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4H Beef Club Manual

Michigan State University Cooperative Extension Service

4-H Club Bulletin

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4H CLUB BULLETIN 51

4H BEEF CLUB Manual



Cooperative Extension Service

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Appreciation is also expressed to the Firestone Tire and Rubber Company for furnishing many of the photographs on care and training of the horns and the washing and fitting of beef cattle.

Appreciation is also expressed to the authors of the 4-H Dairy Manual, No. 17, for furnishing the section on the making of rope halters.

The cover shows De Vir Taylor, Van Buren County 4-H beef project member. The Hereford heifer he is showing is one from the University Herd. It was fitted at a beef production class at Michigan State University for a showmanship contest. De Vir owns a herd of 30 registered Angus beef cattle that he built from his 4-H beef project.

CONTENTS

	PAGE
Project Outline	4
Sample Work Outline	6
Beef Feeding Project	8
Breeding Project	8
Selection	9
Feeder Calf	9
Purebred Heifer	11
Feeding	12
Feeding the Steer	12
Purebred Heifer	13
Beef Cow	14
Feeds	14
Minerals	16
Preparation of Feeds	17
Suggested Rations	18
Care and Management	18
Making a Rope Halter	18
Equipment	22
Buildings	23
Horn Removal	26
Training	27
Grooming	27
Showing	33
Awards	36
Judging Beef Cattle	37
Marketing	37
Health	38
Demonstrations	42
References	43

4-H Beef Club Manual

By E. D. FARWELL¹, W. L. FINLEY² and G. A. BRANAMAN³

4-H beef cattle projects are organized to provide experience for boys and girls in the selecting and feeding of beef calves, in the care and management of beef cattle, and in the exhibiting and marketing of both purebred and market beef animals. Many of our successful feeders and breeders have been 4-H club members whose interest developed from their junior beef cattle projects.

PROJECT OUTLINE

1. Any boy or girl 10 years old and not over 21, as of July 1 of the current year, may become a 4-H beef club member.

2. Each member must be enrolled in a local 4-H club.

3. In the Beef Feeding Project each member must own one or more steers which he personally must feed and care for. (Heifers are not eligible for beef feeding projects.)

4. In the Beef Cattle Breeding Project members may begin with a heifer calf, yearling heifer, or cow—either purebred or grade. Only registered females are eligible for state shows. They must be registered in the member's own name.

5. All animals must be fitted and shown by the owner.

6. See the current "premium book" for rules and regulations for state shows, i.e., State 4-H Club Show at Michigan State University and Detroit Junior Livestock Show.

7. Steers eligible for the State 4-H Club Show or Detroit Junior Livestock Show must have been on feed and owned by the club member since March 1 of current year. Feed records should be kept from time of purchase until the animal is sold. On breeding animals, at least 4 months' feed and pasture records must be kept the first year. Annual records are recommended for succeeding years. (See Fig. 2 for sample of completed livestock record book.)

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Fig. 1. A good start. Pick a calf with good breeding, and take care of him. Be proud of your project and look forward to many enjoyable hours with your calf.

8. Steers are to be weighed at the beginning and again at the close of the feeding period. If possible, monthly weights are encouraged.

9. Animals for 4-H club work should be free of tuberculosis and brucellosis (Bang's disease), as state regulations for shows and fairs must be complied with by all exhibitors.

10. Members who are absent from home for one month or longer, except for sickness, during the required record period, are ineligible.

Exception is made for members who wish to enroll at Michigan State University as first-term freshmen.

SAMPLE OF WORK OUTLINE

4-H Clubs working with their leaders should try to determine what they would like to learn and have their club accomplish. A monthly plan of activity should be developed to show how the work can be done and when it may be arranged to best advantage. In developing a plan of work, remember the instructional period is to acquaint the members with a few fundamentals in a very limited time.

	<i>Project Instruction</i>	<i>Business</i>	<i>Social</i>
OCTOBER	Selecting and feeding steers	Election of officers and planning next year's program	Halloween party
NOVEMBER	Breeds of beef cattle	Plan a holiday party and discuss ways of raising money	Games and refreshments
DECEMBER	Beef diseases and parasites	Check on enrollments and keeping records	Group singing and Christmas carols
JANUARY	Beef cow and calf care and management	Plan demonstrations	Entertainment of parents
FEBRUARY	Winter tour; rate of gain of steers; discuss beef feeders' rating card	Discuss a community project for the club to sponsor	Music by members
MARCH	Selection, feeding and pasture for breeding project	Make arrangements for a judging tour	Educational games
APRIL	The parts of a beef animal and how to judge	Discuss the organization of a baseball team	Refreshments
MAY	How to make a rope halter; plan a summer tour	Discuss fairs and registration of animals	Outdoor games
JUNE	Fitting and showing demonstration	Arrange a fitting and showing meeting	Magic and tricks
JULY	Practice judging	Plan trucking to show	Softball game and outdoor supper
AUGUST	Preparation for fair	Plans for 4-H achievement day	Watermelon supper
SEPTEMBER	Reports and discuss selection of steers	Distribute record books for next year	Indoor games and refreshments

This is made out for a year-round program. If the club does not operate for the full year, make necessary adjustments. First-year livestock club members must keep at least a 4-months' record. However, second year and advanced members should keep year-round records.

BEEF FEEDING PROJECT

As county fair livestock shows are held during late summer and fall, most calves are purchased with the plan to feed for those shows. Choice to prime finished steers will require a feeding period of 10 to 12 months of heavy feeding. Both native and western calves are most available during October, November and December. Selection of your beef calf for the feeding project probably would be best during this period. Your marketing time should be planned and the steer started on feed early.

The time of the show at which you hope to exhibit will determine the age and weight of the calf you purchase. The calf should weigh from 950 to 1,100 pounds at market time. A gain of 2 pounds per day, from the time the calf is purchased until market time, should be your goal. Feeder calves weighing 375 to 500 pounds should make enough gain with 300 days' feeding to arrive at the market at desirable weights. But feed should not be withheld from the calf in order to limit the weight, especially during the last 7 months.

In addition to the practical experience you gain in feeding, fitting and showing, you also should make a profit from your project. Consequently, the price paid for the feeder steer is very important. A high speculative price for the feeder calf may practically eliminate the opportunity for profit.

Do not invest in a calf with "winning the championship" the only purpose. The aim of the project is to produce a well-finished calf; that means that the calf will need a lot of feed—roughly 2 pounds of grain per day for each 100 pounds of live weight. Rarely are calves too fat, and many lack finish.

BREEDING PROJECT

Members may begin with either a heifer calf or older female, which should be chosen from good herds. If purebreds, they should be registered in your own name.

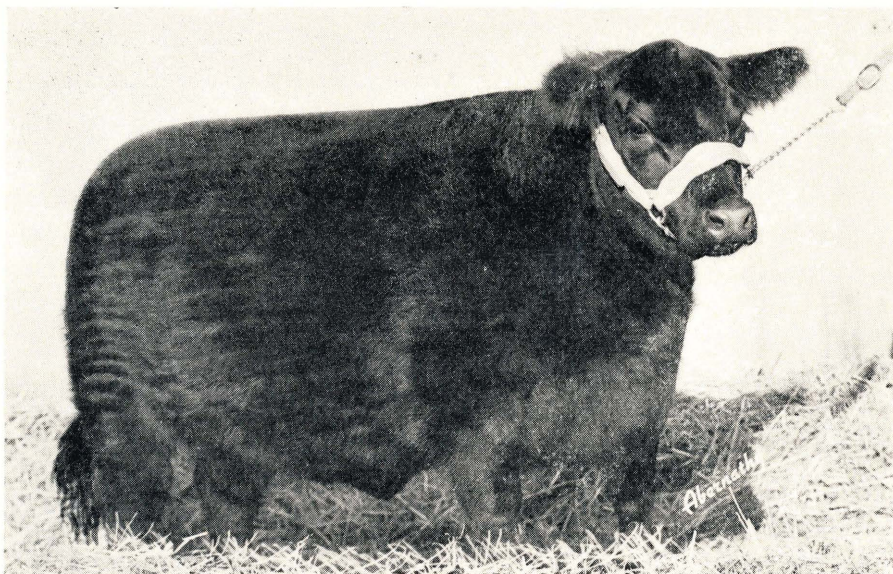


Fig. 3. Angus heifer. This heifer is outstanding in her low setness and breed character. She has been expertly groomed and fitted.

