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4-H Dairy Beginning Manual--Grade School Age (4,5,6) : Extension Circular 2-51-68

Philip H. Cole

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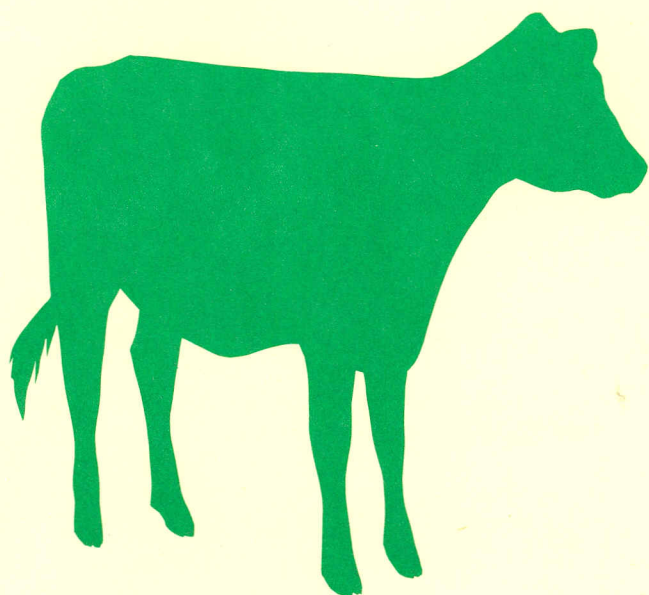
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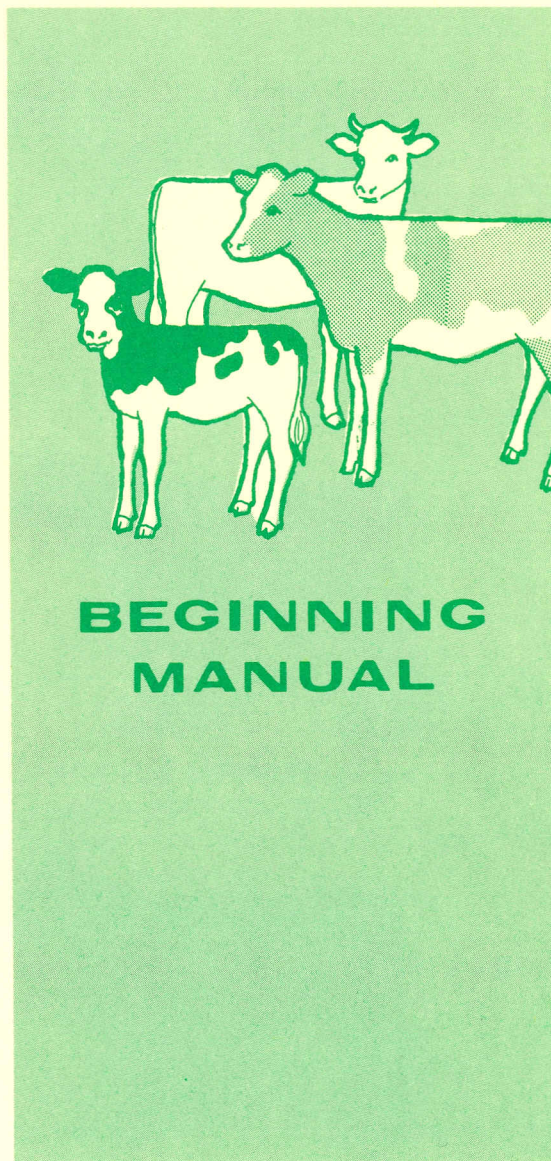
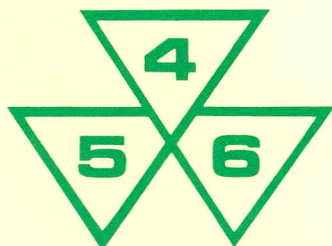


4-H

DAIRY



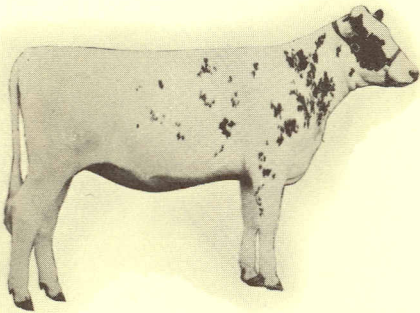
GRADE SCHOOL AGE



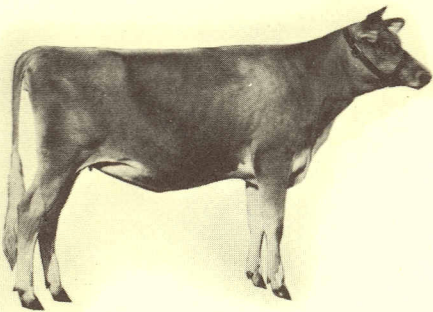
EXTENSION SERVICE
UNIVERSITY OF NEBRASKA COLLEGE OF AGRICULTURE AND HOME ECONOMICS
AND U. S. DEPARTMENT OF AGRICULTURE COOPERATING
E. F. FROLIK, DEAN J. L. ADAMS, DIRECTOR

Nebraska 4-H Dairy Manual

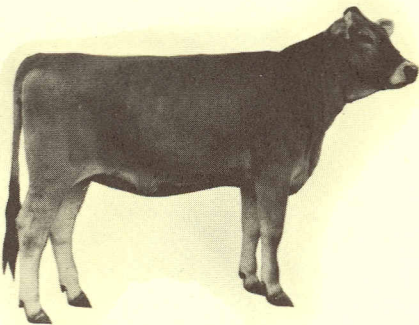
By Philip H. Cole
Agricultural Extension Dairyman



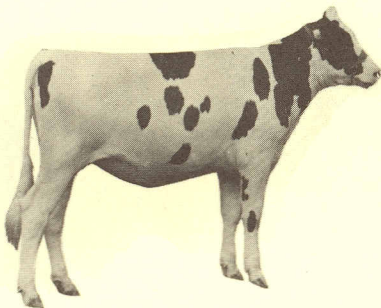
AYRSHIRE



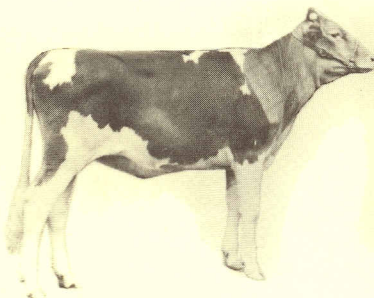
JERSEY



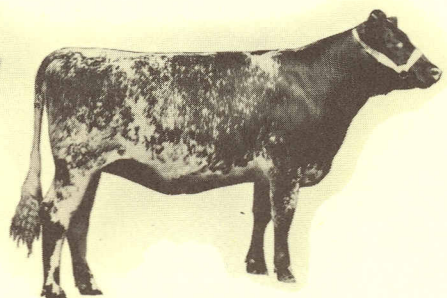
BROWN SWISS



HOLSTEIN



GUERNSEY



MILKING SHORTHORN

A well-planned 4-H dairy project offers you many opportunities for valuable experiences.

You learn to make decisions. You begin with decisions on the breed of heifer to choose, and whether she is to be registered or grade. You decide which particular calf to select on the basis of such things as body form, ancestry, and cost. You will make decisions every day during the project--including what to feed, how much to feed, how to prepare for showing. Most owners of 4-H project animals soon find out that the best decisions are based on knowledge, the facts at hand, and sound reasoning.

