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## 4-H Project Guide : Dairy

R. A. Cave

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### Recommended Citation

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# 4-H Project Guide

Published by AGRICULTURAL EXTENSION SERVICE

SOUTH DAKOTA STATE COLLEGE



TO MAKE  
THE BEST  
BETTER

## Dairy

R. A. CAVE

THIS BOOK DOES  
NOT CIRCULATE

### Selecting The Dairy Club Heifer

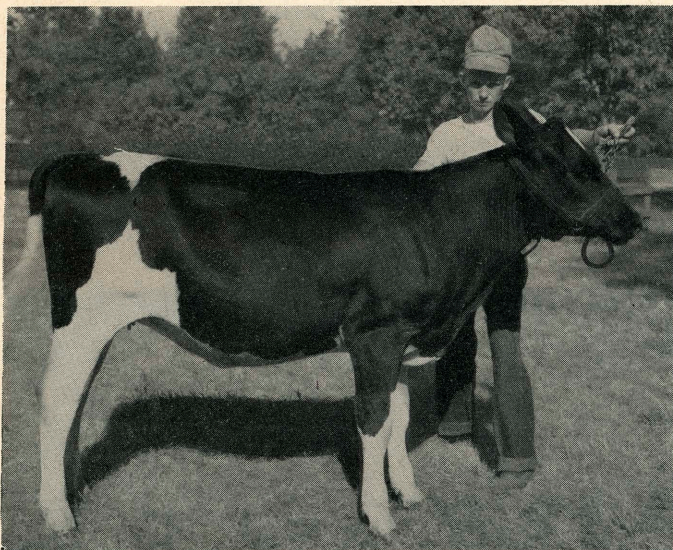
Selecting a good dairy heifer and developing her is a fine accomplishment for any 4-H club member.

Successful dairy club members are those who like their dairy heifers and are anxious to learn the best methods of feeding, training, showing and caring for them, in order to grow them into beautiful, high producing cows that will return a steady income over a long period of years.

Developing a good dairy heifer into a profitable, producing cow, gives the club member valuable experience and confidence in his ability to do a job well.

Successful dairying requires more intelligent and careful attention to details than any other kind of farming, but it is less of a gamble because it brings in a regular monthly income.

The club leader, county agent or Extension dairyman will be glad to help any club member in finding a good dairy heifer.



It Pays To Select a Heifer Which Will Grow Into a Good Cow

Mr. Cave is extension dairyman

Every dairy club member wants to select a heifer which can be grown into a beautiful, high producing profitable cow. It must be remembered that this cow will become the foundation of a future dairy herd. Whether that herd will consist of high producing, profitable cows of good type, depends to a large extent upon the care used in selecting the club heifer.

One of the worst mistakes a club member can make is to secure just an ordinary or even inferior heifer, for his dairy project. It will lead only to disappointment, discouragement and loss. There are several factors to consider in selecting the club calf.

1. **The Mother** should be of good type and capable of producing 400 pounds of butterfat a year. She should also have several other daughters of good type and production.

2. **The Sire** should be of good type and the father of a number of other daughters with good type and production.

3. **The Heifer** itself should be of good type, i.e.—straight and strong in the top-line, deep and wide in the body, straight and square on its feet and legs and clean cut in head, neck and shoulders.

There should be four, squarely placed, teats and loose folds of skin extending well up behind and well forward on the belly.

4. **The Herd** from which the heifer is selected should be healthy and free of disease.

Every club member should get the best heifer he can with the money he has to spend. By observing the points mentioned he should not make a very bad mistake in selection.