Breeding heifers need not be extremely fat, although they must be well-grown. To show well, they will need to carry a rather high condition at show time. Grass, hay and silage may be fed in more liberal quantities to heifers than to steers.

SELECTION

New members should secure advice from their Extension agents, or livestock feeders and breeders, in selecting steer calves or purebred heifers. It takes years of experience to be able to select with accuracy. If a beginner, you might well study the beef cattle section of the 4-H Livestock Judging Manual.

SELECTION OF FEEDER CALVES

Well-bred beef calves that can be fed to choice and prime steers may be shaggy and thin at the time of selection; while crossbred and dairy calves may be smooth and glossy—but when fed out will be gray, narrow, and lack thickness of fleshing.

Feeder calves should be *thick* and low set with short, straight legs. They should be wide and deep in their quarters, and uniform in width and depth of body. Muscling should be emphasized. Look for thickness through the neck and in the thighs. The well-bred calf is usually wide across the muzzle with a short, broad face.

Fleshing qualities are difficult to recognize but are indicated by mellowness and by a loose, thin, pliable hide.

A good disposition is desired in a 4-H club calf if it is to gain fast, and the club member is to be able to train it to show. Avoid high-headed, nervous calves.

In addition to some of the good points to look for in selecting a feeder calf, there are several characteristics to avoid. Some calves are stunted, and others may have been incompletely castrated. These latter steers may become staggy and develop masculinity. Heavy horns, thick crests, "bully" heads and coarseness are indications of stagginess. At the time of purchase, each calf should be examined for testicles to be sure he has been properly castrated. Over-refined calves, however, are usually delicate, slow-gaining feeders.



Fig. 4. Feeder calf. Notice the short legs and depth of body. This calf is thick and rugged.



Fig. 5. Herd sire. Choosing a breed prominent in the locality may make an outstanding herd sire available to the club member. Notice the size of quarter of this bull.

SELECTION OF PUREBRED HEIFERS

Many of the same points on feeder calves apply to the selecting of purebred calves or heifers for breeding projects. Of course, it is important at the beginning for the 4-H member to decide which breed he prefers. With the feeder calf, a different breed may be selected each year; but this cannot be done in a breeding enterprise. A successful breeder must choose a breed and stay with it. It may be advantageous to select a breed that is popular in the area. This could enable the member to gain the use of a top herd sire, and also to gain knowledge from discussing problems with experienced neighbors.

Type, or conformation, is very important in foundation heifers. You should study this part in the judging manual carefully. Wide, deep, low-set calves with straight lines and correct legs should be chosen.

Each breed has its own color and other characteristics which should be studied carefully in selecting a foundation heifer. She should pos-

ness femininity and a good disposition. Under "disposition," the same points apply to the breeding heifer as to the feeder calf.

Heifers should be selected from a well-bred herd, and you may wish to get advice regarding the value of the heifer's pedigree. Either a heifer calf or yearling heifer may be purchased, but be certain that the heifer is free from Bang's disease and tuberculosis.

FEEDING

Feeding is an art which demands attention and a love of livestock. Each experienced feeder has his own special combinations which he prefers. It is necessary for the 4-H club member to learn the basic fundamentals of nutrition and then to study the appetite and eating habits of each animal. Remember the old saying: "It is the eye of the master that fattens the ox." Remember, too, that beef cattle require special rations: mixtures prepared for dairy cattle and other farm livestock are usually not suited to beef feeding. If a balanced ration is fed, as much as 250 pounds of grain may be saved for each 100 pounds of gain.

Feed at a definite time each day by keeping regular feeding hours. Weigh or measure each feed carefully so the full amount will be consumed regularly. If it is necessary to change from one feed to another, use caution, and make the change very gradually.

FEEDING THE STEER

As soon as the calf is acquired, he should be started on feed. However, it will take about 2 weeks to get him on full feed. Start out by placing about 2 pounds of coarsely ground or whole oats and corn in his feed box the first day. After 2 or 3 days this may be increased another half pound, and again every 2 or 3 days until the calf is on full feed.

When on full feed, he should eat about 2 pounds of grain per day for each 100 pounds of live weight. *During the initial part of the feeding period do not feed more than the steer will clean up within an hour after feeding.* Any extra food should be removed from the grain box and fed to other livestock.

Also feed from 3 to 7 pounds of good legume hay per day, or its equivalent in a mixture of hay and silage. If the steer has a strong appetite for roughage, the hay should be cut down to force a larger

grain intake. However, excessive grain feeding may result in expensive gains, and hay does contain many essential nutrients not present in grain.

Sometimes a calf will go off feed. This may be due to any one or more of several conditions such as lack of water or salt, hot weather, irregular feeding, too much feed, or some digestive disturbance. When a calf goes off feed, reduce the amount of grain immediately by at least one-third the regular allowance or omit one feeding. As the calf's appetite returns, increase the feed each day until full feeding is reached again.

Do not turn feeder calves out to pasture. Choice feeder calves should be fed to finish as choice to prime market steers. They should have 200 to 250 days or more of full feeding, and up to a year of liberal feeding. Turning the steer in a small dry lot during summer nights and winter days is a good system for exercising and reduces foot trimming.

Don't forget water. A clean supply of fresh water should be before beef cattle at all times. This is the cheapest feed available. During very cold weather, water from which the chill has been removed will encourage an additional intake.

FEEDING THE PUREBRED HEIFER

Although it is not necessary to have the heifer on full grain feed, you should remember that *she needs to keep gaining and growing well if she is to mature fully.* If the heifer is to be in satisfactory show condition at fair time, it is essential that you feed her a balanced ration of concentrates and roughages. Heifers to be shown should be fed a grain ration the same as suggested for steers (see page 18).

Calves raised by the club member should be allowed to nurse their mothers all summer if born in the spring, and be weaned in the late fall. And, during the late summer and fall, a creep should be provided so that the calf may be given access to concentrates.

A mixture of eight parts by weight of either whole or cracked corn and oats, one part wheat bran, and one part oil meal makes a very good creep feed. In some cases you may want your calf to gain more rapidly than she would with the normal milk supply of her dam, so additional milk may be provided.

The heifer you intend to show must be handled differently from the breeding herd. She must carry additional bloom and condition to do well in the show ring. It is most important that these heifers are not turned to rank pasture which will discourage liberal grain consumption.

FEEDING THE BEEF COW

The cost of keeping beef cows should be low. For greatest income the beef cow should freshen in early spring so that she is nursing her calf during spring and summer months when good pasture is available, and stand dry during winter months when feed costs are higher. A cow nursing a fall and winter calf will require better rations and about twice as much feed as if she were dry. After a heifer has matured and weaned her first or second calf, grain feeding is costly and generally unnecessary, unless she is to be shown.

The winter ration may be entirely roughage. Hay, hay crop silage, some good quality oat or wheat straw, and other forage crops are very satisfactory winter feeds. Some corn silage is desirable but is expensive when fed in large quantities.

These cows may need a light feed of grain for 3 to 4 weeks before or after calving. If corn silage is available, no other grain should be needed; however, 1 pound of protein supplement per head per day will greatly improve a corn silage ration. Concentrate feeding is unnecessary when the beef cow is turned to pasture. The beef cow and her calf will respond well to alfalfa, brome grass, or other legume pasture.

FEEDS

(Besides the feeds mentioned here, there are numerous commercial protein concentrates which may be purchased at local elevators if the price is reasonable. Always keep the feed box clean and at a convenient height.)

Milk—Skim milk is an excellent protein supplement, when available at a cost per gallon not in excess of the cost of 1½ pounds of oil meal. Where available, about 3 quarts may be used to replace each pound of protein supplement. It is seldom economical to provide nurse cows for calves, except within a good purebred herd where bulls and heifers are developed for show and sale, or unless a young steer calf is outstanding enough to justify extra care.

Farm-Grown Grains—It is good management to use the grains grown on the home farm. *However, one of the most frequent mistakes made by new members is in overfeeding of oats.* Oats produce growth, rather than finish, and should not make up more than 20 percent in weight of the grain ration. A good mixture of grains is usually better than only one in the ration.

1. CORN will usually make up most of the grain ration. Corn is higher in energy value and total digestible nutrients than other farm grains. Corn-and-cob meal adds bulk to the ration since there is about 25 percent as much cob as corn. Shelled corn should gradually replace the ground ear corn, unless the steer is fattening quite rapidly and satisfactorily.
2. BARLEY is practically equal to shelled corn in feeding value and may be used instead of corn when the price per pound is similar. If there is a supply of barley on the farm it would be well to add a liberal amount. Barley is a good feed during the latter part of the feeding period because it helps produce a smooth, even, fleshing.
3. WHEAT is equal to corn in feeding value but should not be fed in greater proportions than 25 percent of the ration, because it is not eaten readily.
4. OATS are worth about 80 percent as much as shelled corn for steers. Not more than 20 percent of the grain ration should be oats. It might be well to cut this down during the final stage of the feeding period.