You assume responsibility. By caring for a heifer and being responsible for her, you will learn the importance of doing things in the right way and at the right time.

You add to your knowledge and skills. While taking proper care of your heifer you will learn about dairying and good herdsman-ship. You "learn by doing" when you feed and care for her, and do what is necessary to prevent and control diseases. You will learn to evaluate your work by keeping records, showing your heifer, and comparing her with those owned by other 4-H members.

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LESSON 1 PLANNING YOUR PROJECT



What kind of a project should I carry? What breed should I choose? Where can I buy a good dairy calf? Do I plan to keep this animal in my herd? These are questions that need to be answered as you plan your dairy project.

Kind of Project

Two different dairy projects are available to Nebraska 4-H club members:

1. Dairy Calf or Heifer
2. Dairy Cow

The dairy calf or heifer is the most popular project. Each club member enrolled in this project feeds, cares for, and keeps records on one or more calves for at least five months. The calves may be either purebred or grade.

Should you choose a calf from the home herd, you may want to start your project with a newborn calf. If you buy a calf, you will probably want to start with a fall calf that is 5 to 6 months old.

The dairy cow project is more satisfactory for older club members. It involves the feeding, care and management of one or more animals in production. Production records should be kept. This means weighing and testing, once a month, the milk each cow produces in a 24 hour period.

A young cow (first calf heifer) that you have raised or one from a herd that you are familiar with usually makes the best project.

Which Breed

The choice of a breed is very important. But, remember, there are good animals in all breeds! There are many advantages in having the same breed as your neighbors and other project members--especially the benefits received from cooperation with others in advertising, breeding, and selling. Here are some ideas that may help you in your selection of breed:

- Choose the breed your parents have.
- Choose the breed most popular in your farming area.
- Select the breed you think you will like best.

Never pick a breed because you think there will not be much competition at fairs and field days. Look forward to competition! Competition is fun, educational, and develops good sportsmanship.

Registered or Grade

A registered dairy calf is a purebred with registration papers recorded with one of the purebred dairy cattle associations. All other calves are grades.

Many successful 4-H dairy projects have been started with a grade calf. If possible, it is better to start with a registered calf. However, don't select a calf just because it is registered. It is better to have a good grade calf than a poor registered one.

Select the best calf available with the thought that this could be the foundation for the herd that someday may be earning you your living.

Where and When to Get Project Animals

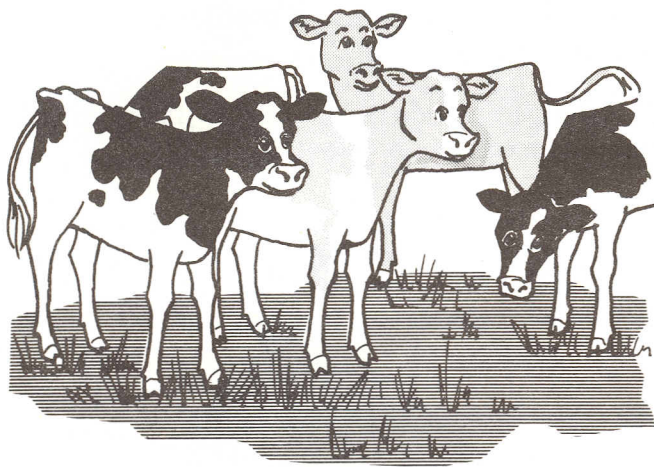
Club members of your age often ask, "Where can I find a good dairy calf for my project?" You may want to select a calf from your dad's herd. Or he may help you select a calf from another good herd in the area.

There are several individuals near you who can help you locate a good dairy calf. Your county Extension agent will be glad to help. The fieldman for your breed association will also be glad to give you advice on where to

buy a calf. Your state breed secretary quite often has a list of breeders who have calves to sell.

Since you will probably want to show your calf, keep in mind how your calf will fit into the show ring class at the time you select her.

If you have had some previous experience with raising calves, you may want to start your project with a newborn calf. However, for most first year members it is a little less risky if you start with a calf that is three or four months old.



How Many Project Animals

Club members who are beginners in a dairy project should start with one calf.

Next year and in the following years and as you gain in experience you can and should increase the size of your herd.

Since most dairy animals will eventually become part of a breeding herd, it is important to do a good job of raising each individual.

How Much To Pay

The cost of a dairy calf will depend on several things. Do you want a purebred calf or will a grade calf do? In general, purebred calves cost more than grades. How much premium are you willing to pay for a calf with a good pedigree and from a good herd? Calves from good cows and good herds where production records are kept are worth more.

Shop around and price calves at several places before you buy. Attend a sale where project-aged animals are being sold. Ask your breed association fieldman what he thinks a calf should be worth. Also visit with your county Extension agent and purebred breeders in your area and find out what they think.

Don't pay a high price for a calf just for the sake of winning a purple ribbon at the fair.

Record Keeping

A good dairyman knows that he must keep records on his dairy operation. Record keeping is also an important part of your 4-H Dairy Club project. In fact, records are a necessary part of any successful business.

Don't trust your memory because you may forget important details. Enter your dairy calf in the record book as soon as you get her. Write down expenses, activities, etc., as they occur.

Keep track of what your calf eats and how much it costs. Also keep track of other expenses such as drugs, veterinarian's fees, fly spray, bedding, and trucking.

Your record book will be more complete and interesting if you keep a record of showing, demonstrations, judging and other activities connected with your project.



LESSON 2 SELECTING 4-H DAIRY CALVES

Selecting the right calf for your dairy project is just as important as proper feeding and care. In fact, the success of your dairy calf project will depend to a large extent on the kind of calf you select.

Parts of a Dairy Calf

Before you can select a good project calf, you must know what a good calf looks like. The first step is to learn the main parts of a dairy calf. Study the drawing carefully so that you can identify the parts on a live animal.

