most valuable one being the loin. Although the ideal feeder head is an indication of feeding capacity in the feeder calf it is not so important in the finished beef animal, for in the judging of fat animals emphasis is placed on form or type, quality, thickness, firmness and smoothness of flesh, mellowness of touch, and small amount of offal or waste at butchering time.

Since the above characteristics are of so much importance in the finished animal, the following points need to be given careful consideration in selecting the feeder calf.

Form.—The form or type of the calf is of great importance. It should have: (1) deep, broad, compact body; (2) well sprung ribs; (3) full heart girth; (4) wide, well fleshed back; (5) middle deep and not cut up in the hind flanks; (6) straight top and underlines; (7) well developed hindquarters; (8) full thighs; (9) deep twist; (10) short, straight, well placed legs (11) medium sized bones and horns.

Head.—The head should be short and wide with a broad muzzle, large, nostrils, and large, quiet eyes. These characteristics indicate great feeding capacity.

Neck.—The neck should be short and thick and blend smoothly into the shoulder.

Constitution.—In order to consume large quantities of feed and put on the greatest gain at the least cost, the calf should have a strong constitution. This is indicated by a deep chest, great width between the forelegs and the brisket being extended well forward. The foreribs should be long and well sprung and the fore flank full with no signs of a shallow or narrow heart girth.

SCORE CARD.—BEEF CATTLE—(FAT STEERS)

Possible
Score

SCALE OF POINTS

Age, estimated.....yrs., actual.....yrs.	
GENERAL APPEARANCE—26 Points	
Weight, estimated.....lbs., actual.....lbs. score according to age.....	6
Form, straight top line and underline; deep, broad, low, medium length, symmetrical, compact, standing squarely on legs.....	8
Quality, bone of firm texture, fine skin; silky hair; clearly defined features and joints; mellow touch.....	6
Condition, thick, even covering of firm flesh, especially in regions of valuable cuts; indicating finish; light in offal.....	6
HEAD AND NECK—8 Points	
Muzzle, good size, lips thin; nostrils large and well apart; jaws wide	1
Face, short, broad, profile straight.....	1
Forehead, broad.....	1
Eyes, large, full, clear, bright.....	1
Ears, well carried, fine, medium size.....	1
Neck, thick, short, throat clean, dewlap slight.....	3
FOREQUARTERS—12 Points	
Shoulder Vein, full smooth.....	3
Shoulders, smoothly covered with firm flesh; compact.....	5
Brisket, broad, full; breast wide.....	2
Legs, straight, short, strong, wide apart; forearm full; shank fine; feet sound.....	2
BODY—32 Points	
Chest, deep, broad; girth large; fore flank full.....	4
Crops, full, thick, even with shoulders.....	5
Back, broad, straight, medium length; thickly, evenly and firmly fleshed.....	7
Loin, broad, straight; thickly, evenly and firmly fleshed.....	7
Ribs, deep, well sprung, closely set, thickly, evenly and firmly fleshed	7
Flanks, full, low.....	2
HINDQUARTERS—22 Points	
Hips, smoothly covered, proportionate width.....	3
Rump, long, level, width well carried back; thickly, evenly and firmly fleshed.....	5
Pin Bones, wide apart; not prominent.....	1
Tail, fine, tapering, medium length.....	1
Thighs, deep, wide, well fleshed.....	4
Twist, deep, broad, well filled.....	6
Legs, straight, short, strong, shank smooth, feet sound.....	2
Total.....	100

Quality.—The quality of the calf is shown by its general appearance, smoothness, mellow skin, fine coat and medium sized bones and horns. A calf lacking in quality will become coarse, rough and patchy as it grows and lays on fat.

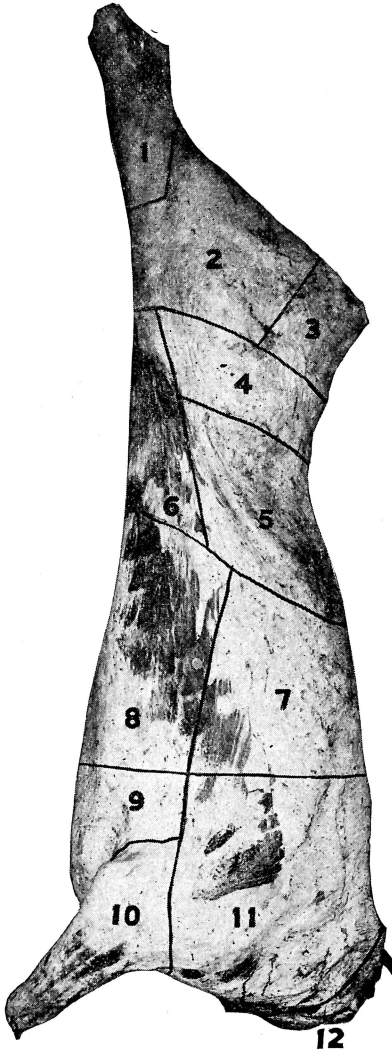


Fig. 3.—Wholesale Division of Beef Carcass.

1. Hind Shank.
 2. Round, Rump and Shank off.
 3. Rump.
 4. Sirloin end of loin
 5. Porter House or Short Loin
 6. Flank.
 7. Ribs.
 8. Navel end of Plate
 9. Brisket end of Plate.
 10. Fore Shank
 11. Chuck.
 12. Neck.
- } Loin
} Plate

Breeding.—Both the form and quality of a calf are dependent upon its breeding. It is best to select calves whose sires and dams are representative of the beef breeds, either Shorthorn, Hereford or Aberdeen-Angus. At least, the sire should be pure bred. Great care should be taken not to select a calf possessing any dairy blood as it will not fatten

thickly over the ribs, back and hind quarters where the highest priced cuts are located.