Protein Supplements—Soybean oil meal, linseed oil meal and cotton seed oil meal are the three standard protein supplements to balance the ration. About 1½ pounds per day when the steer is on full feed with alfalfa hay will meet minimum requirements. One and one-half to 2 pounds will be needed when silage is fed. You may increase these amounts by 50 percent to produce top finish and bloom. This increase is highly recommended during the last 90 days of the feeding period. Another method of protein measurement is 1 pound of protein to each 6 to 8 pounds of grain.

Roughage—*Good leafy alfalfa hay* is one of the best roughages. Because of its relatively high protein and mineral content, less sup-

plement is required if the steer is taking 5 pounds per day. Other legume hays such as red clover, alsike, soybean and sweet clover are also good roughages. For wintering dry beef cows, cheaper roughages may be utilized. Some grass mixture tends to reduce danger from bloat.

Corn silage—Good corn silage is a combination of grain and roughage, and can be fed in quantities up to 8 to 12 pounds per day. *With silage, less grain and hay will be consumed; but it will be necessary to increase the amount of protein supplement.* About 3 pounds of silage will replace 1 pound of hay in the ration. The use of silage tends to prevent bloating. If no silage is available, *wheat bran* is a highly desirable addition to the ration.

Appetizers—Some steers need an appetizer to get them to eat enough grain for rapid gains and desired finish. Some of the more effective appetizers are:

1. **BARLEY.** Two pounds of boiled or steamed barley fed at noon, or mixed with one feeding each day, will whet the steer's appetite. It must be cooked daily because it will sour readily. You can prepare barley by boiling the grain for 30 to 40 minutes and then allowing it to steam for 2 to 3 hours.
2. **MOLASSES** sprinkled on the feed usually makes it more palatable. Use a half cupful or less per feeding, diluted with an equal amount of warm water. Use merely enough to dampen the feed slightly. A high protein (24 percent or more) "Molasses Mixed Feed" may be more convenient.
3. **Corn SILAGE** and **WHEAT BRAN** also have some value as appetizers.
4. A little **GRASS** is excellent, preferably bluegrass; over the summer period steers eat and gain better with a little pasture or grass clippings. However, a heavy grain feed is necessary to finish a steer. Unlimited pasture will reduce grain consumption and slow down the fattening process.

MINERALS

Salt should be available to beef cattle at all times. Provide a box somewhere in the stall *and keep salt in it.* Salt is cheap, but a lack

of it may be expensive. "Trace Mineral Salt" should be used and will usually provide sufficient amounts of cobalt and iodine.

Steamed Bonemeal is often used as a source of phosphorus and calcium. It can be provided by mixing 1 part with 2 parts of salt, or it may be fed free choice, in one end of the salt box.

Ground Limestone may be used in a mineral mixture if legume hay is not fed. Two parts of salt, 1 part of steamed bonemeal, and 1 part of ground limestone is a good mixture.

Cobalt—A lack of thriftiness may indicate a cobalt deficiency, provided that adequate protein and trace mineral have been supplied. Constant licking of the manger or other objects, or a poor appetite is an indication of cobalt deficiency. One teaspoonful per day on the animal's feed, of a solution containing $\frac{1}{4}$ ounce of cobalt sulfate to 1 quart of water, may improve this condition.

PREPARATION OF FEEDS

Feed should be ground coarsely. If the feed is too fine, digestive troubles may develop and the feed is less palatable. Some calves relish shelled corn, or pelleted supplements, and even refuse to eat



Fig. 6. Cracked corn. Cracked or loosely ground corn, as at the left, is preferred. That at the right is ground too fine.

ground feeds. Grind a 2 weeks' supply or less at one time as freshness increases palatability of the feed. You can feed corn whole if hogs are allowed to follow the steers.

SUGGESTED RATIONS

These are average daily rations for one calf. The proportions of the different grains may be varied according to available supplies, as previously discussed. If little or no legume hay is fed, you should increase the protein content of the grain mixture.

Ration A	500-pound Calf	700-pound Calf	900-pound Calf
Shelled corn or barley	6	12	16
Oats	3	2	2
Protein supplement	1½	2	2½
Legume hay	5	5	4
Ration B	500-pound Calf	700-pound Calf	900-pound Calf
Shelled corn or barley	6	12	17
Oats	2	0	0
Protein supplement	1½	2½	3
Legume hay	3	2	2
Corn silage	8	12	8

(Add 25% to shelled corn weight if corn and cob meal is fed.)

CARE AND MANAGEMENT

Many things work together for success with beef cattle. Proper selection and feeding have already been discussed, and are the most important. However, many top calves have been fed liberally and did not develop, simply because of poor care and management. Clean equipment, regular feeding, adequate clean water, and exercise in the sun light are very helpful.

You should study the financial part of your enterprise, as a blue ribbon is not an achievement unless it is accompanied by a profit. The risk of financing a calf may be too great for some club members to assume unless insurance is obtained from a reliable company. Your county Extension agent may be able to establish a cooperative agreement plan among club members.

MAKING A ROPE HALTER

A rope halter is simple to make and is inexpensive. The proper size rope, correctly fitted, gives a neat appearance to the animal's head. Some showmen use leather halters, but a good rope halter will serve just as well and is much cheaper.

Rope Needed—Measure 12 to 14 feet of rope. Use rope $\frac{1}{2}$ inch in diameter. Be careful not to let the ends unravel until you are ready for your splices.

How to Measure for Splices—On one end of the rope mark the position for the splices with pieces of string tied around the rope. In Fig. 7, A to B is 6 inches, B to C is 4 inches and C to D is 15 inches. A to B is unraveled to braid the eye splice (after the loop splice is made), B to C forms the loop of the eye splice, and C to D gives the length of the nose piece.

Fig. 7 Measuring rope for distances of splices.

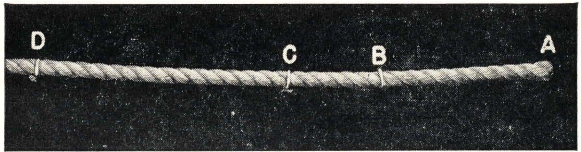


Fig. 8. Passing short end of rope through the long end to form loop splice.

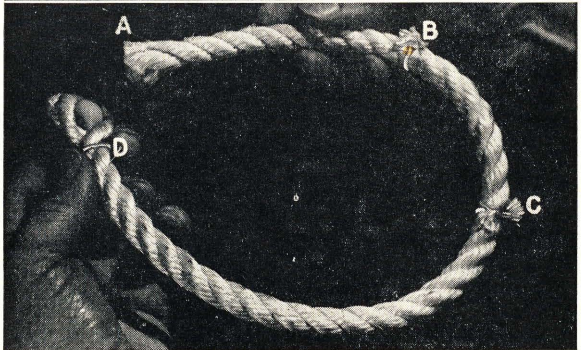


Fig. 9. Passing the long end through the short end.

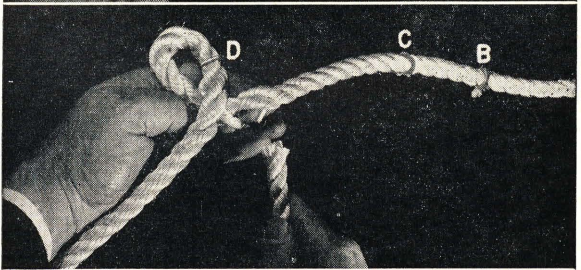
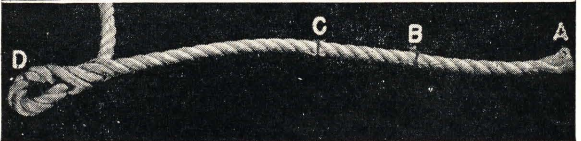


Fig. 10. The completed loop splice.



Splices Needed—In making rope halters, three splices are necessary—a loop splice, Fig. 10 and No. 1, Fig. 11; the eye splice, No. 2, Fig. 11; and the end or crown splice, Fig. 13G.