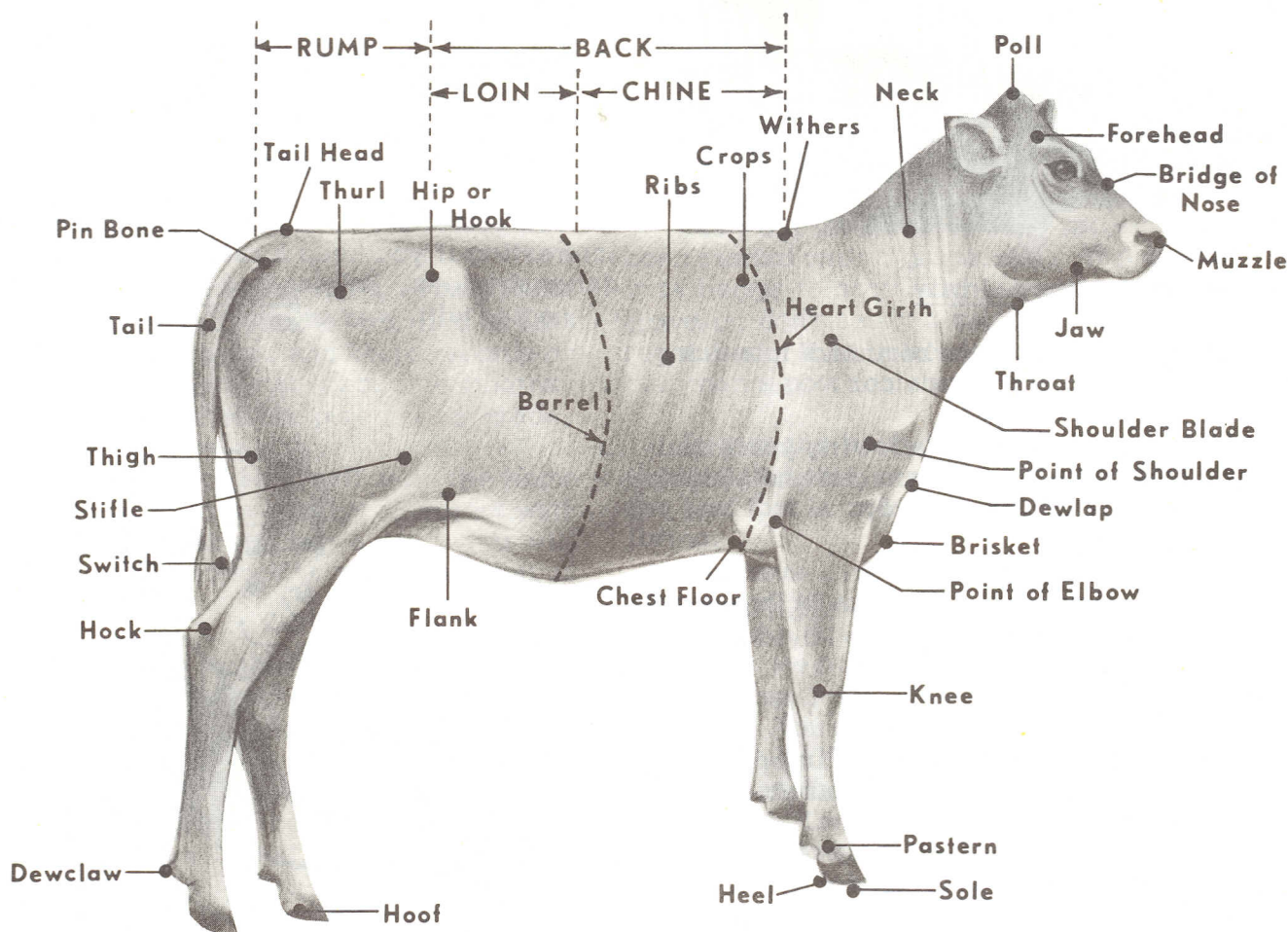
Select for These Points

A calf selected for a dairy project should be a healthy, growthy, acceptable type, and representative of her breed.

A growthy calf is one that is larger than the average calf of the same age and breed. All dairy breeds are looking for growthier, more upstanding animals so pick a calf that shows this characteristic. A calf that is going to show well and grow into a useful animal should have a strong topline and stand on good feet and legs. Pick a calf with straight legs and strong pasterns.

It is difficult to tell much about the future development of an udder on a young calf, but you should examine your calf's mammary system to be sure she has no abnormal development. Extra teats are a problem, but they can easily be removed.

Overall balance of the calf is important if you plan to do much showing.



Judging Training Can Help You

You can learn a lot about selecting a dairy calf by taking part in judging training. Your county Extension agent will provide training meetings. Your club leader will also include judging training at one or more club meetings each year. Take part in as many judging training meetings and contests as possible. It will help when you buy a calf or select one from the home herd.

Use Records, Too

When you buy your calf, select it, if possible, from a herd where milk production records are kept. In herds doing production testing, the owner knows how good his cows are by keeping records on the cows and their offspring. He will also know how much effect the sires he is using are having on his herd.

Knowing what to look for will help you select a calf that is desirable in conformation. However, you will do a better job of selection if you also use production records.

Try to select a calf with desirable type and out of a sire and dam with outstanding production.

Other Factors to Consider

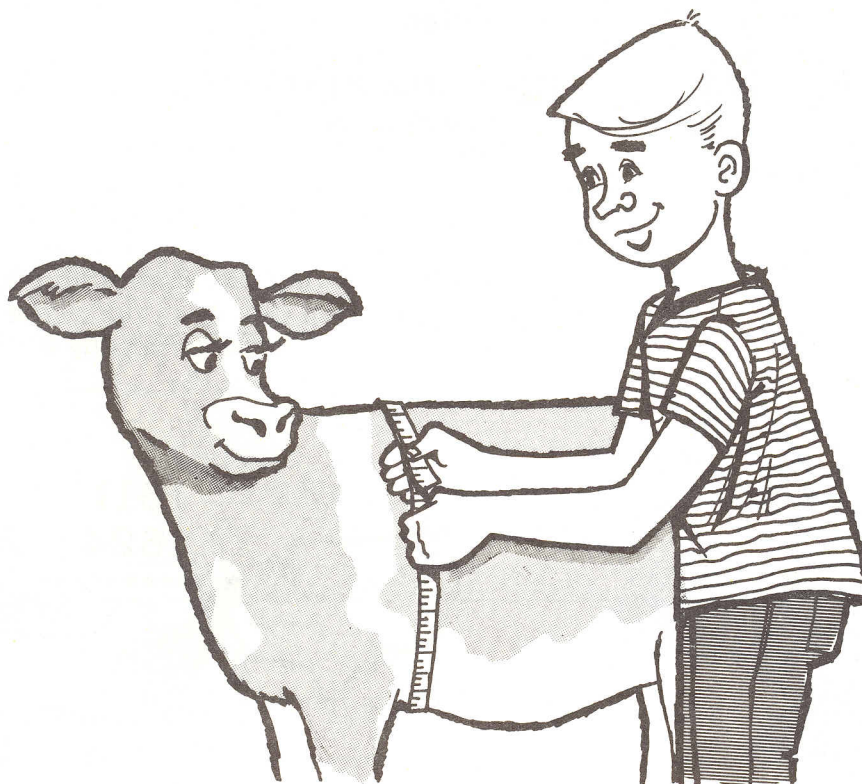
Good health is a must if your calf is to grow and develop normally. A healthy calf will have a bright eye and look alert. It will also have a quality look to the hair coat.

Listless, dull-eyed calves that have a dry, dead appearance to the hair coat should be avoided.

Be sure to find out whether your calf has been vaccinated for Brucellosis. If she has been vaccinated, there should be a certificate to prove it. All dairy calves must be vaccinated before they are eight months old if they are to qualify as calfhood vaccinated.

Disposition is also important when you select your calf. Select a calf with a quiet disposition. Never accept a calf that is wild, because it will make a lot more work for you and will be difficult to show and manage.

Age and size should go together and are very important. You should know how much calves of different ages normally weigh, and select a calf that is at least average in size. Growthy calves with good breeding will gain more rapidly and have a definite advantage in the show ring.