Age.—The calves selected by club members should be as nearly uniform in age as possible. The exact age should be determined somewhat by the time of marketing and the age requirements of the show in which they will be exhibited.

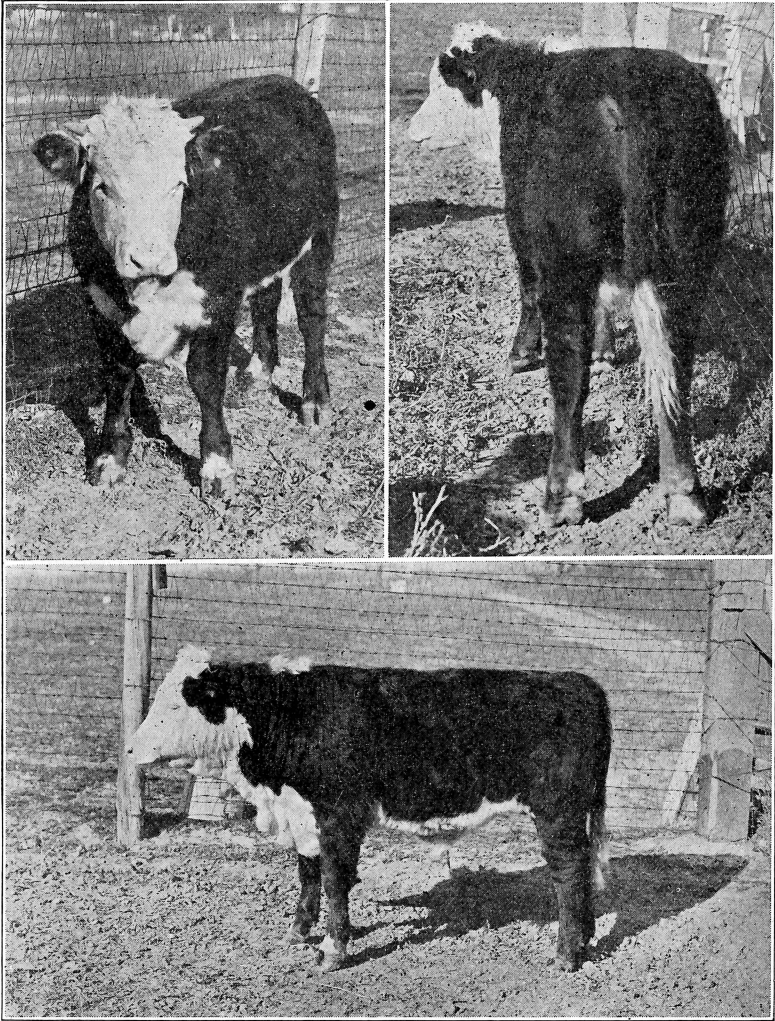


Fig. 4.—Front, rear and side views of a good type of calf for producing choice beef.

Sex.—Packers prefer fat steers for baby beef rather than heifers of the same weight and usually will pay from 50 cents to \$1.50 a hun-

dred weight more for steers. Steers have a tendency to feed more quietly and fatten more evenly, though heifers mature more quickly and can be marketed at an earlier age than steers. Heifers carried through a long feeding period are apt to become rough and patchy. Heifers are not eligible for showing at the St. Joseph Interstate Show.

Selecting Calves

Calves that are to be fed by 4-H club members should be selected on the basis of their form or type, quality, indications of feeding ability and breeding. In communities where there are several herds of purebred or high grade cattle, club members should be able to select and buy their own calves. Many farms should be raising the calves that are to be fed by the boys and girls. Where individuals select and buy their own calves care should be taken to secure animals that will develop satisfactorily, and if possible the purchaser should see the calf's sire and dam. All calves that are secured by individuals should be inspected and approved by the county extension agent, a livestock specialist or some one capable of selecting feeders.

Where few desirable calves are available in a community it will perhaps be more satisfactory to secure the calves in one lot from a breeder or on the open market. The experience of club members in this state has been that native or home grown calves have been more desirable than range bred calves.

In buying feeder calves it should be remembered that the finished animal must sell on the open market on its merits. Therefore, the purchase price should be in keeping with the calf's value to go into the commercial feed lot.

The calves should be purchased during September, October and November before the majority of the desirable individuals are marketed or moved into feed lots. By securing the calf at an early age he can be started on feed at or prior to weaning and thus prevent losing the calf or milk fat.

If the calves have not been vaccinated to prevent blackleg they should be vaccinated as soon as purchased. For instructions regarding vaccination, see page 22.

Losses are not great among young cattle that have been vaccinated to prevent blackleg and received proper care but occasional losses do occur. Club members can insure their calves thus protecting themselves against such losses. Insurance can be obtained from reputable companies specializing in livestock risks. A special rate can often be obtained by insuring all the calves in the club.

Beef Cows and Calves

The feeding of calves to be marketed when 10 to 12 months old has introduced into 4-H club work the necessity for considering the

ownership and care of beef cows. The cow can be handled without a great amount of labor and expense and her milk will increase the gains, reduce the feed cost and make it possible to finish the calf at this early age. The cow and calf system of beef production has proven so profitable on Missouri farms that many club members have invested their profits in cows and are raising calves for their projects. It is good business judgment for club members to establish cow herds and raise the calves that are to be fed but the practice of trading in cows is questionable. The cow herd should be maintained on a practical commercial basis and where such a procedure is followed choice calves can be produced cheaper than they can be purchased and the club member builds a herd of cows that can be used when he or she goes to farming.