U. S. Department of Agriculture, Cooperating

In Furtherance Acts of Congress May 8, June 30, 1914

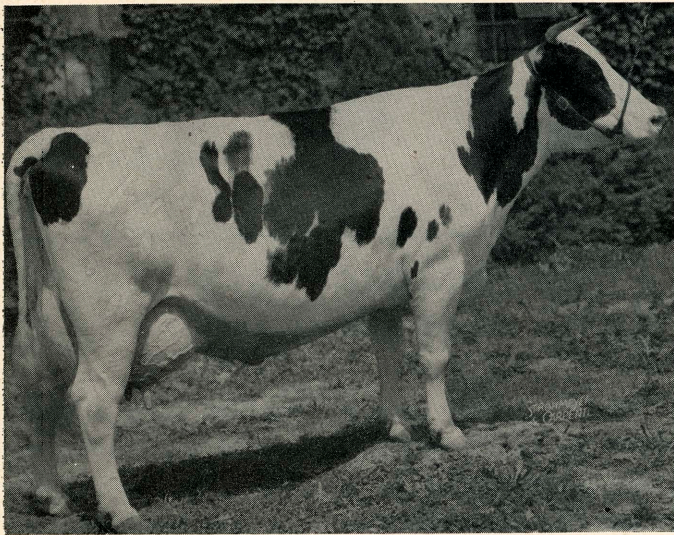
Extension Circular 451

Geo. I. Gilbertson, Director of Extension

April, 1949

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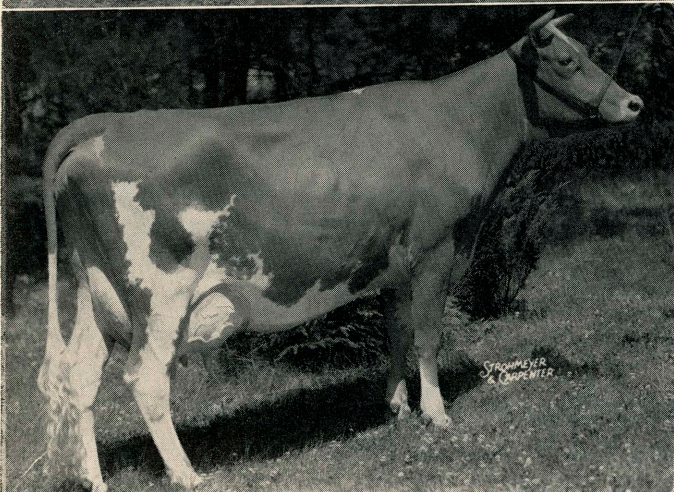


The Holstein—the Largest of the Dairy Breeds

### Choosing A Dairy Breed

The common dairy breeds are Ayrshire, Brown Swiss, Guernsey, Holstein and Jersey. There are good cows and poor cows in every dairy breed. The breed chosen is not so important as the factors mentioned in selecting the individual heifer.

There are a number of advantages in choosing a club heifer of the same breed as the home herd. If no definite



dairy breed is kept on the home farm then it is well to select the dairy breed that is most common in the neighborhood.

### Comparison of the Dairy Breeds

Holsteins, as a breed, give the most milk. Jerseys, as a breed, have the highest butterfat test. Holsteins and Brown Swiss are the largest and Jerseys the smallest of the dairy breeds. In early maturity the breeds would rank as follows: Jersey, Guernsey, Ayrshire, Holstein and Brown Swiss.

Brown Swiss and Ayrshires would probably rank first in ability to withstand adverse weather conditions.

### Age of Heifer When Selected

It is probably best to select a calf born in the fall if possible. It can then run on pasture two summers before it freshens. It will also be at the right age to freshen in the fall. Fall calves show better than spring calves as they are older and have more size.

Heifers for 4-H dairy club projects can be any age from young calves to bred heifers.

Young calves cost less and give the club member more experience in the care and feeding of the heifer through its entire development into a producing cow. On the other hand, it is hard to know what type of animal will develop from the small calf. The young calf is more likely to die than an older animal, and there will be a much longer time before production and income start.

It is probably wisest to select a club heifer three months of age or older. At that age, they will not require milk and should be eating grain and hay satisfactorily. The club member will be able to get the experience of caring for a small calf when his heifer freshens.