LESSON 3 A BRIEF HISTORY OF DAIRY CATTLE



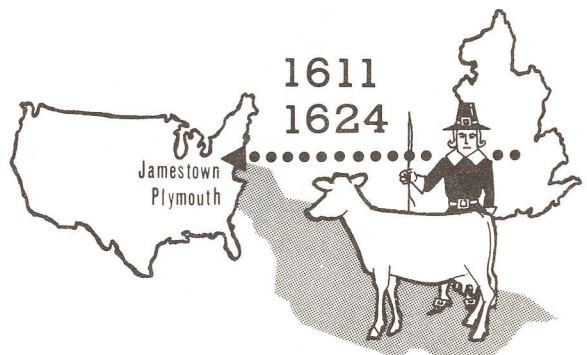
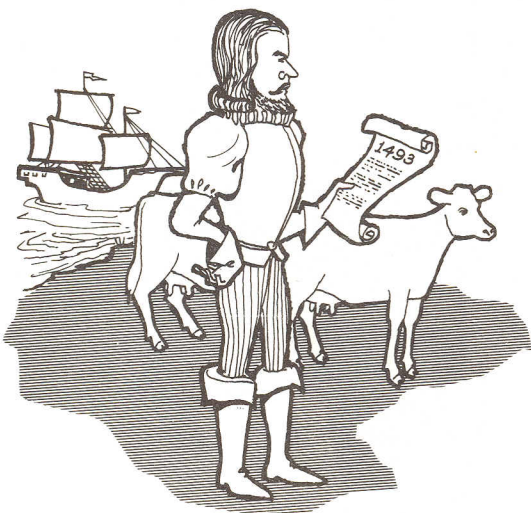
Milk is one of the oldest known foods. There are records of cows being milked in 9000 B.C. The Bible contains many references to milk; one of the best remembered is from Exodus 3:8 "a land flowing with milk and honey." Sanskrit writings thousands of years old tell how milk was one of the most essential of all foods. Hippocrates recommended milk as a medicine five centuries before Christ. In Ur of Chaldea, a frieze depicted a dairy scene in 3500 B.C. showing milk containers and strainers.

The soldiers of Genghis Khan, the Mongol emperor who conquered Asia and a large part of Europe in the 13th Century, carried dried milk as part of their rations. Cheese was an important part of the food carried by the Vikings in their voyages which carried them to the shores of all Northern Europe and North America.

When Christopher Columbus came to America there were no cows, but on his second voyage in 1493 he brought cattle and other farm animals to the islands of the West Indies.

The Pilgrims made the mistake of not bringing cows and lack of milk was said to have had a bearing on the high death rate, particularly of children. Cows were required to be brought on later ships.

The first U.S. cows were brought over to the Jamestown Colony in 1611. The first cows arrived in the Plymouth Colony in 1624.



Early importations from Europe of the dairy breeds as we know them today included Jerseys in 1815, Guernseys in 1830, Ayrshires in 1822, Holsteins in 1857, and Brown Swiss in 1869.

The first milk cows came to Nebraska in the 1820's. These first animals were only slightly more productive than the native buf-faloes. These first cows served a good purpose though because they were used as beasts of burden, milked, and then slaughtered for their meat.

The first small herd was located at Fort Atkinson, now called Fort Calhoun, a short distance north of Omaha. Products from this small herd were used by the 600 men, women, and children of the garrison. In the 1840's

many of the caravans traveling across Nebraska from the east brought cattle with them.

There were 14,000 milk cows on Nebraska farms in 1867. The number of milk cows gradually increased until 1934 when an all-time high of 820,000 cows was reached. Today there are something over 200,000 milk cows in Nebraska.

The University of Nebraska Dairy Husbandry Department was started in 1884. In 1913 a dairy herd was established at the Experiment Station at North Platte and a year later a herd was established at the Scotts-bluff Station. All three of these herds are in the process of moving to the University's new station at Mead.

Milk Cow Numbers (Thousands)

	1940	1950	1960	1964	1965	1966	1967
Nebraska	605	463	327	269	256	240	225
USA	23,640	21,950	17,519	15,702	14,998	14,124	13,578

Production Per Cow (Nebraska)

	1962		1963		1964		1965		1966	
	Milk	Fat	Milk	Fat	Milk	Fat	Milk	Fat	Milk	Fat
All	6,270	226	6,350	229	6,600	238	6,600	238	7,210	274
DHIA	10,550	406	10,807	412	11,367	435	11,385	427	11,736	436

Herd Size - Cows Per Farm (Nebraska)

	1-9	10-19	20-29	30-49	50-99	100+	Total
1959	22,712	7,542	1,401	670	180	8	49,719
1964	12,532	5,399	1,725	986	328	47	29,119

LESSON 4 BREEDS OF DAIRY CATTLE

The five major breeds of dairy cattle in the United States are Ayrshire, Brown Swiss, Guernsey, Holstein-Friesian, and Jersey. All of these breeds are found in Nebraska.

Ayrshire

The Ayrshires came from the county of Ayr in Scotland. They have been known as a dairy breed since 1814. Just how the breed was started is not known. The first Ayrshires were brought into the United States in 1822. They are now found in nearly every state.

Color - Red of any shade, mahogany, brown with white, or white, each color clearly defined. Black or brindle markings are not desirable.

Size - Cows, 1,150 pounds; calves, 60-80 pounds.

The Ayrshires carry more flesh than some of the other breeds. They do well on pasture and other roughage.

Ayrshire milk contains 4 percent butterfat and is good for making cheese.

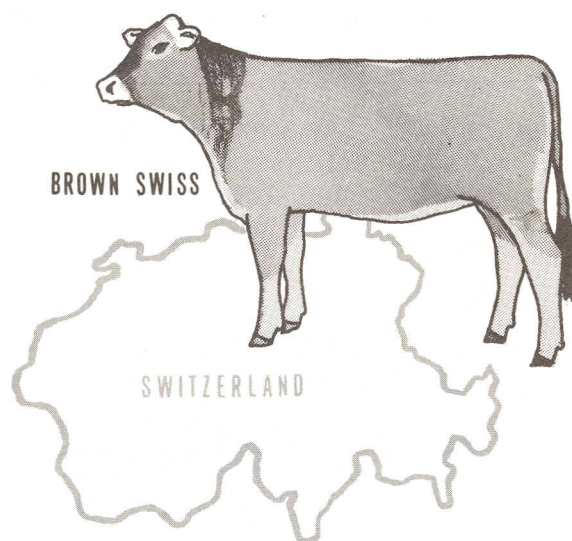
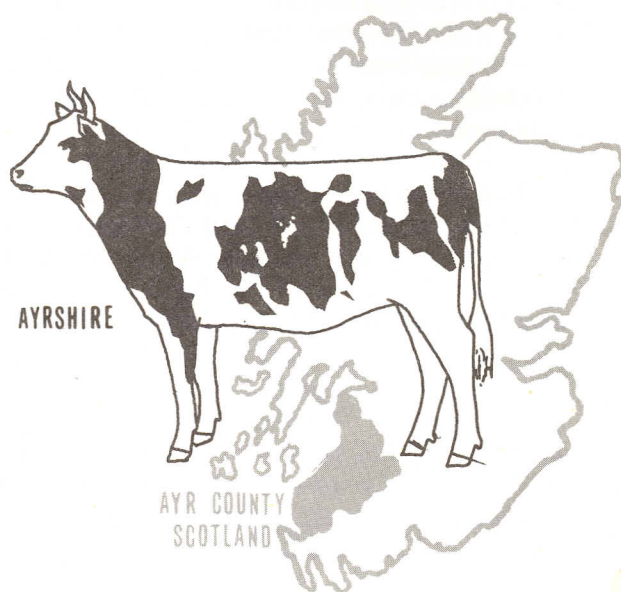
Brown Swiss

This breed came from Switzerland and is thought to be centuries old. The first Brown Swiss cattle were brought to the United States in 1869 and are now found in nearly all of the states. The first Brown Swiss bull registered in the United States was named William Tell.