Cows that are selected to raise calves suitable for 4-H club projects may be either grades or pure bred, but care should be taken to secure individuals of desirable beef form or type that are good milkers. Such cows mated with good registered beef bulls should produce desirable market calves. Cows that will drop calves at the proper time of year to fit the club project should be selected. Mature cows will usually produce calves of better quality and give more milk than heifers with their first calf. All cows and heifers should be bought subject to the agglutination test for contagious abortion.

Breeding operations should be planned so that calves of the following ages will be produced: for finishing as yearlings, May, June and July; for after September 1st calves, September and October; and for the cow and calf project, January and February. All cows must be bred to registered beef bulls of good quality if desirable calves are to be produced.

The largest item of expense in keeping a cow is for feed. This cost can be kept at a minimum by providing the cow with an abundance of pasture and roughage. The cow should be on good pasture from May first until December and in stalk fields during December and the first part of January. Cows that are suckling calves should not be kept in stalk fields after the best of the feed has been utilized. During the period from January to May the cow should receive all of the hay, stover or silage she will eat. Cows that receive one good feed, 8 to 10 pounds, of legume hay each day in addition to what other roughage they will eat, should not need any concentrates. Cows receiving only silage or stover and non legume hay should be fed 1 to 2 pounds per head daily of cottonseed cake and 1/10 pound of finely ground limestone. The feeding of grain to cows soon runs the cost so high that there is no profit to be realized from the calf.

All calves should be vaccinated for blackleg when 4 to 6 weeks of age, and again when 6 to 8 months old. The bull calves should be

castrated before they are two months old. The steer calves that are to be marketed when 10 to 12 months old and any heifers not needed for replacements or to increase the herd should be started on feed by the time they are two months old. The calves that are to be fed should be kept away from the cows and allowed to nurse twice each day. Care must be taken that all of the milk is removed at each nursing, otherwise, spoiled udders and other difficulties will result. Many cows produce so much milk that the calf can not take it all at one nursing. In such cases, the cow should be milked after the calf is through nursing and the practice should be continued until the calf can take all of the milk. Calves that are to be finished as yearlings need not be started on feed until they attain a weight of approximately 300 pounds.

III. FEEDING, FEED STUFFS, RATIONS

Feeding

It is well to remember in starting this project that young animals grow as well as fatten, therefore it requires more time to finish a calf than is required in the case of an older animal. A feeding period of at least six months is necessary to fatten a calf sufficiently to meet the requirements of the choice light weight beef market. A longer feeding period is usually desirable. A calf should be started on feed gradually. Any increase in the amount of feed should not be so great as to cause scours or digestive disorders. Once the digestive system is disturbed, the animal is more likely to have later attacks and will not feed so regularly. A mixture of equal parts by measure of corn and oats is a good feed with which to start. This can be changed gradually after the first week to the ration you wish to use. The calf should not receive more than one-half pound per day of the grain mixture at first, for each 100 pounds of its own weight. For example, if the calf weighs 300 pounds it should receive not more than $1\frac{1}{2}$ pounds of grain per day. This amount should be gradually increased after the calf begins to eat, until at the end of a second or third week, it is receiving about two pounds per day for each 100 pounds of live weight or all the grain it will eat at each feed. For example, if the live weight of the calf is 300 pounds, at the rate of two pounds for each 100 pounds live weight the calf should receive about 6 pounds per day of the grain mixture, or about 3 pounds at the morning feeding and the same at night. If the calf is to be fed for 8 or 10 months it should not be started on full feed of grain in such a short time. In addition to the small amount of grain the calf should receive all of the hay it will eat. Legume hays are preferred but if the calf has not been accustomed to these hays, only small amounts of them should be given as large amounts may cause bloating which is a serious disorder. Re-

member, it is important that changes in amounts or kinds of feed should be made gradually in order to avoid much serious trouble.

Correct feeding is absolutely necessary to keep the appetite of the calf regular and cause it to lay on fat rather than grow. The feed should be palatable, and composed of a variety of fresh, thoroughly mixed feeds, free from dust or mold.

Young calves that are nursing will not consume as large quantities of grain as older calves, neither is there as much danger of such animals gorging on grain when first started on feed. Grain can be kept before the two-months-old calf until he learns to eat readily but thereafter he should be fed and have time to eat his grain before he is allowed to nurse.

Classes of Feeds.—Feeds are divided into two main classes, Concentrates and Roughages.

Concentrates are grains and the feeding stuffs of a condensed nature, the greater part of which is readily digested by animals, as: corn, oats, bran, linseed oil meal, cotton seed meal, molasses.

Roughages are the bulky feeds, a large part of which is not digested by the animal, as: hay, silage, corn fodder, pasture, straw.

It takes a much greater quantity of roughage to furnish the same amount of digestible food for the animal than is necessary in concentrates. Calves belong to the ruminant class of animals, or those chewing cuds, and for this reason roughages are very important as they help to keep the digestive systems in order.

Composition of Feeds

The value of a feed depends upon the things it contains, its digestibility, or the amount of the feed that can be digested, and the palatability or the agreeableness of the taste.

The nutrients a feed contains are protein, carbohydrates, fats, fiber, and mineral matter. These nutrients may not mean much by name, but they are the parts of the feed that influence the development of the calf.

Protein is the part of the feeding stuffs which helps to build blood, tissues, muscles, vital organs, skin, hair, horns, and hoofs.