Loop Splices—To make the loop splice, hold the rope in front of your body with the point D in your left hand and A in your right hand. In this position, raise two strands just beyond string D and pass the end A through at right angles, as shown in Fig. 8. Pull up so as to leave a loop just large enough for the rope to move through *snugly*. Next, raise two strands on the short end of the rope (the end on which the measurements were made) and pass the long end through as close to the other rope as possible. (See Fig. 9.) Pull up tight. The completed loop splice is shown in Fig. 10.

Eye Splice—To make the *eye splice*, untwist the rope from A to B as marked off by strings in Fig. 7. Hold the rope in front of the body with the loop splice to the left. Then bend the rope so that points B and C, as marked off in Fig. 7, are brought together at 2, Fig. 11.

Fig. 11. The first step in making the eye splice.

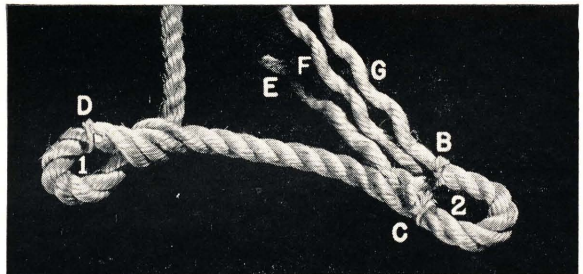
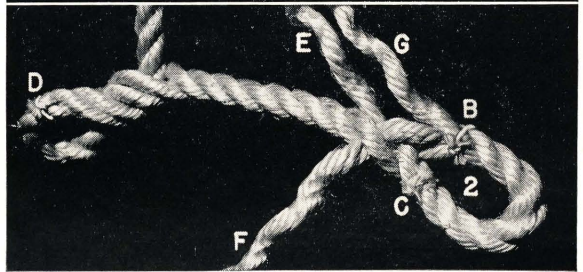


Fig. 12. The second step in making the eye splice.



Raise one strand of the main rope as near string C as possible and pass strand E under it. Pull up tight so E points to the left along the main rope. With the eye splice to the right and the loop splice to the left, turn the rope away from the body. Pass strand F *over* the strand *under* which the strand E was passed and under the adjacent strand, (Fig. 12). Again turn the rope away from the body and follow the same procedure with strand G. You may start braiding on the second round with any one of the three strands. Follow the same plan as outlined above to complete the second round of braids. Again start with any strand to complete the third round. Rope braid all strands into the main rope three times.

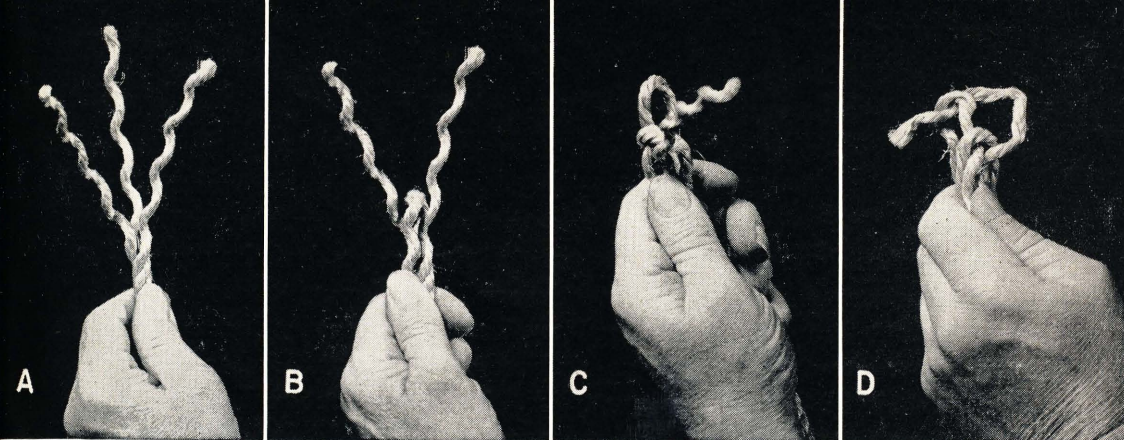


Fig. 13-A. Rope in position for crown splice.

Fig. 13-B. Middle strand pulled forward.

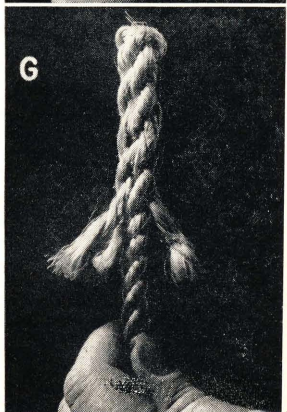
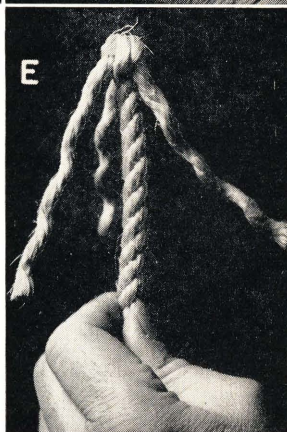
Fig. 13-C. Position of left strand.

Fig. 13-D. Right strand passed over left strand and through loop formed by middle strand.

Fig. 13-E. The completed crown knot.

Fig. 13-F. The first step in making the splice after completing the crown knot.

Fig. 13-G. The completed end or crown splice.



End or Crown Splice—Make an end or crown splice in the other end of the rope. Untwist 5 or 6 inches of rope. Hold the rope in the left hand (if you are right-handed). In this position one strand is to the left, one to the right, and one at the back. (See Fig. 13-A.) Next pull the middle strand forward so it forms a small loop and hold the end with your thumb (see Fig. 13-B.) Pass the strand on the left in front of the loop made by the middle strand, then to the rear between the loop of the middle strand and the right strand, and hold the end with the fingers of your left hand (see Fig. 13-C.) Next pass the right strand over the left strand that you just passed to the rear. Pass the end through the loop that you made with the center strand. (See Fig. 13-D.) Pull all strands down tightly. This forms the *Crown Knot*. (See Fig. 13-E.) Hold the main rope in your left hand with the crown knot to the right. Make the braid in the same way as the eye splice was made. Fig. 13-F shows the first step in making the splice after the crown knot is completed. The completed end splice is shown in Fig. 13-G.

When the halter is complete be sure to put it on the animal correctly. Hold the loop splice and the eye splice together with the loop splice on the left. In this position the long end of the rope will point upward. Pass the end of the rope first through the eye splice and then through the loop splice. This rope goes under the chin. The rope from the loop splice is placed over the animal's head before being passed through the eye splice. The short section between the loop and eye splices is the nose piece. See Fig. 14 for correct way to put a halter on an animal.

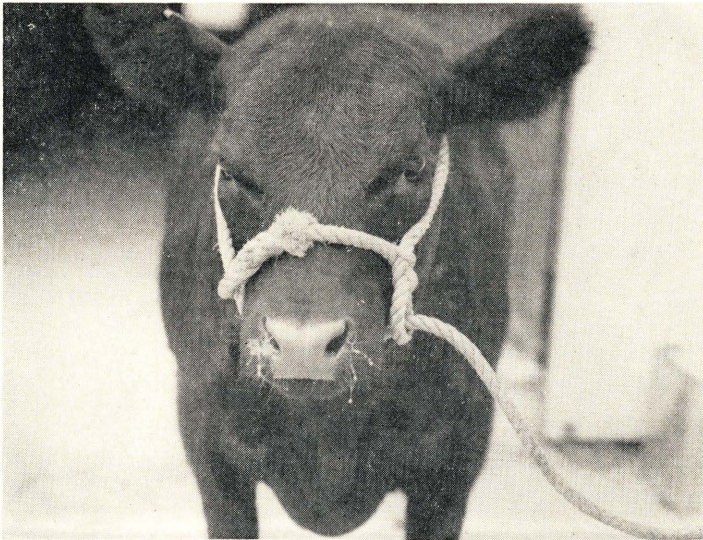


Fig. 14. The correct way to put a halter on your calf.

EQUIPMENT

Beef cattle equipment does not need to be elaborate or expensive. Many of the necessary pieces can be made at home, or are already used for other livestock. The accompanying illustrations (Figs. 15-17) show most of the small items that are needed.

To groom the steer or heifer properly, several small tools are desirable. For washing, get a bucket, some tar soap, and a scrub brush. Do not use the same bucket that is used for watering. After washing, use a scotch comb, marking comb, and a rice root brush. To take care of the horns and hoofs, use sandpaper, a file rasp or horn scraper, horn polish, and a wool cloth. Hoof nippers are necessary to trim long hoofs. You can learn to use some of these items from the section on grooming.