Color - A shade of brown varying from a silver to a dark brown. Hair inside ears is lighter color than body.

Size - Cows, 1,500 pounds; calves, 70-90 pounds.

Brown Swiss are large and strong. They make good use of pasture, hay and silage. The cows mature slower than some of the other breeds. The milk contains 4 percent butterfat.





Guernsey

The Guernsey breed came from the island of Guernsey. This island is only 9 miles long and 5 miles wide, and is located about 30 miles off the coast of France in the English Channel.

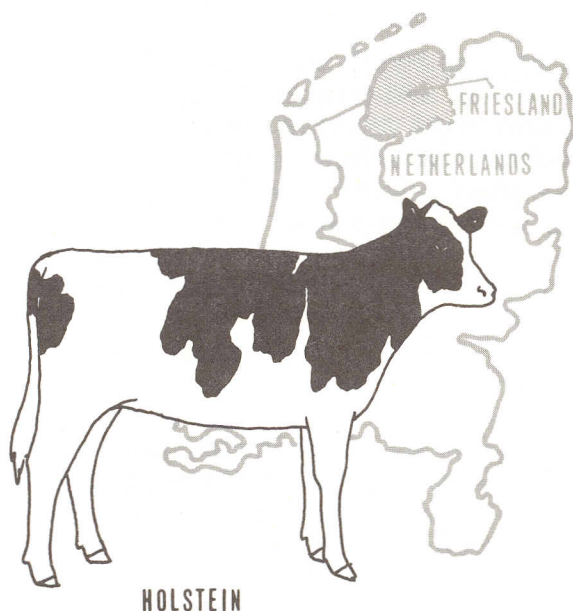
The neighboring islands of Herm, Sark, and Alderney were also stocked with cattle that were registered in the Guernsey herd book. For a time, the island Alderney had its own breed of Alderneys, but since 1910 these Alderneys have been officially recognized as one breed with the Guernseys.

The first Guernseys were brought to America in 1830 and are now found throughout the United States.

Color - A shade of fawn with white markings clearly defined. Skin is golden yellow.

Size - Cows, 1,100 pounds; calves, 60-80 pounds.

Guernsey milk is a golden color and contains about 5 percent butterfat.



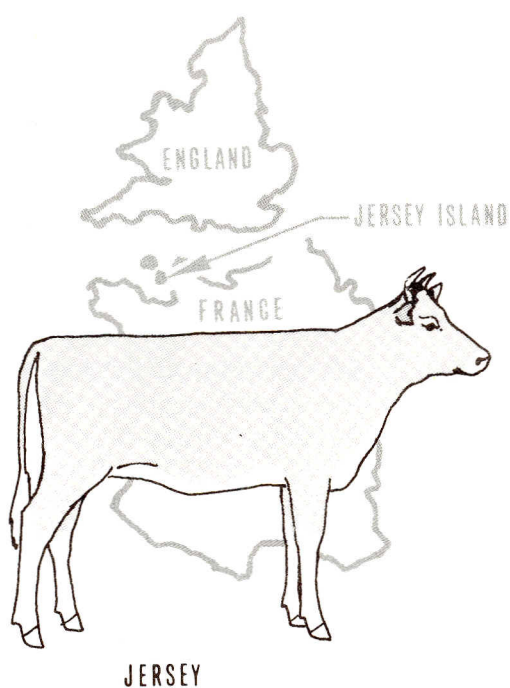
Holstein-Friesian

This breed is called Holstein in North America and Friesian in many other countries. It is thought to have come from Northern Holland. Records show that this breed was first brought to this country in 1857.

Color - Black and white; color markings clearly defined.

Size - Cows, 1,500 pounds; calves, 80-100 pounds.

Holsteins are the largest of the dairy breeds. They are hardy feeders and do well on pasture, hay and silage. Holstein milk usually tests lower in butterfat (about 3.5%) than the milk of other breeds, but Holsteins produce a large volume of milk. Today, Holsteins make up close to 80 percent of the dairy cows in the United States.



Jersey

The Jersey came from the island of Jersey, a small island in the English Channel. The average length of the island is 10 miles; average width, 6 1/4 miles.

Jerseys were brought to the United States in the early 1800's, and have continued to be imported since that time except during war years.

Color - A shade of fawn, with or without white markings.

Size - Cows, 1,000 pounds; calves, 50-70 pounds.

Jerseys mature earlier than the other dairy breeds. The milk is famous for its richness. The average Jersey produces milk that contains 5.25 percent butterfat; some of it contains more than 6 percent.



Dual Purpose

Milking Shorthorn - This breed originated in Norfolk and Suffolk Counties in Eastern England in the Valley of the Tees River. When Shorthorns were first imported to America they were often referred to as "Durham" cattle but Shorthorn is the correct name.

Color - Red, white, and roan.

Size - Cows, 1,400 pounds; calves, 60 to 80 pounds.

Milking Shorthorns have rugged constitutions and handle easily. Steer calves make good beef animals and cows have a good salvage value. Shorthorn milk contains 4 percent butterfat.

LESSON 5 DAIRY CATTLE FEEDS

Proper feeding is important to any good livestock program. Your dairy calves may be able to grow rapidly but they will not do so unless you feed them right. This lesson covers some of the things you will need to know about feeds and their uses.

Uses of Feeds

The feeds dairy animals eat are used for the following purposes:

1. Growth
2. Body maintenance
3. Reproduction
4. Milk production (for animals after they calve)
5. Body reserve

Growth is the increase in size of the body. The development of bones, muscles and other parts of the body constitutes growth. The increase in body weight because of fat accumulation is not considered as growth. Dairy animals grow until they are 5 to 7 years old.

Body maintenance is the repair and replacement of worn body tissues. It also includes the use of nutrients for body metabolism such as exercise, digestion, breathing and beating of the heart.

Reproduction is the development of the unborn young. The unborn calf (fetus) grows most rapidly the last three months of the gestation period.

Milk production requires nutrients after a dairy animal calves and starts producing milk. Requirements increase as the amount of milk increases.

Body reserve is the accumulation of body fat between muscles, under the skin and in other parts of the body. In addition to fat, other nutrients or elements may be stored as body reserves.

Mature dairy animals use most of their feed for body maintenance and milk production except during the dry period. During the dry period, the pregnant cow uses much of her



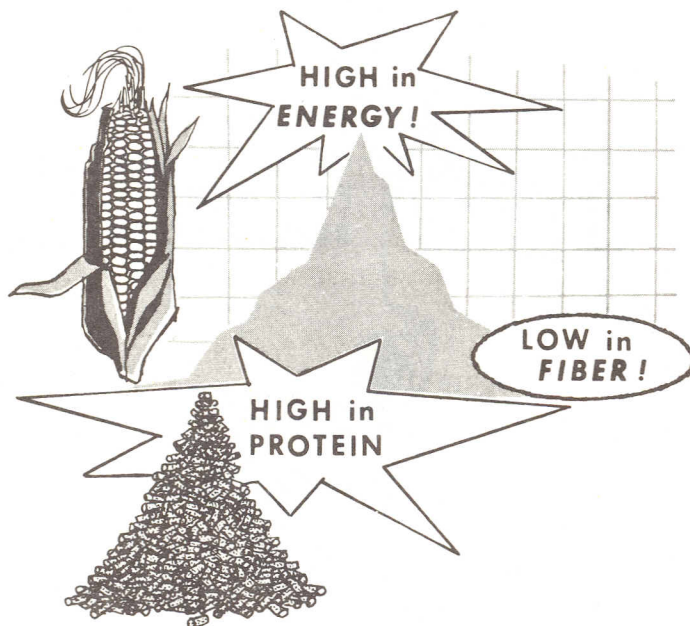
feed for reproduction. Young dairy animals not pregnant use all of their feed for growth, maintenance and body reserve.