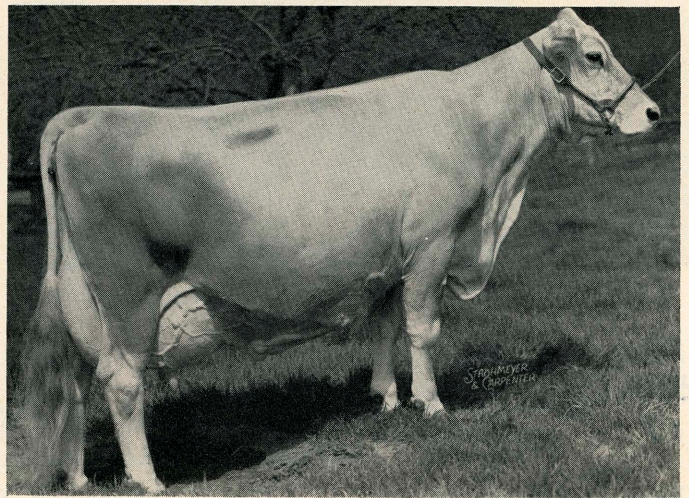
### Grades or Purebreds

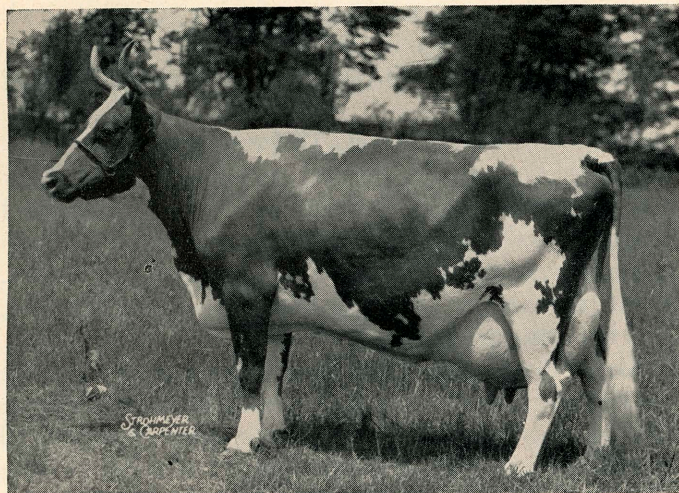
Purebred or registered heifers cost more than grades but are to be preferred if the club member can finance the purchase.

**TOP LEFT:** The Jersey, the Smallest of the Dairy Breeds, Gives the Richest Milk.

**LOWER LEFT:** The Guernsey Is Known for Her Yellow Milk.

**BELOW:** The Rugged Brown Swiss.





The Ayrshire Is Also a Rugged Breed

More production records are kept on purebreds than grades, therefore, the production of the heifer's sisters, half sisters and other relatives can be determined.

There are two sources of income from purebreds, one from milk and one from the sale of breeding stock.

Only purebreds can be shown in the open classes at state fairs and large dairy shows.

No 4-H club member, however, should feel that he must have a purebred calf in order to be successful. There are many high grade dairy cows that are high producers, and also have good type. Grade heifers can be shown in the 4-H club classes at the State Fair.

If a club member purchases a purebred calf he should make sure that the owner transfers the heifer to him and furnishes a registration certificate.

## Feeding The Dairy Heifer

Although many club members start their dairy club project with heifers which are several months old, they will need to know how to feed and care for the young calf when their heifer freshens.

The calf should be grown as rapidly as possible and with the lowest possible feed cost. Grain or ground feed must be fed in order to get good growth during the first year, since the calf's paunch is not large enough to contain very much hay, silage and other roughage. Calves that are well grown and thrifty at 12 months of age will make good growth in their second year on high quality hay, silage and pasture, with little or no grain.

### Birth to Eight Weeks

As soon as the calf is dropped, clean its nose and mouth of membranes. Slap its chest sharply with the hand and rub it vigorously if it has difficulty in breathing. Treat the navel cord with iodine.

The calf should be up sucking within one hour. If not, lift the calf to its feet and help it to get started. Before it sucks, wash the udder and teats of the cow with a warm chlorine solution.

It is important that the calf get the colostrum or first

milk from its mother for at least the first three days, either by being allowed to suck or fed by hand.

The colostrum is very beneficial to the calf as it cleans out the digestive system and furnishes vitamin A, minerals, and other materials that will help him to resist disease.

Keep the calf from gulping or drinking too fast. Otherwise, some of the milk may get into the first stomach or paunch, where it will sour and upset his digestion. A nipple pail can be used or the inner liner from the teat cup of a milking machine can be used on a small topped quart bottle (see cut).

The right temperature for the calf milk is 90 to 100 degrees. Use a milk scale and weigh the milk for each calf. Wash and scald the calf pails after each feeding, the same as the other milk pails. Carefulness counts in successful calf raising.

The amount of milk to feed depends upon the weight and condition of the calf. A good rule to follow is one pound of milk per day for each 10 pounds of the weight of the calf. It is better to underfeed than overfeed.

### Calf Meal Cuts Milk Needs

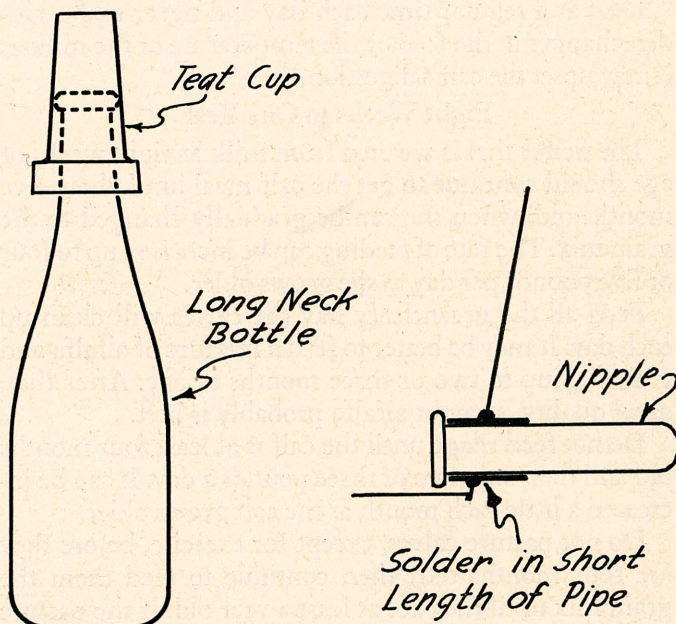
Calf meals, either home made, or commercial, can be used to reduce the amount of whole milk needed, when skimmilk is not available. The following mixtures are suggested:

#### HOMEMADE CALF MEAL

Coarsely ground corn 30 lbs. ....  
 Coarsely ground oats 30 lbs.  
 Wheat Bran 10 lbs.  
 Linseed meal 10 lbs.  
 Soybean oil meal 10 lbs.  
 Dried skimmilk or  
 buttermilk 10 lbs.  
 Steamed bone meal 1 lb.  
 Salt 1 lb.

#### GRAIN MIX WITH SKIMMILK

Coarsely ground corn 30 lbs.  
 Coarsely ground oats 30 lbs.  
 Wheat Bran 30 lbs.  
 Linseed or soybean oil  
 meal 10 lbs.  
 Salt 1 lb.  
 Steamed bone meal 1 lb.



## Whole Milk Feeding

The following schedule of milk feeding is suggested for Holstein or Brown Swiss calves weighing 80 lbs. at birth, when whole milk is marketed. Ayrshires, Guernseys and Jerseys would get less at the rate of one pound per day for each 10 pounds of live weight of the calf.

**First week**—Eight pounds whole milk per day in two or three feedings. This will include the feeding of colostrum milk from the mother the first three days at least.

**Second week**—Nine pounds of whole milk per day.

**Third week**—Ten pounds of whole milk per day.

**Fourth week**—Eight pounds milk, two pounds warm water per day.

**Fifth week**—Six pounds milk, four pounds warm water per day.

**Sixth week**—Four pounds milk, six pounds warm water per day.

**Seventh week**—Two pounds milk, eight pounds warm water per day. If the calf is small and weak it should get whole milk for a longer period.

Teach the calf to start eating calf meal and some good quality green, mixed hay at about 10 days of age. Gradually increase the daily allowance until it is cleaning up two pounds of calf meal and one pound of hay per day at eight weeks of age. Keep a pail of clean fresh water in the pen where the calf can drink at will.

## Skimmilk Feeding

When cream is marketed and skimmilk is available, the whole milk can gradually be replaced by the skimmilk during the fourth week. The calf will not need the calf meal but can be started directly on the grain mix.

Calves can be fed skimmilk until 8 to 10 months old if plenty is available.

If the hay received by both the cows and calves is not of first quality (green and leafy) it is advisable to feed one tablespoon of crude codliver oil each day in the milk or on the ground feed.

Feed at a regular time each day and never make sudden changes in the feed or the temperature of the milk as it may upset the calf's digestion.

## Eight Weeks to One Year

The heifer that is weaned from milk at eight weeks of age should continue to get the calf meal until about five months old, when she can be gradually changed to the grain mix. The rate of feeding can be increased up to four or five pounds per day as she grows older.

Feed all the green leafy hay the calves will clean up each day. It may be better to feed a mixture of alfalfa and grass hay up to two or three months of age. After that, good quality, straight alfalfa probably is best.

Do not feed silage until the calf is at least four months old and then only two or three pounds a day. It can be increased a little each month as the calf grows older.

Do not pasture calves, except for exercise, before they are four months old; then continue to feed them the grain mix until they are at least a year old. If the pasture

starts to dry up, increase the grain feed or give the calf all the nice green hay it will eat.

Provide the calf with plenty of water and salt at all times.

## Twelve Months To Freshening

If the heifer is thrifty and well grown at one year old, it will make a satisfactory growth on good alfalfa hay and silage or good pasture up until a few weeks before freshening. Do not allow the heifer to get thin and run down. If the pastures dry up, or the hay is not of good quality, give her some ground feed.

About three weeks from freshening it is well to start feeding the heifer four or five pounds a day of a mixture of 45 pounds ground oats, 45 pounds wheat bran; and 10 pounds linseed meal with one pound of steamed bone meal and one pound of salt. Do not feed her any corn at this time.

## Care At Calving Time

Calving time is always a critical period especially if it is a heifer with her first calf.

The usual date for calving is 283 days after the heifer was bred. Check the breeding date to make sure when the calf should be born. Place the heifer in a clean, disinfected, box stall or pen, that has been well bedded, about a week before she is to freshen. Make her comfortable and get her used to her surroundings. It is best to leave her alone at calving time but to watch her closely in case she needs some help.