Carbohydrates have as their main duty that of furnishing heat and energy for work. They are rich in sugars and starches and when an extra amount of carbohydrates is eaten by the animal it is stored as fat.

Fats or Oils furnish heat and energy and are stored as fats.

Fiber is the woody and less digestible part of a feed. Its chief importance is to give bulk to the feed.

Mineral Matter or Ash furnishes the mineral matter for the building of the skeleton.

Feed Stuffs

Corn is rich in carbohydrates and fats and for this reason it is the best of all fattening foods. However, it has only a small amount of protein and ash for tissue and bone building. If the corn is fed with linseed oil meal, wheat bran, and clover or alfalfa hay more satisfactory results will be obtained than when it is fed alone because these supply protein and ash to balance the carbohydrates in corn. Corn may be fed either shelled or ground; the ground corn is preferred when finishing calves for show purposes as they will eat larger amounts and it will mix more readily with other feeds, but it should not be ground too fine.

Oats is a feed that is higher in protein and mineral matter than corn. It gives bulk to the ration or feed and is much relished by the calf. Oats should be free from mold or dust and may be fed either whole or ground. Crushed or coarsely ground oats is more palatable than finely ground oats. Oats is a safe feed to use when starting the calf on feed.

Wheat bran is a good feed to add to the ration as it is high in protein, pleasing to the taste and has a slightly laxative and cooling effect on the animal. Although it is valuable in the ration of the show and breeding animal it usually costs too much to be used in large quantities for commercial cattle feeding.

Linseed Oil Meal or Cake and Cottonseed Meal or Cake are of special importance in the ration of the growing calf because they are rich in protein. The amount fed should depend upon the age of the calf and the feeds used in the ration. The feeding of these protein meals should be started gradually. Begin by feeding very small amounts and as soon as the calf has learned to eat the meal gradually increase the amount until the calf is eating $\frac{1}{5}$ of a pound of the meal for each 100 pounds of its weight, or the amount suggested in the following rations. If the calf weighs 500 pounds, it should receive $\frac{1}{2}$ pound of the meal at each feed when it is fed twice each day. The pea sized cake is more palatable than the meal. Cottonseed meal may be substituted for the linseed meal, but it is not so good for the growing calf. However, cottonseed meal usually is cheaper in Missouri and protein can be bought cheaper in that form. Protein feeds are expensive, but they are essential in finishing young cattle.

Cottonseed and linseed meals should always be fed in proportion to the amounts of other feeds used and a calf should not receive more than 2 pounds per day at any time during the feeding period.

Molasses.—Cane molasses, sometimes called black strap molasses, is well liked by cattle and is often used as an appetizer. It has a feeding value about equal pound for pound to that of corn. Only small quantities should be fed because of its laxative effect. About one-fourth to

one-half pint mixed in enough water to moisten the feed is sufficient and should cause no bad effects.

Molasses and alfalfa feeds may be fed in small quantities as appetizers if the cost is not too great to be in keeping with their feeding value. Molasses and molasses feeds are low in protein and should not be fed in place of protein feeds.

Hay.—The calf must have some bulky or coarse feed. This should be supplied in the form of some legume hay such as alfalfa or clover. Both are high in protein and bone-building material and are to be preferred to prairie or timothy hay.

Pasture.—Grass is a palatable feed that may be used advantageously in limited amounts in producing choice light weight beef. If used properly it will serve as an appetizer and conditioner, encourage exercise and assist in keeping the calf on feed. But at certain seasons the growth is luxuriant and contains so much water that calves eating large quantities of grass will not consume a sufficient amount of grain. This change from a dry concentrate to green washy roughage causes scouring and reduces the rate of gain and fattening until it is impossible to get the calf finished by show or marketing time.

The calf should be allowed the run of a pasture during the day in the spring and at night during the summer and fall. By keeping the calf on a pasture where the grass is grazed close there will not be an opportunity for him to consume a sufficient amount of grass to cause any disturbances in his feeding schedule. The calf should not be turned on to pasture with the milk cows or other livestock. If the calf is allowed on pasture by himself he will graze for a short time then lie down, otherwise he will keep on the move most of the night. The calf that is fed and allowed to eat his grain before going to pasture and is turned out by himself on short pasture should utilize grass and continue to make satisfactory gains.

Rations

It is not possible to suggest a ration that will give the best results in all cases, as individual calves differ in the way they feed.

Any of the following rations will give satisfactory results for fattening yearlings. Ration No. 1 has been most widely used by club members in finishing their calves. It is made up largely of home grown feeds, has bulk, and contains a variety. Although oats are sometimes expensive, their addition to a ration of corn often makes it easier to keep a calf on feed. Ration No. 2 is more concentrated and contains more fattening feeds. It should be used during the latter part of the feeding period for calves that do not finish readily. Ration No. 3 contains too much bulk for producing rapid gains and usually is not economical for commercial

cattle feeding. This ration may be used to hold a steer for a time during hot weather or to secure a more even finish on a calf that has a tendency to become uneven in his fleshing. If this ration is used during hot weather it may be advisable to change to ration No. 1 or 2 during the last part of the feeding period after the weather becomes cooler.

Rations for Weanlings or Yearlings

Ration No. 1

Corn 8 parts by weight	Linseed or Cottonseed meal
Oats 2 parts by weight	1 part by weight

Alfalfa or clover hay—all the calf will eat during the first part of the feeding period and limited amounts during the last half of the feeding period.