Fig. 15. Equipment for training and watering the beef calf: Rope halter, show stick, water bucket, and show halter.

At the start a rope halter will be essential, because the calf should be trained to lead early. Remember also that when a calf is sold he must have a rope halter, so the buyer can handle him. Don't leave a steer tied with a string since this does not encourage good buyers.

BUILDINGS

It is best to have a separate box stall for the steer or heifer. Small pens or tie stalls do not provide enough room for the animal to move freely and get enough exercise. Beef cattle need to be able to lie down in comfort in clean, dry bedding.

During the summer when the flies are bad, the stall may be darkened with curtains. These curtains may be made from burlap sacks where windows are opened or removed. Good ventilation is essential to the health of livestock.

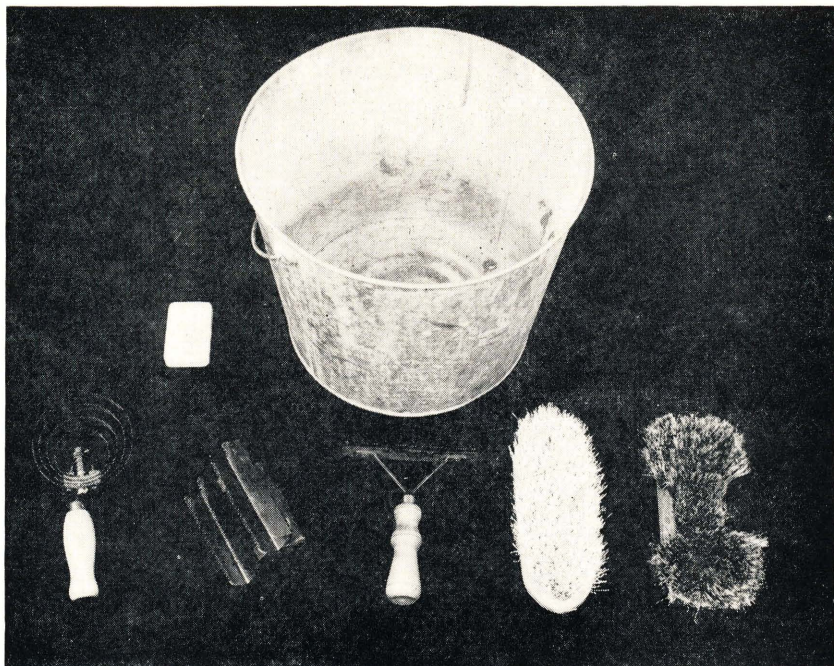


Fig. 16. Equipment used for washing and grooming beef cattle. Castile soap and large wash pail; combs and brushes—(left to right) curry comb, lining comb, scotch comb, rice root grooming brush, and scrub brush.



Fig. 17. Small items of equipment for fitting beef cattle for the show. Left to right; horn polish (mixture of equal parts olive oil and alcohol), horn scrapers, rasp, large shears with curved tips, heavy comb, and emery cloth.



Fig. 18. Feed box for fattening steer. Notice that it is constructed of 2 x 6 inch planks and is spiked to the wall so that the steer feeds at a convenient height. Next to it is a box for salt—or a mixture of salt, steamed bone meal, and ground limestone.

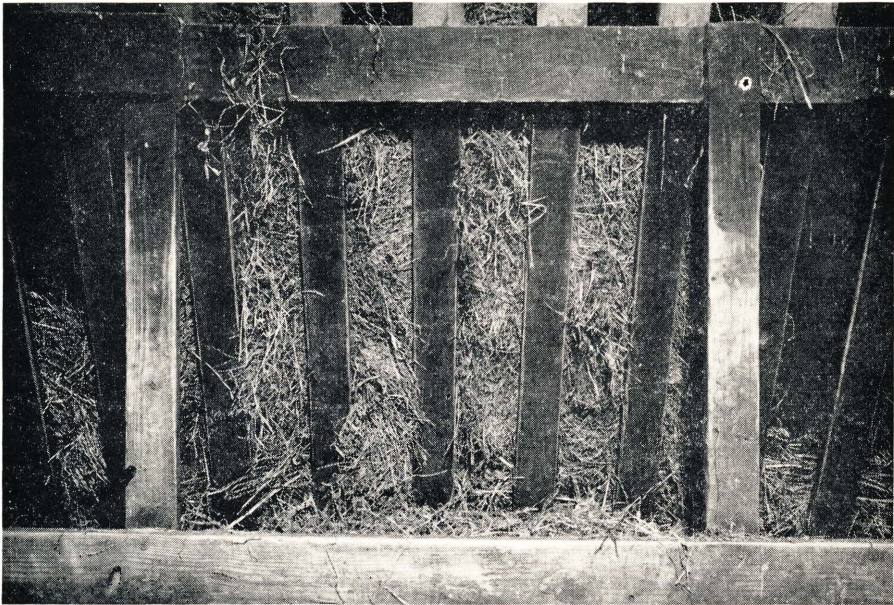


Fig. 19. Hay feeding rack. This type of rack will prevent waste, yet cattle will be able to get the roughage easily. Notice the high quality leafy hay.

Too many times club members do not have adequate feed boxes. Don't attempt to feed beef cattle from a pail. The easiest place in which to feed your calf is in a feed box or manger large enough to catch grain that may drop as it is chewed. You can construct it out of a few pieces of used lumber, and save both time and feed. Fasten the box to the wall at about knee height for the steer (Fig. 18). A high feed bunk may cause the calf to stand with his back down. A suitable hay feeding rack is also essential (Fig. 19).

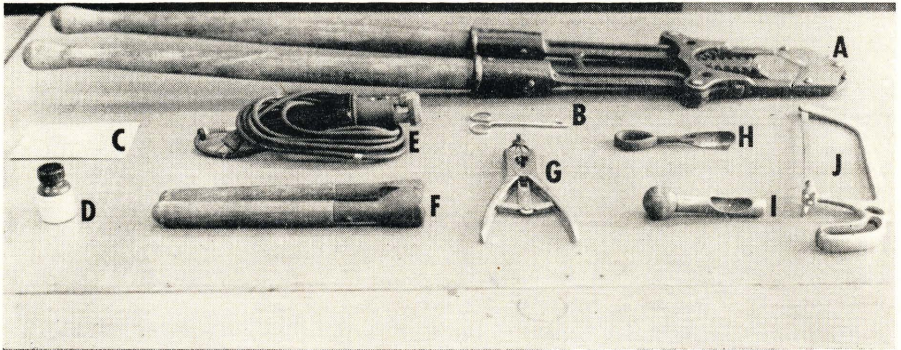


Fig. 20. Dehorning equipment and the age for which particular equipment is best suited: (a) Leavitt Clippers, 12-20 months; (b) Forceps to pull arteries after clipping or sawing horns; (c) Caustic stick, 3-10 days; (d) Dehorning paste, 3-10 days; (e) Electric Dehorner, up to 2 months; (f) Barnes Dehorner, 5-12 months; (g) Rubber band applicator, 15 months or older; (h) Dehorning spoon, 3-5 months; (i) Dehorning tube, 1-3 months; (j) Dehorning saw, 20 months and over.

HORN REMOVAL

Horns have been removed from most 4-H club steers the past several years. A polled or dehorned head may be clipped to show a more refined appearance. As soon as possible after purchase, the calf should be dehorned. If necessary to remove horns during fly time, a fly repellent such as Smear EQ 335 should be applied immediately after horns are taken off.

Methods of dehorning calves are with caustic stick, (see page 18 of 4-H dairy club manual), electric dehorner, and dehorning tools shown in Fig. 20. When using dehorning clippers or saw, be sure to cut close to the head to prevent the development of a stub horn. The use of rubber bands for horn removal is discouraged because it does not dehorn close enough to the head. It may be desirable to have your local veterinarian remove the horns if you have not had experience in removing them.

TRAINING

In training your calf, there is no substitute for leading. Teach the calf to lead while he is still small. This is especially true with western calves which have never been around people and are not used to being in close quarters. A quiet, gentle steer usually makes better gains than an unruly, nervous steer.

The first few times it is best to simply tie the calf to a strong manger or post. Don't give the calf a chance to get loose as this only encourages him to try breaking away again. While a small calf is tied up, start brushing since cattle like to be brushed. It will make you and your calf friends. When a calf is wild, if you stable and tie another calf with him, he gains confidence.