Digested feed not used for growth, maintenance, milk production or reproduction is stored as body reserve. Much of this reserve goes into production when a cow freshens. In younger animals, body reserve is the animal's energy bank. It is used when the animal's feed does not furnish enough nutrients.

Classes of Feed

Feeds are divided into concentrates such as grains and by-products, and dry and succulent forages. Corn, milo, barley and oats are examples of feed grains. Wheat bran, soybean oil meal, dried sugar beet pulp and many other feeds like these are examples of feeds that are by-products of an industry. Alfalfa and prairie hay are examples of forages high in dry matter and low in moisture. Corn silage, grass silage, green chop or pasture are examples of succulent forages relatively low in dry matter and high in moisture.

Commercial feeds manufactured and marketed by the feed industry are a combination of grains, by-products and manufactured products.

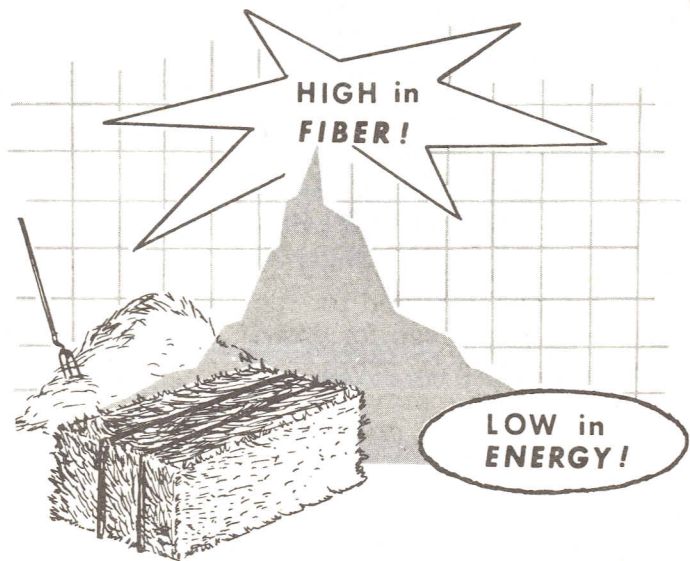


Concentrates

Concentrates are feed grains or a combination of feed grains, by-products and manufactured products. Most of the concentrates are high in total digestible nutrients and, therefore, are good sources of energy. Concentrates vary in their protein content. Concentrates high in protein, called protein supplements, are used to balance the protein content of the ration with grains and forages.

Dry forages vary in quality depending upon stage of maturity when harvested and the amount of damage due to unfavorable weather at harvest. In general, dry forages contain about 90 percent dry matter, are lower in nutrients and higher in fiber than concentrates. Alfalfa hay, an excellent example of a dry forage, is a good source of protein.

Succulent forages also vary in quality. The silages, which are examples of succulent forages, contain 26 to 32 percent dry matter. Larger quantities of silages must be fed to get the same results obtained from feeding dry forages. Dairy animals, because they have four compartments in their stomach and use



Dry Forages

bacteria, protozoa and enzymes to digest feeds, make good use of a wide variety of feeds. They can use to a good advantage dry and succulent forages and many different kinds and combinations of concentrates.

Feeds Used in Nebraska

The soil and climatic conditions in Nebraska are favorable for the production of many different kinds of feeds suitable for dairy animals. Grains produced in Nebraska that are good sources of nutrients are corn, milo, barley, oats and wheat.

Some of the by-products produced by different industries are wheat bran, sugar beet pulp, sugar beet molasses, dried skim milk, soybean oil meal, and miscellaneous products. An example of a manufactured product that can be used in dairy feeds is urea.

On Nebraska farms, a large variety of forages are produced. These are fed as hay, silages, green chop or pasture.

LESSON 6 FOOD NUTRIENTS

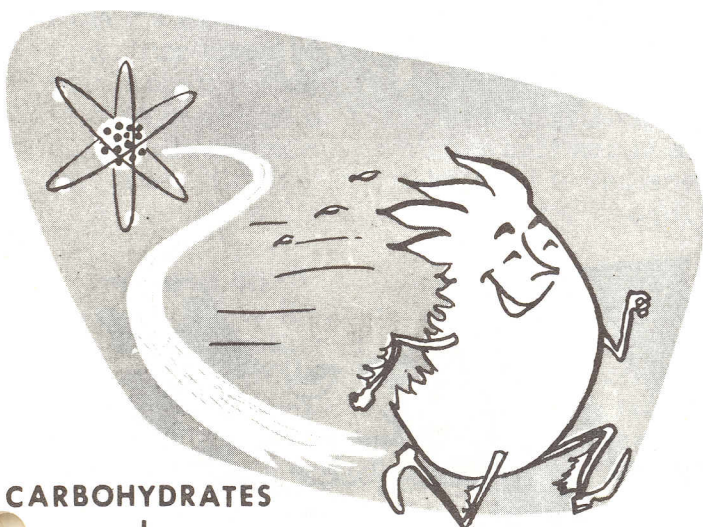
Why does feed make a dairy calf grow and develop? Why does a dairy calf gain better on some feeds than on others? Perhaps you have asked yourself these questions. Let us take a look at what feeds are made of and how they are used in the animal's body.

All feeds are made of nutrients. A nutrient is a food substance which can be used by the animal's body. A nutrient may be a simple element such as iron or iodine. It may also be a compound such as sugar or protein. Livestock feeds contain many nutrients. In fact, scientists have discovered more than 100 different nutrients. These nutrients are grouped into five main classes:

- | | |
|-------------|-------------|
| 1. Energy | 4. Vitamins |
| 2. Proteins | 5. Water |
| 3. Minerals | |

Carbohydrates and Fats

Carbohydrates and fats furnish most of the energy or fuel needed by the animal's body. Energy is needed for growth, movement, digestion of food and beating of the heart. It is also needed to keep the body warm. Energy nutrients that are not used are stored as fat until the body needs them.



**CARBOHYDRATES
and
FATS ENERGY NUTRIENTS**

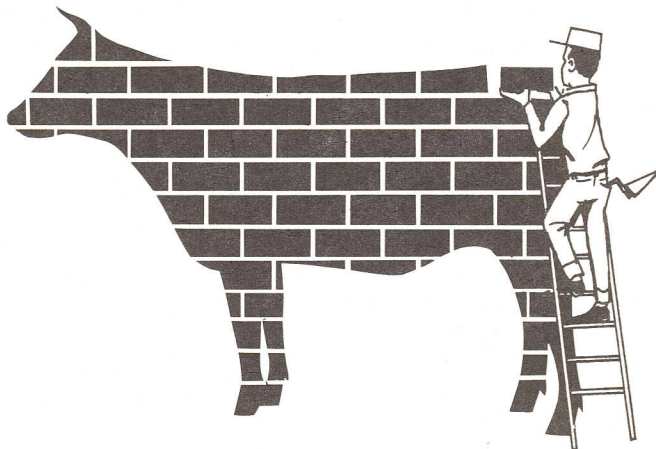
Sugar, starch and fiber are carbohydrates. Corn oil and tallow are examples of fat. Fat furnishes more energy than does equal amounts of carbohydrates. However, carbohydrates are more important because livestock feeds contain a lot of carbohydrates but very little fat. Dry and succulent forages are lower in carbohydrates and fats than grains, and thus supply less energy per pound.