Ration No. 2

Corn 8 parts by weight	Linseed or cottonseed meal
Alfalfa or clover hay (See Ration No. 1)	1 part by weight

Ration No. 3

Corn 6 parts by weight	Bran 1 part
Oats 3 parts by weight	Linseed or cottonseed meal
Alfalfa or clover hay (See Ration No. 1)	½ part by weight

Grain rations for suckling calves should contain less bulk than those for yearlings because of the bulk contained in the milk and tendency for young animals to grow instead of fatten.

Rations for Suckling Calves

Ration No. 4—Calves 1 to 3 months old.

Shelled corn.....	2 parts by weight
Oats.....	1 part by weight
Alfalfa or clover hay (See Ration 1)	

Ration No. 5—Calves over 3 months of age

Corn.....	8 parts by weight
Linseed or cottonseed meal.....	1 part by weight
Alfalfa or clover hay in limited quantities.	

The calf should be fed at least twice each day. Any feed stuffs left from a previous feeding should be removed and the trough cleaned before the next feeding. The self-feeder is not recommended for one calf, although it may be used with satisfactory results in feeding carload lots.

Twice each day is often enough to feed at first but during the last part of the feeding period the calf should be fed three times a day. During the summer the morning feed should be given early, as the calf will eat

better in the cool of the day. The feeds should be thoroughly mixed. Ground feeds may be moistened with water containing some black strap molasses or a pinch of salt. Feeds that are fed moistened should be just damp enough to press into a ball.

Hay should be fed in limited amounts during the last half of the feeding period. Two or three pounds of hay per day should be sufficient. If the calf has a tendency to be paunchy the hay and grass should be limited during the entire feeding period.

Feeding Problems

Feeding problems become more difficult with the heat of summer. Unless a bulky and palatable ration is fed the calf's appetite will not be so sharp. The appetite may be improved by increasing the amount of oats and slightly decreasing the amount of corn. While green corn stalks are valuable as an appetizer they should be fed only in small amounts chopped and mixed with the grain ration. The feeding of new corn is not advisable as it causes the calf to refuse dry grains.

The development of the calf is largely due to the ration it has received. If the calf does not develop as it should it may be advisable to make some changes in the ration, but before any changes are made, consult the Local Leader, the County Extension Agent or a Live Stock Specialist.

Once a calf is on full feed, stick to the same ration. Don't change from one feed to another. Make any change gradually. Feed the same amount at the same hours each day. Make the ration palatable and keep the calf's appetite vigorous. It is better to feed slightly less than the calf will eat than to get it "off feed" by over feeding.

Water.—The calf should have all the clean, fresh water it will drink at all times.

Salt.—Calves should always have a plentiful amount of salt kept before them as they consume large quantities when they are fed heavily.

IV. CARE AND MANAGEMENT

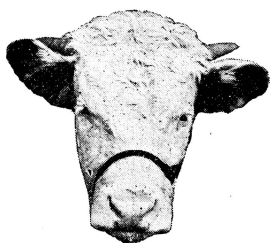
As important as feeding is, there are other things that will help the calf to make large gains, these are care and treatment. Other things being equal, the calf receiving the best care and kept in the most comfortable quarters will make the most economical and satisfactory gains.

The calf should be kept in a roomy, well ventilated stall, that has a dry floor and a low, wide manger. The stall should be well bedded so the calf will lie down as much as possible as the calf makes its greatest gains when it is lying down, comfortable and contented.

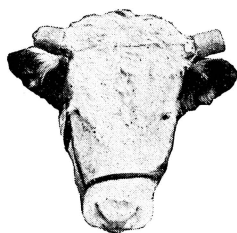
The manger and feed boxes should be kept very clean, for this not only prevents disease, but also helps to prevent loss of appetite. The calf should be allowed to exercise in a lot on clear days during the

winter and early spring, but in the late spring and summer it should be kept in the stall during the day, and allowed to run in a small pasture at night. If flies bother the calf the stall should be darkened and the calf should be protected by a blanket of burlap. Keep the calf out of the hot sun from June to October in order to preserve the gloss of its hair.

The calf should be taught to lead and stand when tied. If it is very wild it should be left tied for several days and disturbed only at feeding time. A halter made of $\frac{1}{2}$ -inch rope is serviceable and very satisfactory for this purpose. The calf should be led some each day as soon as it becomes sufficiently quiet. Its stubbornness will be overcome by gentle and patient handling. Do not let the calf get loose the first time it is led, as this may make it more difficult to train.



Upturned horns



Use of horn weights.

(Figure 5)

Horns of the proper shape will improve the appearance of the head very much while a pair of upturned horns are unsightly and will greatly detract from the appearance. If the horns have a tendency to turn up they can be trained to the correct position by the use of horn weights while the animals are young and the horns are still growing. In extreme cases it may be necessary to rasp the under side of the horn so it will turn down. If too much is removed with the rasp the shell will be made thin and there will be danger of the horn being easily broken. As soon as the tips of the horn are slightly below the level of the base, the weights should be removed.

The hair and skin should be kept clean by a thorough brushing every day. This will improve the condition of the skin and hair and eliminate the need for washing the calf during the spring and summer.

The feet should be kept clean and free from soreness. Very little difficulty will be experienced if the calf is kept in a clean well bedded stall and given plenty of exercise. If the feet become sore and feverish, clean them thoroughly, and wash them in a saturated solution of bluestone or apply tincture of iodine to the affected parts. In making the bluestone solution, stir in all of the powdered bluestone that can be absorbed in one quart of hot water. The amount that can be absorbed will be reached

when there is some of the bluestone left undissolved after stirring. Bluestone can be obtained at any drug store.