After your calf leads well, start training him to stand correctly on his feet. Be sure to keep his back level, and his head fairly high. This gives the steer, or heifer, style. At fair time, a leather show halter helps appearance and aids in showing. However, if you use a show halter be sure the calf has been led with it several times at home and is not afraid of the chain. Some show halters have only a strap under the chin and may be easier to use.

A show stick or other suitable stick 4 to 5 feet long is useful in teaching the young steer or heifer to move its feet into position. Show sticks are helpful in the show ring and beef club members should use them. Let the calf stand in one position for several minutes before moving on again. Many hours of labor may be saved by proper training while your calf is small.

All beef cattle need daily exercise. Steer calves on full feed should be turned out in a small lot at night during the summer or on winter days, and it is a good practice to lead the steer to and from the exercise lot each day. This lot should not be a pasture, except possibly a little very short grass in the barnyard.

GROOMING

Grooming is an art that requires a great amount of patience. Pictures shown here (Figs. 21-27) illustrate how to do many of the steps in washing and curling.

Wash your calf about once a week four or five times ahead of show day. The use of pine tar soap in soft water is a good practice. The white markings of Herefords and Shorthorns will need a little extra washing, sometimes with a *little* bluing or mother's bleach, to give

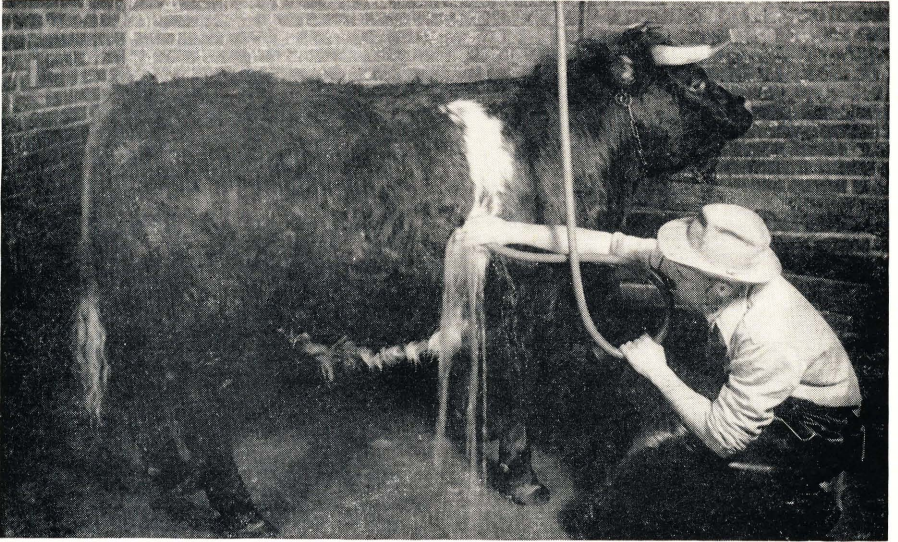


Fig. 21. Wet the entire body of the animal thoroughly with lukewarm water. Include the face.



Fig. 22. Soap while hair is full of water. Work up good lather with a brush. Use a good mild soap.

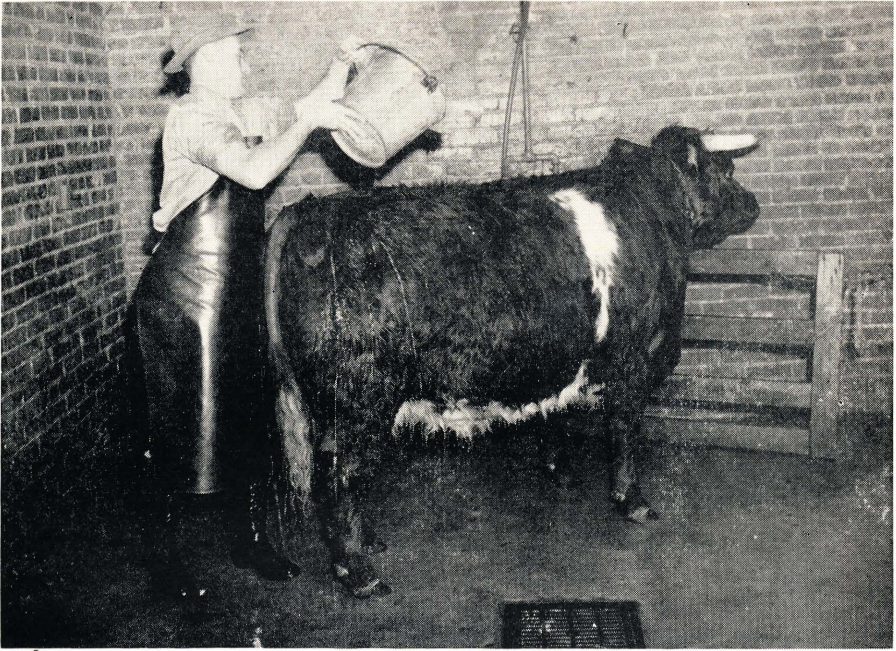


Fig. 23. Rinse carefully. Hold ear face down to keep out water. To soften hair and kill skin parasites, apply weak solution of dip.



Fig. 24. Use an aluminum water scraper to remove all surplus dip from hair.

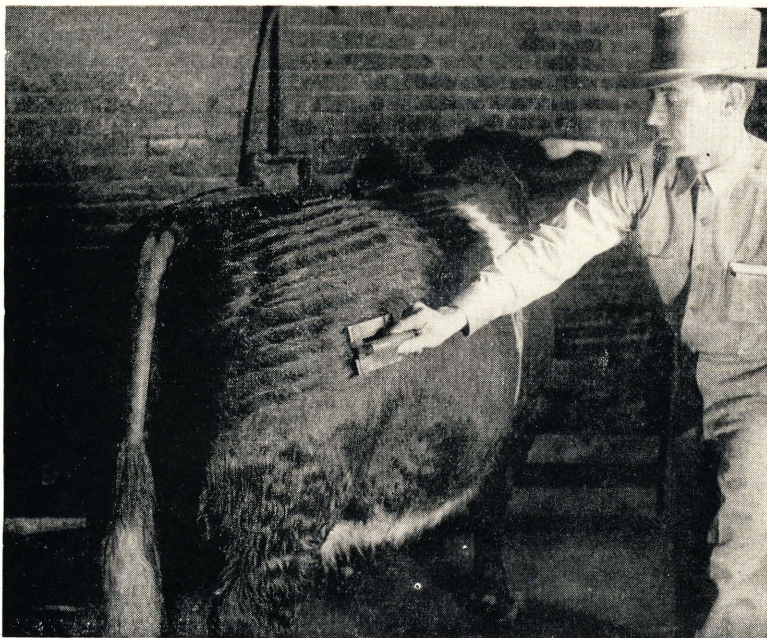


Fig. 25. Smooth damp hair with clean brush. Straight, even lines are made by pulling 4-rowed marker from back to front.

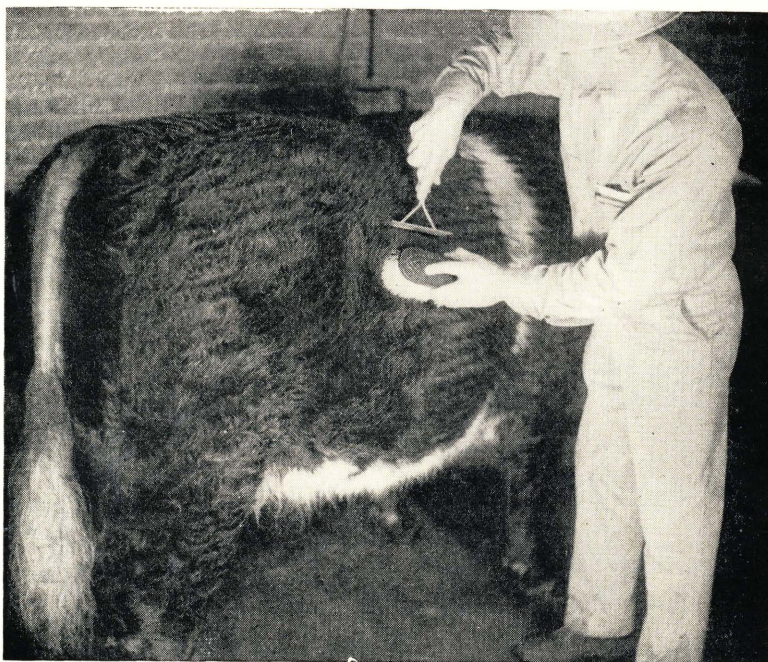


Fig. 26. Use brush and scotch comb to pull up hair. Start at underline and comb upward. Brush until hair is soft and dry.

a bright white color. You can add a small amount of stock dip to a pail of rinse water to make the curl last longer, and to help control lice. Hair dressing should be washed out of hair coat soon after animal is shown if it is to be shown at other shows.