After the calf is born, give the heifer a drink of warm water. It is also well to give her a bran mash made by pouring hot water over four or five pounds of bran.

Do not be in a hurry to get her on full feed. Give her from five to eight pounds of a mixture of half ground oats and half bran for several days. Then, if the swelling is out of her udder, her feed can be gradually increased until she is getting one pound of ground feed for each three or four pounds of milk per day.

## Kind of Grain Feed

The kind of grain mixture to feed the heifer will depend on the kind of hay she is getting. With good alfalfa, alone, as roughage very little protein concentrate is needed. A grain mixture of 900 pounds of farm grains such as corn and cob meal, ground oats and barley with 100 pounds of soybean oil meal or linseed meal would be satisfactory. With good alfalfa and silage as roughage 200 pounds of soybean or linseed meal and 800 pounds of farm grains would make a good mixture. With no alfalfa or clover hay, the grain mixture should contain 100 pounds of soybean or linseed meal to each 300 pounds of ground farm grains.

One pound of salt and two pounds of steamed bone meal should be added to each 100 pounds of the grain mixture.

## Amount of Grain to Feed

The amount of grain to feed a cow depends on her condition, amount of milk she is giving and the butterfat test of the milk.

A general rule for winter feeding is to give each Holstein or Brown Swiss cow one pound of grain for every four pounds of milk produced each day. Example—a cow giving 40 pounds of milk a day would get 10 pounds of grain, or five pounds at each feeding. If the roughage is of poor quality or the cow is in thin condition feed one pound of grain to three of milk. Jerseys and Guernseys should get one pound of grain for each three pounds of milk or one of grain to two of milk if they are thin or the roughage is poor.

### Feeding on Pasture

On excellent pasture, a cow can give 40 pounds of milk a day without grain. She will have to eat 150 pounds of grass a day, however, and she is not likely to eat that much unless the pasture is of top quality.

A good plan is to feed one pound of grain to six or eight pounds of milk and provide hay in a rack so the cows will be sure to get plenty of feed in case the pastures dry up or get mature and unpalatable.

It is poor practice to feed every cow the same amount of grain regardless of the amount of milk produced. The good producers do not get enough and decline in their milk flow. The poor milkers get more than they need and become fat.

A good producing cow will need from 2,000 to 2,500 pounds of ground feed in a year, 1½ to 2 tons of good quality hay (alfalfa if possible) and three tons of silage. If no silage is fed, she will need 2½ to 3 tons of hay.

A good rule in feeding hay is 2 to 2½ pounds of hay per day for each 100 pounds of cow. Three pounds of silage is equal in feeding value to one pound of hay.

## Breeding The Club Heifer

Great care must be used to keep the club heifer from getting bred too young, to a scrub bull, or one of another breed.

If possible, breed her to a bull proven to transmit good type and high production. That means a bull whose daughters are of good type and are higher producers than their mothers. If a proven bull is not available, then try to breed her to the son of a proven bull.

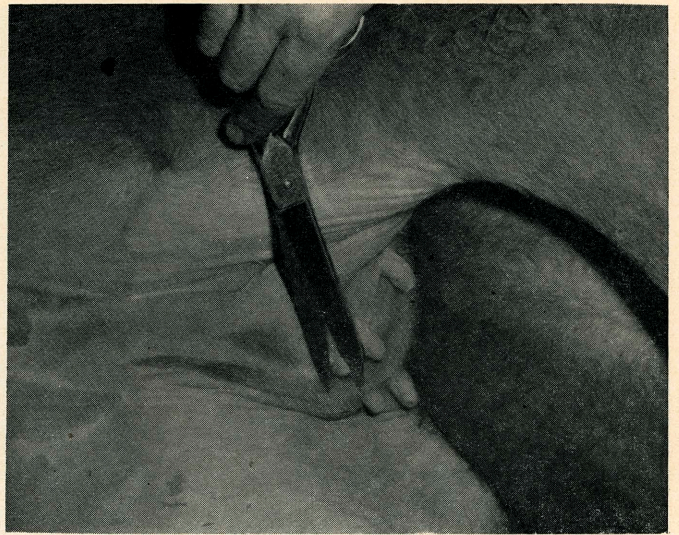
If a club member lives in an area served by an artificial breeding association, he can arrange to have his heifer bred artificially.

The bulls owned by the artificial breeding association have been very carefully selected for type and production and many of them are proven.

### Age to Breed

Well grown Brown Swiss and Holstein heifers can be bred at 18 to 20 months of age, Jerseys and Guernseys at 16 to 18 months of age. A careful record should be made of the breeding date and the name and registration number of the bull.