Training

The calf can be handled with less effort while it is small so the owner should see that the calf is gentle and well-mannered before it becomes too large to be handled easily.

In putting the halter on the calf place the head stall back of the ears and the lead at the left jaw so the person leading can walk at the left side.

The first point is to get the calf gentle, then teach it to lead and to stand squarely on all four feet with its head up and its back level. This can be done by leading the calf to and from the pasture or watering place, stopping occasionally and standing it in proper position. When the calf is standing, the feet should be set squarely under the body and they should not be extended to the front or rear as that stretches the body and causes the back to appear low and the rear flank shallow. The feet can be placed by touching the calf gently above the hoofs with the foot or a stick. Once the calf is trained it should be accustomed to strange sights and to being handled by strangers. The well trained calf has a great advantage in the show ring or at a sale over the stubborn one which stands improperly, for it shows in the best possible manner the development of the chest, the strength of the back and the fleshing of the hind quarters.

Parasites and Diseases

Even if care has been exercised in feeding, and in keeping the calf, the manger, and the feed boxes clean, some trouble may arise from such parasites as lice, and from digestive disorders, and disease.

Lice and Mites causing mange often infest barns and stables, so that calves sometimes are much troubled by them. These are not serious if they are treated as soon as discovered. To get rid of lice sponge the animal thoroughly with kerosene emulsion. To make the emulsion dissolve $\frac{1}{3}$ cake of laundry soap in $\frac{1}{4}$ gallon of warm water and stir in $\frac{1}{2}$ gallon of kerosene. After the kerosene and soap are thoroughly mixed add 15 gallons of water. Repeat the treatment in two weeks. This treatment should be applied only on a warm bright day when the animal can remain in the sun until dry.

Warbles or Grubs are first noticed by swellings along the back. To squeeze them out may cause a sore place on the back. They should be left entirely alone.

Scours is a digestive disorder caused by over feeding, irregular feeding, dirty feed troughs, impure water or damaged feeds. It has a tendency to check the growth of the calf and can usually be corrected

by changing to feed free from mold, or by withholding a part of the feed. If this does not correct the trouble mix two tablespoonsful of turpentine in a quart of raw linseed oil and give as a drench. Care must be taken not to hold the calf's head too high while drenching. If the head is held too high, the calf may become strangled, which is very serious and often results in death. Feed sparingly for 24 hours then gradually increase the amount so the calf will be on full feed in about a week.

Bloating may result from several causes but is very serious and should be relieved at once. To relieve bloating give the calf one quart of raw linseed oil in which two tablespoonfuls of turpentine have been mixed. A gag made of rope should be placed in the calf's mouth. As a last resort the animal may be relieved by tapping but this should be done only by an experienced person.

Blackleg is an infectious disease that is common among calves. The animals can be protected against the disease by vaccination and each one should be vaccinated as soon as purchased. Information and aggressin for vaccination may be secured from a local veterinarian.

V. GROOMING, FITTING FOR SHOW, JUDGING

Grooming

When the calf has been fattened, the next important matter is to present it in the show ring in such manner that it will make the best appearance. In order to do this it is necessary that the calf be well mannered, properly groomed and carefully shown. A good calf is often placed or ranked below one that is inferior because it does not stand properly and quietly.

The care of the hair and the manner of grooming are important in making the calf appear its best. The hair is an index to quality and every effort should be made to have it appear glossy and full of life instead of harsh and dead. The gloss of the hair can be preserved by keeping the calf out of the hot sun for a few months before the show, especially from June to October, as during these months the coat will sunburn and appear dead and coarse. A few weeks before the show the calf may be blanketed to advantage. The blanket should be made of burlap and it is used chiefly to keep the flies from worrying the calf and to improve the condition of the hair and skin.

The condition of the hair and skin can be further improved by washing the animal every few days and brushing it thoroughly every day. Occasionally a thick lather made from tar soap should be used in washing in order to remove any dirt from the skin and hair. When soap is used care should be taken to rinse the hair thoroughly. Frequent washing keeps the animal free from dirt and serves to stimulate the growth of hair.

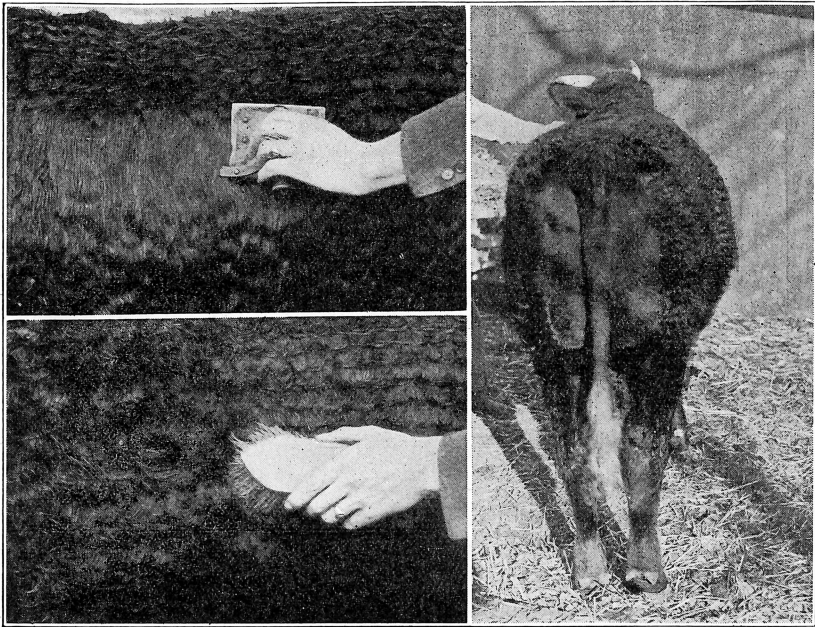


Fig. 6.—Steps in making curl in parallel lines.