Fig. 27. Brush tail away from hand, a few strands at a time. A large, fluffy tail helps to give a steer balance.

Training the horns (Figs. 28-31) will also need to be started early. Horns that are not weighted will usually grow upright and straight out from the head, giving your calf a wild, plain appearance. Usually, weights are put on when the horns are 3 or 4 inches long. Don't use weights that are too heavy; they will kink the horns. Usually weights of $\frac{1}{2}$ to 1 pound are best. Leave them on about a week, then remove them for 4 or 5 days.

Trim the feet regularly so that your calf will stand straight. The calf will need to be well trained to let you handle the feet when trimming, unless stocks are used. Your local club leader, or older club members, will give assistance to new members in trimming feet.

Clipping should be done about 10 days before the show, but recommendations vary with the breeds.



Fig. 28. Start the horn shaping process early. Fasten weights securely, but avoid clamping them on so hard that you injure the shell of the horn.

1. ANGUS calves should have their heads clipped. They should be clipped to a line around the neck about 2 inches behind the ears. The ears are left with the hair and not clipped; however, very shaggy coarse hair can be trimmed with a pair of scissors. You should clip the tail from about 4 inches above the switch up to the tailhead and blend in carefully.
2. HEREFORDS and SHORTHORNS with horns are not clipped about the head at all, but clip the tail the same as for the Angus.
3. POLLED SHORTHORN and POLLED HEREFORD, or well dehorned cattle, should be clipped the same as the Angus.

SHOWING

After a long summer of hard work and careful preparation, your climax is show day at the fair. Even though your calf has been well groomed, you'll have a lot to do the day of the show. The pictures show you how to comb and curl a wet calf. Keep the lines straight and make all lines parallel. After marking, brush the ends of the hair up lightly with a dry brush. Allow the hair to dry for about 10 minutes, then use a long comb and comb up. After this keep the calf on its feet until the hair is dry.

Sometimes breeds with short hair are curled only over the thighs and shoulders to make the calf look thicker and fuller.

The hair over the back may be parted and brushed out to make the calf look broad and square. The switch of the tail should be braided



Fig. 29. Dress the horns well in advance of show day. Use a fine-surfaced horn rasp to smooth rough surfaces.



Fig. 30. After rough spots are removed, further smooth the surface of the horn with a horn scraper. Work carefully.

while wet the evening before the show. Then, before showing, it is unbraided and fluffed out by brushing upwards. Do not brush tail excessively.

Horns and hoofs should also be given a final grooming before showing. Clean and polish the hoofs. If the horns are heavy and rough, they should be rasped or scraped early. Then use sandpaper and apply either shoe polish, or a mixture of pumice stone and linseed oil, for polishing. Use a soft wool cloth to get a luster.

Many mistakes are made in the show ring. Some can be corrected only by experience, while others may be discovered by watching professional showmen at work.

Here are a few tips which may guide 4-H club members:

1. Plan your schedule. Be ready when your class is called.

2. Have your calf dry when you go into the show ring.
3. Ignore the crowd and *watch your calf* with an eye on the judge.
4. Lead forward with the strap in your *right* hand. When you stop, turn towards your calf and take the lead strap in the left hand. Beef cattle herdsman do not walk backwards. *This is the most common mistake made in the show ring by beef club members.*
5. If possible, stop your calf with its front feet on slightly higher ground than the rear feet but place him where the judge indicates.
6. Don't obstruct the judge's view of your calf. *Show him the result of your work.*
7. Keep the calf's head up, but avoid pulling his head too high.
8. Don't stretch your calf; keep all four legs squarely under it.
9. Obey the judge. Do what he asks politely and quickly.
10. Be courteous at all times. Remember the other 4-H club exhibitors.
11. Don't overshadow. If your calf is well-trained, showing will be easy.
12. Be a good winner or loser. Don't brag or "squeal." Never criticize the judge. A visit with the judge after his work is finished may add to your understanding of judging.



Fig. 31. Use sandpaper or emery cloth to give the horns their final smooth finish before polishing with oil. Attractive horns improve the steer's appearance.



Fig. 32. Showmanship. It is not only important to have a well-fitted and well-trained heifer or steer; you should also be clean, neatly dressed, and courteous at all times.

AWARDS

There are two types of awards in livestock club work. The first are the fair or show awards given you on the results of your livestock at the fair. These may be ribbons, in addition to cash premiums. The second type of awards are achievement awards, made on the basis of a club member's all-around 4-H club record.

Most county shows use the "Danish system" of awards. The livestock is judged first in the usual manner; lined up in order with the best first on the basis of finish and type; then ranked into three groups—A, B, and C—depending on how they are developed, fitted and shown. Sometimes ribbons are given for both awards, with the cash premiums paid only on the A, B, or C grouping.

At the State 4-H Show and the Junior Livestock Show, awards are made only for placings on finish and type. In steer feeding, finish is

the most important factor, since it reflects the ability of the club member to feed and prepare his steer properly for market.

There are several achievement awards for livestock club members:

1. The Michigan State Board of Agriculture awards 4-H scholarships to outstanding 4-H members for use at Michigan State University.

2. The 4-H Club Department and the County Extension Service award educational trips to 4-H Club Week, held annually at Michigan State University; or Camp Shaw.

3. There are demonstrations and achievement awards that are announced each year.

All are made on the basis of quality of the project work, accurate and complete records, years in club work, livestock judging and activity on demonstration teams, and in leadership.

JUDGING BEEF CATTLE

Every club member should study the fundamentals of livestock judging. Judging is the foundation of our cattle marketing and grading system. Livestock buyers and salesmen are good judges, since they must be able to estimate the dressing percentage and carcass value of market cattle. Breeders have to be able to recognize correct type. You should watch the judge to gain all the information possible, and make a careful study of the beef cattle section of the 4-H Livestock Judging Manual.

MARKETING

Most of the steers from the beef feeding projects will be sold at auctions, at either the county fair or a state event. Some club members may have extra steers which may be sold at local markets, or consigned to livestock commission firms.

Again it should be emphasized that a project needs to be well planned. Calves should be purchased at a weight that will permit most of them to be sold from 975 to 1,100 pounds. Of course, some steers will gain more rapidly than others after feeding gets under way. Good quality steers should be sold as fat steers in the fall and early winter months when high prices usually prevail for choice and prime steers. It pays to have them ready at the right time.

You may market calves raised from the breeding project by several methods. Male calves may be saved for bulls, or castrated for steers. Only the very outstanding calves from excellent females with good pedigrees should be raised as bulls. You should have the advice of experienced breeders if you intend to keep a bull calf.

The calves for steers should be castrated before 3 months of age, and preferably during the first month. Calves born in the late winter or early spring are the right age for fattening the next year.

Heifer calves may be added to the herd by the 4-H club member, or sold for breeding stock. However, heifer calves from purebred cows that do not justify registration because of color markings or poor type should be fattened and sold for meat.

HEALTH

Parasites and minor ailments cause irritation to cattle and reduce gains. Control of parasites is essential for the comfort of your livestock, and is a part of good management. Prevention is still the best cure; cleanliness can prevent many diseases. When a calf is ill and the cause is not known, or is not a simple illness that can be treated at home, you should call a veterinarian at once.

FLIES

Sanitation in and around barns is necessary for satisfactory control of flies. Keep all manure hauled away from the barns, and drain all damp or wet areas.

1. Spray the interior of the barn, especially where flies gather in clusters, with either $\frac{1}{2}$ pound of 25 percent wettable lindane powder, or 2 pounds of 50 percent wettable methoxychlor powder, or $1\frac{1}{2}$ pounds of 25 percent wettable malathion powder in 5 gallons of water. (Lindane seems to be better than methoxychlor for control of flies in barns. Use malathion where lindane or methoxychlor seems to be ineffective.) Cover the surface with the spray, but avoid dripping. Repeat the treatment in 30 days or when flies again become annoying. Baits of malathion and sugar may be used in the light places of the barn. Commercial sugar baits of other materials than malathion may be purchased. Avoid getting any of these materials in drinking water or on feed.