If the heifer is purebred, consult a breeder, or the county agent about making out the application for registering her calf.



Clipping an Extra Teat

### Management

It is well to have the heifer officially vaccinated against Bangs Disease or abortion, by a veterinarian, when she is between four and eight months of age. This will protect her against that disease until she is five or six years old.

Remove extra teats before the heifer is six months old. The best time to do it is before she is one month old. This is a simple operation as shown by the illustration.

Keep the heifers pen clean, dry and well bedded; clean her feed box often and provide a rack for hay so it will not get under her feet. Teach the heifer to lead and give her some exercise on mild, sunny days.

## Fitting and Showing Dairy Calves

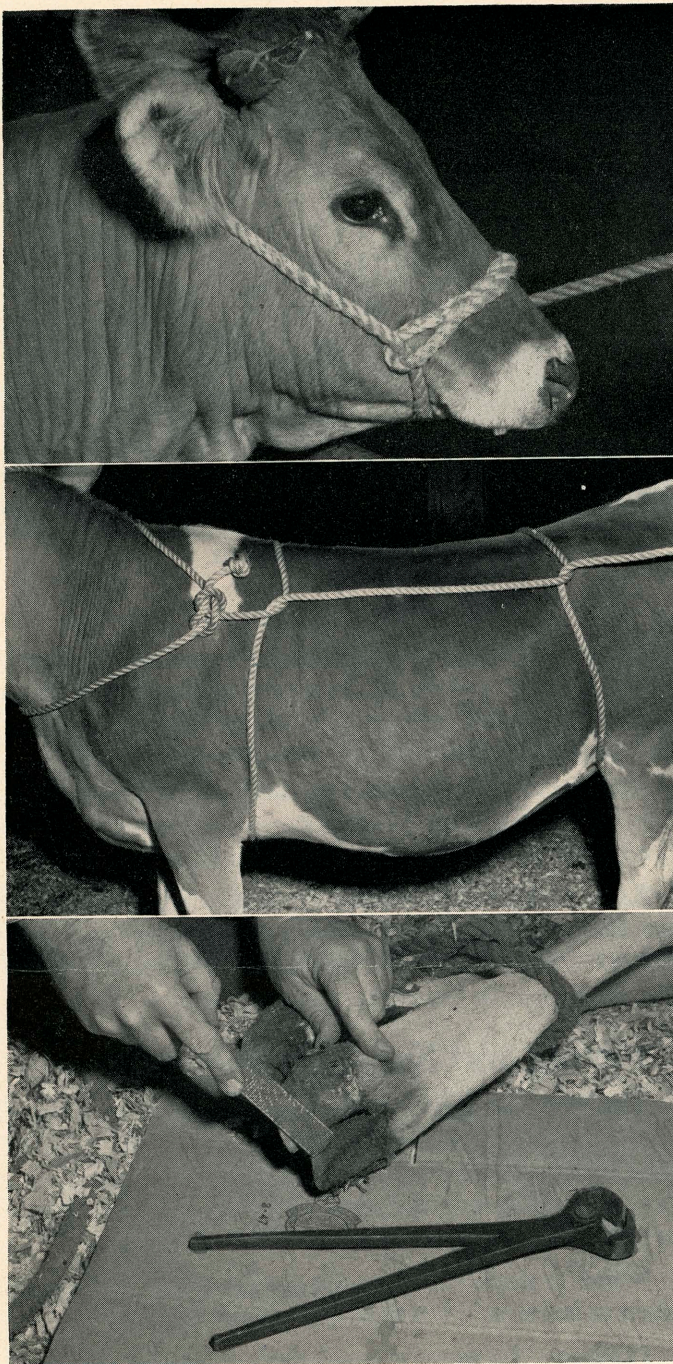
You boys and girls in 4-H dairy clubs can get a lot of fun out of fitting and showing your club heifers. It will take time, patience and kindness, but when you lead a beautiful heifer into the show ring, on achievement day or at the fair, you will say it was worth all the work.

**When to start**—You can not get your calf in shape, to show at her best, in less than six to eight weeks.

**Feeding**—To show in good flesh, your calf will need to be fed a good grain ration for about eight weeks. A satisfactory mixture may consist of 100 lbs. of ground corn; 100 lbs. of ground oats; 100 lbs. bran; and 25 lbs. linseed meal. Salt can be provided in a box or about one pound mixed with each 100 pounds of the grain mixture. The amount to feed will depend upon the size of the calf and its condition. Do not get her too fat.

Give your calf all the nice, fresh, leafy hay she will eat. She should have plenty of water and it will be best for her to drink from a pail and also eat her grain from a bucket as she will have to be fed that way at the show.