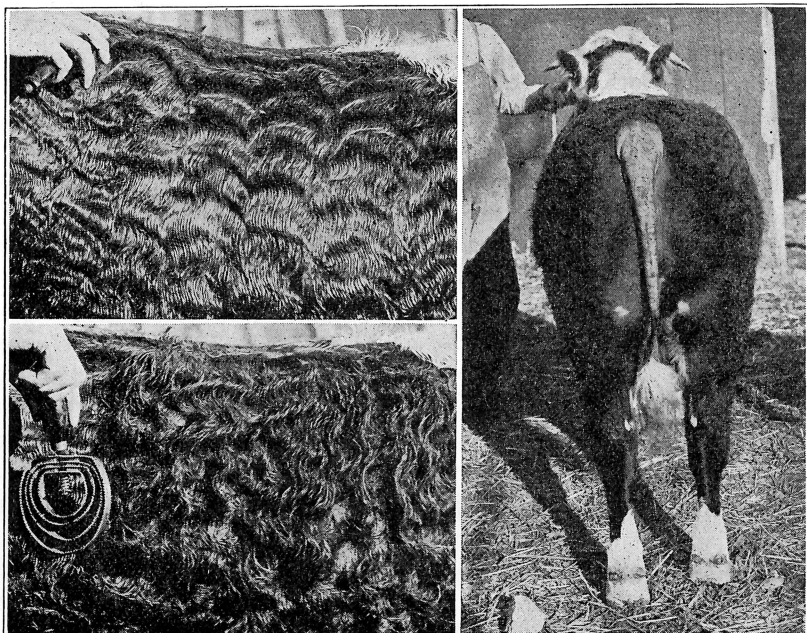


Fig. 7.—Steps in making curl in wavy lines.

The manner of grooming the calf for the show ring will depend upon its breed and individuality. Herefords, Shorthorns and Galloways are usually shown with hair curled, while Aberdeen-Angus are shown either with the hair curled or smooth. The method of preparing for the show ring will depend entirely upon the individual, the object being to prepare the calf so it will best exhibit its desirable qualities.

Curling.—There are two ways of curling the calf's hair. In either case the animal should be wet with water containing a few drops of some good dip solution. This will stiffen the hair and cause it to stand up. The hair should be parted along the back and brushed down smooth. In making the curl in parallel lines, as shown in the illustration, such as is used on Shorthorns and Aberdeen-Angus, take a straight bar comb and make the lines about $1\frac{1}{4}$ inches apart, then brush up until the hair stands on end.

If the curl with wavy lines is desired, as shown in Figure 8, use a round comb to make the marks, then brush up. Herefords and Aberdeen-Angus are usually curled with the wavy lines. The hair covering all depressions on the animal's body should be combed so it will stand on end. Give the hair a thorough rubbing with an oiled cloth as soon as it has dried. This will produce a luster and cause the hair to appear silky and stand on end to fill depressions.

If the calf is smooth and its hair short, it can be shown with the hair smooth. In that case the hair should be brushed down and rubbed with a woolen cloth dampened with equal parts of olive oil and denatured alcohol. This will give gloss to the hair.

Clipping.—The heads of Aberdeen-Angus cattle should be clipped a few weeks before the show. The hair should be clipped back to a line which is about one inch back of the jaw bone. The eye lashes, the hair inside the ears and the long hair around the muzzle should not be clipped. The heads of the horned breeds should not be clipped but the hair should be brushed and curled.

The development of the twist and quarters can be shown to the best advantage by clipping the tail. Begin clipping just above the switch and clip up to the tail



Fig. 8.—Aberdeen-Angus head clipped back to white line.

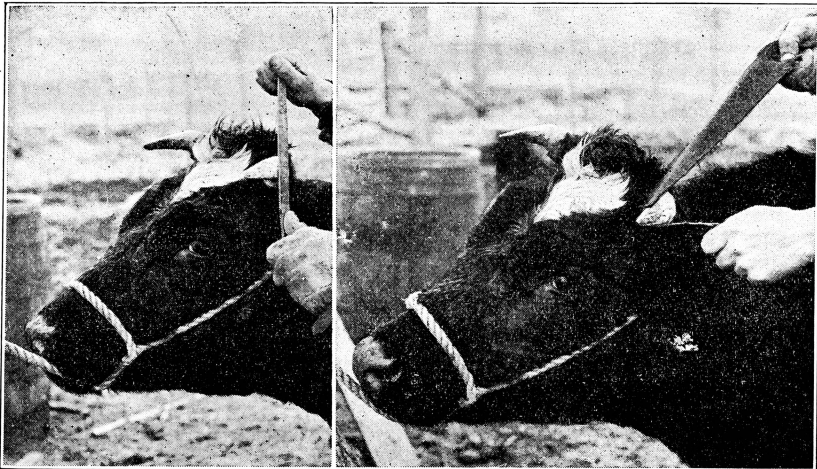
head, gradually tapering off so it will not be necessary to clip any hair off the rump. The clipping should be done several days before the show. The switch of the tail should be brushed out by taking hold of the tip and brushing forward. If the hair in the switch is coarse and straight it should be washed the night before the show and braided while damp into three or four braids. It should be unbraided and brushed just before leading into the ring.