Proteins

Proteins are used by the body to build muscle and blood. They also form part of the nervous system and the skeleton. When feed contains more protein than the dairy animal requires, the extra protein is used as energy.

Proteins are made of substances called amino acids. Amino acids are often called the "building blocks" of protein. There are 26 different amino acids. Each protein is made of several different amino acids. There are many different kinds of protein.

Soybean oil meal and tankage are high in protein. Corn and milo are lower in protein.



**PROTEINS
AMINO ACIDS - "Building Blocks"**

Minerals

Minerals are used mainly to build bones and teeth. Small amounts of them are also used to form blood, muscles, and nerves. Livestock need 16 different minerals. However, most of the mineral content of an animal's body is calcium and phosphorus. Minerals which are needed in very small amounts are called trace minerals.

Livestock usually get enough of most minerals in their regular feed. But many feeds do not contain enough salt. Some feeds are also too low in calcium and phosphorus. A mineral supplement is usually fed when extra minerals are needed. A mixture of trace mineralized salt and dicalcium phosphate or bone-meal is an example of a mineral supplement.

Vitamins

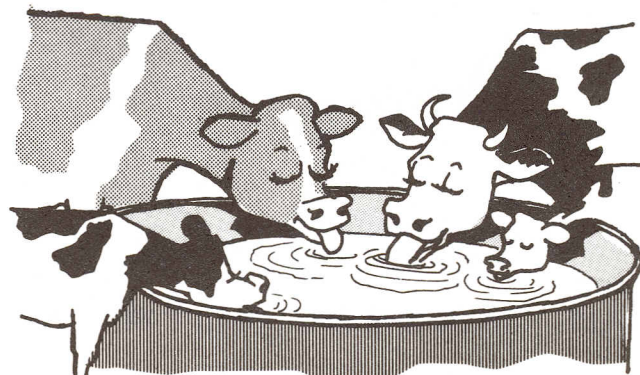
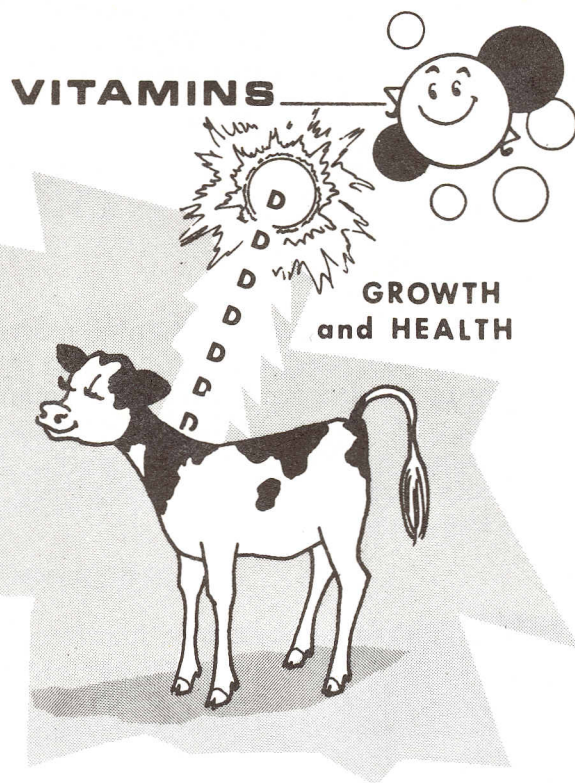
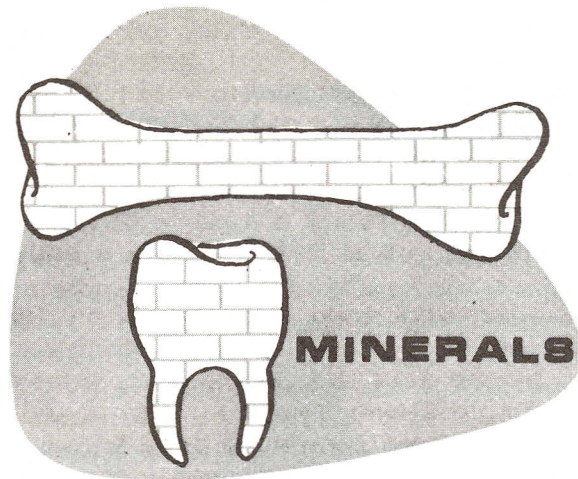
Vitamins are nutrients that do not furnish energy. But an animal must use small amounts of them every day to grow and keep healthy. The animal's body makes some vitamins but not always enough. Other vitamins are not made in the body at all but must be in the feed. An animal that does not get a certain vitamin for a while will become sick.

For example, a young dairy calf will get a disease called rickets if it does not have vitamin D for some time. Each vitamin does a certain job in the body. Scientists have discovered about 10 different vitamins. Many vitamins are named after letters of the alphabet. Vitamins A, B, C, D and E are examples.

Water

Water is the most important of all nutrients. It is also the cheapest. Every living thing must have water. An animal can live much longer without feed than without water. Water is a part of every cell in the body. In fact, your body is more than two-thirds water.

Water helps the body digest food and carry nutrients to the tissues. It helps the body get rid of waste materials. It also helps keep the body cool.



LESSON 7 FEEDING YOUR CLUB CALF

Feeding is an important part of your dairy project. A calf may have the inherited ability to grow rapidly, but she will not do so unless properly fed. What you feed will determine in very large part how much it will cost to raise your calf.

The feed which an animal eats daily is called a ration. A good ration is one designed specially for the animal to which it is being fed. Such a ration should be reasonable in cost and taste good so that the calf will relish eating it. Finally, it should have the right amount of each nutrient so that the calf will grow and develop normally.

A good ration may contain many different kinds of feeds or it may contain only two or three kinds. For young animals a simple ration is just as good as a more complicated one and is usually cheaper. Use homegrown feeds, or feeds that are grown locally when they are available. This will help keep down the cost of the ration.

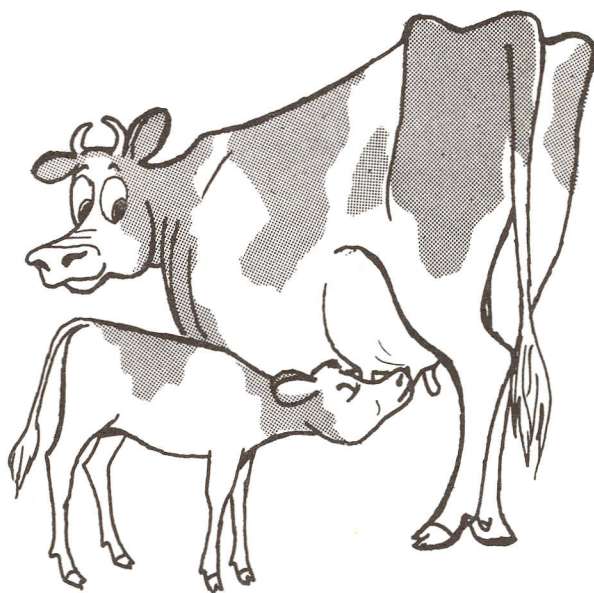
Early Feeding

A normal, vigorous calf should be standing and attempting to nurse within an hour after it is born. If your calf has trouble getting its first meal, you will have to help it.