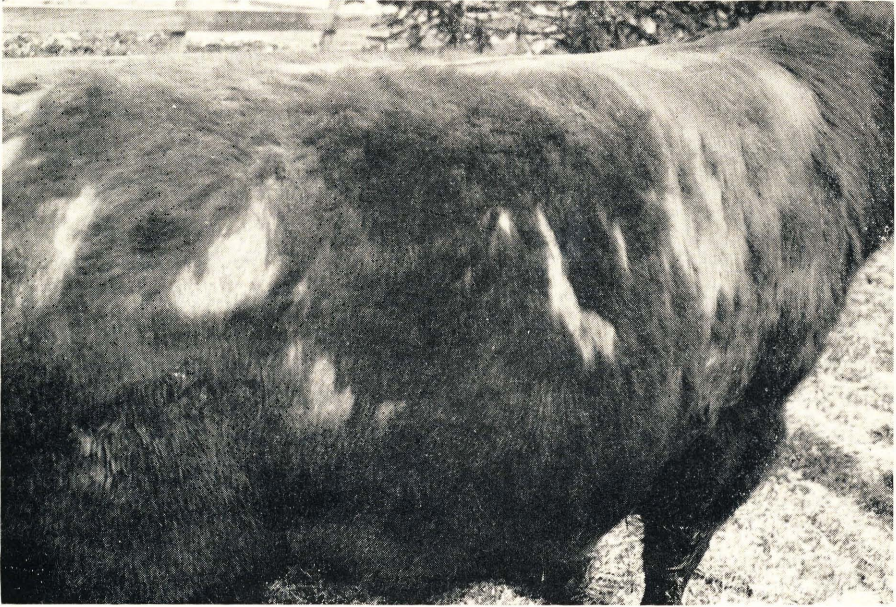


Fig. 33. Proper care would have prevented this heavy infestation of lice.

2. Spray the cattle for horn flies with $1\frac{1}{4}$ ounces of 50 percent wetttable methoxychlor powder in one gallon of water. Wet the entire body, back, neck, chin, ears, sides, belly and brisket, so that the liquid penetrates through the hair. Repeat the treatment again when needed.

CATTLE LICE

FALL TREATMENT: Spray with $\frac{1}{6}$ ounce of lindane, or $\frac{1}{4}$ ounces of 50 percent wetttable methoxychlor powder, in one gallon of water. Lindane should not be used on calves under 3 months of age. Wet the entire body and be sure the liquid penetrates through the hair. Spray pressure above 250 pounds is preferred when treating for lice. The treatment should be repeated in 14 days.

WINTER TREATMENT: Use either a 1 percent lindane dust, or a 10 percent methoxychlor dust, or a $\frac{3}{4}$ to 1 percent commercial rotenone dust. All can be applied with a small dust gun. A shaker type of can is satisfactory, providing the material will penetrate through the hair to the skin. Brushing against the hair will help. The dust should be applied along the back, neck, ears, sides, flanks and under parts of the animal. Rotenone and methoxychlor require another

treatment in 14 days and again 7 days later. Lindane may require only one treatment.

CATTLE GRUBS

Cattle grubs, or warbles, appear in the back between December and May. Watch for lumps along the back. Dust the entire back with a 1½ to 2 percent rotenone dust. Rub it through the hair and into the grub openings with a stiff-bristled brush, or with the finger tips. To be effective, the rotenone must enter the openings leading to the grubs.

Sprays or water drenches can be made by using ¾ pound of 5 percent rotenone concentrate to 10 gallons of water. Add enough skim milk or soybean flour to make the water slightly foam. (Rotenone bought in liquid form should be used according to the manufacturer's directions.)

PRECAUTIONS: DDT is not suggested in this bulletin for horn fly and lice control. It is stored readily in animal fat. It may take 60 or more days after using it before animals may be safely slaughtered. Lindane should not be used closer than 30 days before slaughter.

RINGWORM

Ringworm is dangerous to you as well as your cattle. Remove all scabby material upon the surface, using a sturdy durable swab, before starting the treatment. By using grease on each infection, scabs may be removed and the area softened. The following day, dry the infected spots and paint once or twice daily with *tincture of iodine* as long as it seems necessary.

A paste made of equal parts wool fat or lard, sulphur, and coal tar dip applied daily for a week or more has also given satisfactory control. Remember to disinfect equipment since ringworm can be spread by halters, barn walls, mangers and other equipment.

BLOAT

Bloat may be caused by several factors. Some steers may bloat with full feeding. A sudden change in feed, moldy feed, or digestive disturbances may cause it. Green feed or pasture may cause cattle to bloat. A pint of mineral oil will usually help in relieving bloat. A kerosene drench is also effective in checking the production of gas. Turpentine may be used instead of kerosene.

This drench may be made by using 6 ounces kerosene or turpentine and 1 pint of milk; or one part of kerosene or turpentine may be mixed with three parts of mineral oil. Don't hold the steer's head too high when giving the drench.

After drenching, a gag in the steer's mouth may help to induce belching. Walking the calf slowly also encourages belching, unless he is in extreme distress. In severe cases, puncturing the rumen in the center of the triangle below the left hip will prevent death from suffocation. Some grass hay or other coarse roughage with heavy grain rations is often helpful.

SCOURS

Dirty equipment, irregular feeding or overfeeding may cause scours. Excessive feeding of laxative or high-protein feeds may cause scouring. If scouring develops, reduce the grain ration and use some non-legume hay instead of alfalfa or clover for a few days. However, the best cure is prevention: Don't let your calf eat out of dirty pails, or have moldy feed, and always feed at regular hours.

FOOT ROT

Foot rot is usually caused by an infection present in unsanitary conditions, such as mud holes, or stables not properly bedded. Rough ground or stones will aggravate the infection. Lameness, swelling between the toes, and abscess formation are indications of foot rot.

Treat this condition by first cleaning thoroughly between the toes and removing all dead tissue. Then apply a small amount of undiluted creolin or coal tar dip to the infected tissue; or you can soak the tissue in a saturated solution of copper sulphate.

A 10-percent solution of copper sulfate in a trough through which the cattle may be led will help; or a mixture of one part powdered copper sulphate and nine parts slake lime may be spread where the cattle stand.

Call a veterinarian if this disease is extensive, or secure from him advice and a substance that may be effective.

WARTS

Warts sometimes become numerous and appear in undesirable locations. A daily application of sweet oil, castor oil, or olive oil for

two or three weeks will usually destroy them. Swabbing the warts with pure coal tar dip every two or three days should give relief.

If extra large or persistent cases appear, you should secure the services of the local veterinarian. Vaccination of such animals usually gives them relief.

DEMONSTRATIONS

Local livestock clubs may be able to assist their own members—as well as other 4-H club members and the whole community—by giving instruction through demonstrations. A demonstration team consists of two members. The team selects a subject and tells the method of doing particular tasks. It will need some equipment to illustrate the different steps. For further information secure the bulletin, “4-H Demonstration Story” from your County Extension office.

Here is a suggested list of subjects suitable for club demonstrations:

1. Trimming feet.
2. Grooming for the show.
3. Treating ringworm, lice and flies.
4. Making rope halters.
5. Judging beef cattle.
6. Training horns, shaping and polishing.
7. Dehorning calves.
8. Showmanship in the ring.
9. Castrating calves.
10. Balancing rations.

REFERENCES

This manual is designed only as a basic handbook for club members. Older members and leaders will want to increase their knowledge through additional reading. The following list of references is highly recommended:

Books:

Beef Cattle by R. R. Snapp.

Feeds and Feeding by F. B. Morrison.

Modern Breeds of Livestock by H. M. Briggs.

Bulletins:

Hints on Judging Livestock—Ontario Department of Agriculture (Toronto).

The Beef Calf, Its Growth and Development—U.S.D.A. Farmers' Bulletin 1135.

Beef Cattle Breeds—U.S.D.A. Farmers' Bulletin No. 1779.

Feeding Cattle for Beef—U.S.D.A. Farmers' Bulletin No. 1549.

Beef Cattle for Breeding Purposes—U.S.D.A. Farmers' Bulletin No. 1916.

Fattening Beef Calves—Michigan State University Special Bulletin 280.

4-H Livestock Judging Manual, Michigan State University. 4-H Club Bulletin No. 62.

Cooperative extension work in agriculture and home economics. Michigan State University and the U.S. Department of Agriculture, cooperating. Paul A. Miller, Director, Cooperative Extension Service, Michigan State University, East Lansing. Printed and distributed under Acts of Congress, May 8 and June 30, 1914.

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