Horns.—A well polished pair of neatly turned horns improves the appearance of the head and attracts attention. The rough surface should be removed with a rasp or file and the horns finished with emery paper and polished with a woolen cloth moistened with a few drops of oil. The hoofs can also be polished if desired.

Care at Show Time

Every precaution should be taken to prevent the calf from going "off feed" when he is moved to the show. It is a good practice to cut the feed to one-half the regular amount and make the first feed at the show a light one. The calf should be allowed to lie down as much as possible before it is shown. Animals show to better advantage when they are not gaunt, therefore it might be advantageous to give the calf feed and water just before showing.

In the show ring the calf should appear at its best. The showman should watch the judge so as not to be standing between him and the



Removing rough surface with rasp.

Polishing with oiled cloth.

(Fig. 9)

calf. Care should be taken to have the calf stand in the proper position with the head well up and the back level.

Judging

Livestock judging is one important phase of calf club and beef cattle work that should be given consideration along with feeding and management. By learning to judge cattle during the first year of work the member will find this accomplishment worth a great deal during succeeding years of club work and in handling cattle. The diagrams showing the location of parts on the live animal and the corresponding carcass cuts and the score card on pages 7, 9 and 10 afford an opportunity to study the various parts of the animal which is the first step in judging beef cattle. An understanding of the correct beef form can be had by studying pages 7-10. Continued study of the score card and the scoring of several animals will establish the habit of systematically analyzing each animal or group of animals. After a sufficient number of animals have been scored for the member to become familiar with the location of parts and their relative importance comparative judging of animals can be undertaken.

Comparative judging can best be studied by starting with two animals and comparing the important parts according to their merits. General appearance is of great importance in the judging of all animals and observations should include side, front and rear views. These views will provide an opportunity to determine the quality, depth of body, length of neck and leg, width of body, fullness of quarters and length and fullness of rib. When the comparisons of general appearances have been completed members should handle the cattle to determine the thickness, evenness and quality of fleshing and mellowness of touch. The foregoing comparisons will give sufficient reasons for placing one animal above the other. In classes of more than two animals the same procedure should be followed.

Reasons for rating one animal above another may be given orally or written but they should state clearly why one animal is superior or inferior to another. In giving reasons it is essential that club members keep in mind the important points to be considered, such as; form or type, quality, finish and dressing percentage in fat steer classes or, form or type, breed characteristics, quality, and finish in breeding cattle classes, and talk or write about them using livestock terms. Continued practice will increase the ability to recognize difference and properly describe comparisons in approved livestock terms.

VI. THE BEEF CLUB TOUR

It is recommended that the tour be conducted in July or August, since the project work will then be far enough along to show results

and farm work is not so rushing. Usually one all-day tour is made for all the beef clubs in the county. All beef club members, parents, livestock men and others interested should be invited to take part in the tour.

The program usually consists of a visit to one or more beef cattle farms and to the homes of as many of the members as possible. Each club member visited should show his project livestock and be prepared to tell the following facts:

1. Age, weight, cost on date purchased.
2. Rations fed and amounts.
3. Weight on day of tour if possible.
4. Amount and cost of feed to date. Total expenses to date.

A regular club meeting should be held at the noon hour following a picnic lunch. A demonstration on Grooming may also be given. Special training in stock judging should be given if time will permit.

VII. ROUND-UP

The great day of your achievement has come when the final Round-up or Show is held. Your work throughout the year will determine to a great extent the way the judge will rate your calf in the show. By far the most interesting part of the program for each member is, "Where will my calf be placed by the judge?" It will be interesting to see how nearly your idea of the calf's placing agrees with that of the judge. If there are questions you would like to ask after the ribbons are tied, don't hesitate to do so as the answers the judge gives you may help you to do better next time.

Demonstrations

In so far as possible, all club members should be instructed in the regular club meetings by the demonstration method. As a usual thing, one or more members of each club can begin giving individual demonstrations at the club meetings.

After two or three months of practical experience in handling calves, mature club members should be able to demonstrate approved practices of beef production. The scope of the team demonstration usually should be limited to some phase of the club work of the current year. A team of two or three of the best demonstrators, according to the number needed, should be selected from the membership of one club, either by mutual consent or by a tryout on individual demonstrations. All teams should have an opportunity to demonstrate before the local club group and the people of the home community. The championship team should represent the local club at the county round-up, if one is held.

Suggested Subjects for Individual Demonstrations

- Weighing out and mixing feed.
- Making a halter from rope.
- Treating for lice or bloating.

Suggested Subjects for Team Demonstrations

- Demonstration on grooming for show.
- Demonstration in judging.
- Demonstration of various methods in production of baby beef.

Suggested Outline of a Demonstration

<p><i>A speaks and demonstrates</i></p> <p>Leads in giving the 4-H club pledge; tells what club and community team represents; introduces team mate and self; gives brief history of club.</p> <p>States title of demonstration and tells why this subject is of value.</p> <p>Begins work, explaining and giving reasons.</p> <p>Continues to a logical break in subject matter and states that ----- will continue with demonstration.</p>	<p><i>B assists</i></p> <p>Joins in giving pledge. Stands at attention while being introduced.</p> <p>Assists team mate.</p>
<p><i>A assists</i></p>	<p><i>B speaks and demonstrates</i></p> <p>Continues with demonstration until conclusion or until convenient stopping place is reached.</p> <p>States that ----- will continue with demonstration.</p>
<p><i>A speaks</i></p> <p>Summarizes demonstration.</p> <p>Asks for questions.</p> <p>Concludes demonstration.</p>	<p><i>B assists</i></p> <p>Clears demonstration table.</p> <p>Stands at attention for questions.</p>

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