**Training to Lead**—The first step in fitting and training your calf is to make a rope halter. The club leader or county agent can show you how. Next tie her up in a



TOP: This Is the Proper Way To Lead with a Rope Halter. CENTER: Proper Arrangement of the Rope to Throw the Animal. BOTTOM: Trimming the Feet.

clean bedded stall in the barn. She will soon learn what the halter means and you can begin to train her to lead. Teach her to walk stylishly with her head up, and to stand quietly and squarely on her feet.

**Washing**—About four to six weeks before show time, wash your calf thoroughly. First get her soaking wet, then rub her coat with good soap that makes a lot of lather, such as tar or other mild soap. Do not be afraid to scrub her good until her skin and hair are clean. After scrubbing, rinse her well with clean water until the soap

is all washed out. To dry her, rub downward with your hand in the direction the hair lies.

**Clipping and Blanketing**—After your heifer is dry she should be clipped over the entire body, then blanket her and keep the blanket on her during the entire fitting period, except when you are leading her, or she is out for exercise in the evening. Never let her out in the hot sun as it will bleach her hair and dry out her skin.

A very satisfactory blanket can be made with burlap feed sacks or a large piece of burlap from the furniture store. To make a burlap blanket, measure the length along the back line from just in front of the shoulders to the base of the tail, that will be the length of the blanket. The width will be twice the distance from the top of the shoulders to a point on the front leg, even with the underline of the calf. An allowance of a few inches should be made for seams and the cut-out to fit the neck.

A piece of burlap cut according to the illustration will be satisfactory. Straps for tying can be made by folding burlap in two inch strips and sewing to the blanket.

**Trimming the Feet**—About the time you start fitting your calf you should trim its feet. Lay the calf on its side by using a rope with a half-hitch around the body. Level the soles with a sharp knife, round the hoofs neatly but be careful not to cut deeply enough to bring the blood as this will make the calf lame. Tools that help are, hoof nippers, rasp, knife and possibly a chisel.

**Care of the Horns**—If your calf has horns, smooth them down with a rasp, scrape them with a piece of broken glass and smooth them with sandpaper. You will not need to polish the horns until the day of the show.

**Grooming**—If you want your calf to shine on show day, you should spend some time each day grooming it by brushing with a soft brush and rubbing down on its coat with your hands. The daily routine should also include leading and training the calf to show to best advantage.

One or two days before the show clip the head, neck, legs, underline and tail. Trim the edges of the ears with shears and be sure the inside of the ears are washed clean.

Holsteins, Brown Swiss and Ayrshires should be washed again, the day before the show, using a few drops of bluing in the rinse water. Jerseys and Guernseys should not be washed again as it takes out the yellow secretions.

**Care of the Switch**—The night before the show wash the switch thoroughly with soap and rinse well using bluing in the water. After it is washed braid it into several braids and wrap a cloth around the whole switch. Shake the switch out the next morning and just before showing comb it out.

**Preparation on Show Morning**—Keep your calf hungry the morning of show day and feed it about an hour before show time. Let it drink just before going into the ring, but be careful not to let it drink enough to appear



bloated. Wipe the calf's coat, horns and hoofs with a cloth dampened in olive oil just before entering the ring.

**Conduct in the Show Ring**—In the ring watch the judge closely and follow his instructions. Keep your calf showing to the best advantage every minute. Be a good sportsman, do your best and take whatever honors you get modestly. There is a lot of satisfaction in winning, but, if you do not win, showing that you are angry lowers you in the eyes of the other exhibitors, as well as the spectators.

## Production Record

In order to improve his herd, a dairyman needs to know just how much milk and butterfat each cow produces every year. He can then cull out his low producing cows, save heifers from his high producing cows and prove his herd bull by comparing the records of his daughters with their dams.

Production records are very important as a basis for herd improvement. There are four kinds of dairy production records as follows—Advanced Registry Records, Herd Improvement Registry, Dairy Herd Improvement Association records, and Private records. The first two are usually spoken of as official records, since they are made under the supervision of the dairy breed associations and the state colleges, and are published by the breed associations.

## Registration

Each club member with a purebred dairy calf should learn how to fill out an application blank for registering his calf, also an application for transfer in case he sells his calf.

Write the breed association for the blanks. Your county extension agent can give you the address.

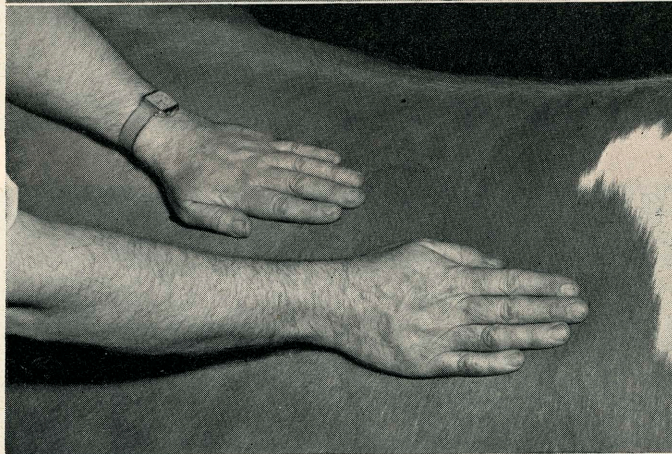
## Judging Dairy Cattle

Members of dairy clubs have a splendid opportunity to learn how to judge dairy cattle. It takes hard work, careful study, and much practice to become a good dairy judge. It develops independent thinking, keen observation, and careful balancing of the good points and weakness of each animal.

The ability to do a good job of judging dairy cattle is a valuable asset to a dairy club member, a dairy farmer, or breeder. For a beginner, the first thing to do is to learn the name and location of the different parts of a dairy animal as well as the terms and phrases used in comparing them. (See chart on dairy cow score card.)

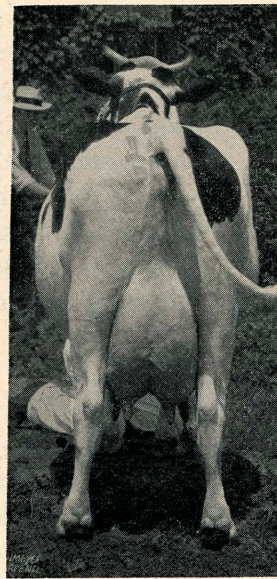
The next step is to study the dairy cow score card. This will enable you to understand the relative importance of each part of the body.

Study pictures of cows of the different breeds which have been classified excellent. (See pages 2 and 3.)



**TOP: Clip the Calf To Improve Her Appearance. CENTER: Hand Rubbing Makes the Heifer's Coat Shine. BOTTOM: An Inexpensive Blanket Will Keep Your Heifer Clean**

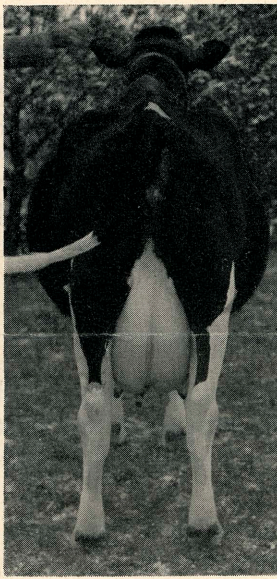
In judging dairy cattle, your decision must be made on what you see. The animal should be observed from a distance to note its general appearance, symmetry, and balance. Notice the straightness of topline, depth of body, heart girth, length and levelness of rump, straightness of legs and shape and size of udder. From a rear view you can see the rear udder attachment, width of loin, hips, thurls and pin bones, also the spring of rib. Closer observation enables you to study the udder attachment, teat placement and quality of udder. Strength of udder attachments, body capacity and breed type need especial attention.



### Excellent

← SIDE VIEW: Notice the nice "wedge" shape of this animal (deep at the rear, tapering to the front.) Notice the straight top-line, long level rump and smooth tail-setting. See the well-balanced udder with level floor, strong fore-attachment and squarely placed teats. She has a great depth of body, a clean-cut feminine head with long tapering neck.

REAR VIEW: Notice the high, wide strong rear attachment of the udder. She has wide, square hips and high wide pin bones, wide spring of rib, thin thighs and strong, square set hind legs.



### Good

← SIDE VIEW: Compare the following points of this cow with excellent cow above: "Wavy" topline, short from hooks to pins, much less depth of body, crooked hind legs, smaller udder with abrupt fore-attachment but fairly level on the floor, only fair teat placement; head not so clean cut.

REAR VIEW: Compared to excellent cow, she has lower and narrower rear attachment of udder, fairly wide hips but narrower between pin bones, fairly sharp in withers but drops off behind shoulders, resulting in smaller heart girth. Fair spring of ribs; good setting of hind legs.



### Poor

← SIDE VIEW: Notice the lack of wedge shape. Very shallow of body, low in the pins and rounding over the rump. Udder is extremely small with weak, short fore-attachment, tilted up in front with poor teat placement. Hind legs are crooked. Head is "meaty," lacks in cleanness.

REAR VIEW: Body is very narrow with poor spring of rib. Pin bones close together and much lower than hips. Udder has very low rear attachment and rear quarters are unbalanced. She has a fair set of hind legs but notice her thicker thighs.