The calf needs colostrum--the first milk from its mother--if it is going to survive. Colostrum contains antibodies or substances that protect the calf from infection. It also is a rich source of proteins and vitamins, especially vitamin A, which a calf needs at this time. Colostrum can be used to replace milk or milk substitutes pound for pound.

The calf should be taken from its mother when it is 12 to 18 hours old. Separating the calf and its mother at this time reduces the chance of the calf's overeating or from picking up infection from the area where it was born. It is important though that the calf continue to get its mother's colostrum for at least three days.

After the third day, your calf may be switched to milk replacer or whole milk.



Teaching your calf to drink will be easier if the calf has been away from its mother for at least 12 hours.

To teach your calf to drink from a bucket, let the calf suck your fingers, then gradually lower its head into the warm milk or colostrum. After it has had several swallows withdraw your fingers slowly. This process may have to be repeated several times.



Either a nipple bucket or an open bucket can be used to feed your calf. Whichever you use it should be kept clean. Feeding with dirty and unwashed utensils can cause scours and other digestive disturbances.

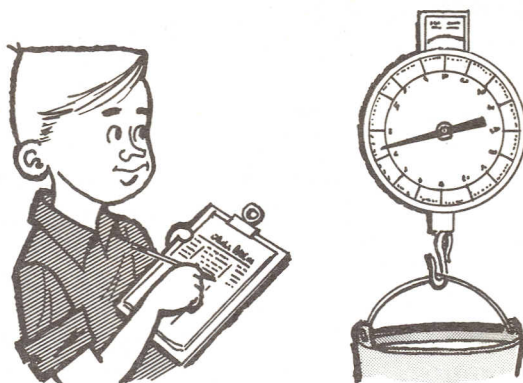
Most calves need to be fed only twice a day. Milk or replacer should be warmed to 90° to 100° F and fed at the rate of 8 to 10 percent of the bodyweight of the calf, depending on the breed. For example, if you have a Holstein calf that weighs 90 pounds, she would get nine pounds of milk per day, or if you had a 60 pound Jersey, she would get 4 - 5 pounds per day.

Milk and Milk Replacers

Careful feeding is very important during the first 20 days. During this time, it is better to slightly underfeed your calf than to feed it too much. A young calf's digestive system is easily upset. After your calf is 20 days old and if it is vigorous and healthy, it can be fed more than the suggested amounts.

After the calf is 5 to 7 days old and has a good start on colostrum and milk, it will grow and develop well on a number of different feeds.

The two most practical ways to feed your calf are by limited amounts of whole milk or by a commercial milk replacer.



Milk replacers usually contain 50 to 90 percent of milk solids such as dried skimmed milk, dried whey, dried whey products, or dried buttermilk. They are designed to lower the cost of raising calves by replacing whole milk. The manufacturer's recommendations should be followed carefully when milk replacers are used.

Calves raised on milk replacer may be a little slower getting a start and their coats may be a little rougher than milk-fed calves. Replacer-fed calves will be thrifty and may have less trouble with scours, and by the time they are yearlings should compare favorably with calves raised other ways.

Pounds of Milk to Feed Daily

Age of calf	Pounds of milk to feed daily	
	Holsteins and Brown Swiss	Guernseys Jerseys Ayrshires
1-3 days	Suckles cow; or is hand-fed colostrum	
3-7 days	9 to 10 pounds	4 to 8 pounds
2nd week	10 to 12 "	5 to 8 "
3rd week	10 to 12 "	6 to 9 "
4th week	8 to 10 "	6 to 7 "
5th week	6 to 8 "	6 to 7 "
6th week	4 to 6 "	5 "
7th week	4 "	4 "
8th week	(No milk after 8th	4 "
9th week	(week if eating	3 "
10th week	(grain well	2 "
		(No milk after (10th week if (eating grain (well

"Starter" Mixtures for Calves

Ingredients	Mixture		
	A <u>1</u> / Parts	B <u>2</u> / Parts	C <u>3</u> / Parts
Cracked corn or similar grain	28	40	43
Oats, whole or crushed	30	30	22
Wheat bran or distillers' dried solubles	30	0	22
Soybean, linseed, or cottonseed meal	10	28	11
Salt (iodized in certain areas)	1	1	1
Bonemeal or dicalcium phosphate	1	1	1
Total	100	100	100

1/ Contains 15.5 percent of protein.

2/ Contains 19.6 percent of protein.

3/ Contains 15.0 percent of protein.

Starter Rations

Most calves will develop a little faster if they receive a "starter" grain ration along with milk or milk replacer. A calf "starter" should be offered to the calf as soon as the calf can be induced to eat it, usually at 7 to 10 days of age. It may be necessary to encourage your calf to start eating grain by rubbing a little grain on its nose after milk feeding.

Encourage your calf to eat all the "starter" mixture she will clean up, up to a limit of 4 pounds a day. When your calf is 4 to 5 months old she should be switched to a growing ration.

Growing Rations

Growing Ration for Calves

Ingredients	Pounds
Ground Shelled Corn	400
Ground Oats	300
Wheat Bran	200
Soybean Oil Meal	100
Salt	10
Steamed Bonemeal	10

If only poor quality hay is available, it may be wise to add another 100 pounds of soybean oil meal to the mixture.

Hay - Any variety of your best bright, leafy, early cut hay will be good for your calf. Hay feeding should begin when your calf is 1 to 3 weeks old. Encourage your calf to eat all the hay she will readily clean up as long as it doesn't limit her grain consumption.

Silage - Grass or legume silage makes a satisfactory feed for calves and heifers if it is not too high in moisture content. Dry silage (50% dry matter) or haylage will produce gains equal to those obtained from hay.

Pasture - It is a mistake to expect a calf under six months of age to get a large part of its ration from pasture. Hay or low moisture silage and grain should provide most of the nutrients for the young calf.

Water - Provide your calf with clean fresh water from the time she is 3 weeks old.

Minerals - If your calf is being fed an adequate ration, she will be getting all the minerals she needs except salt. Salt should be provided as soon as your calf is old enough to eat hay or grain. When your calf is a month old, she should have free access to a salt block or loose salt.

Vitamins - Most vitamins your calf will need are supplied naturally by milk, good forage, sunshine, or manufactured by the calf itself.

Adequate amounts of vitamin A, D, and E are added to most commercial milk replacers and starter rations.

Both vitamin A and D are available in supplement form and can be added to home-made grain rations as needed.

Antibiotics - Almost all commercial milk replacers and many "starter" rations contain antibiotics. Feeding antibiotics to calves reduces scours and increases grain consumption. It does not pay to feed your calf antibiotics after she is 2 to 3 months old.

LESSON 8 MANAGEMENT OF YOUR CLUB CALF

Along with proper feeding it is equally important that your calf is properly housed and cared for. While your calf is young, it is a good time to identify her, dehorn her, remove any extra teats, start regular hoof trimming and see that she is vaccinated.

Housing - Your newborn calf doesn't need elaborate quarters, but it should have plenty of fresh air and a dry bed. Damp, unsanitary quarters and lack of ventilation are more harmful than low temperature.

When you separate your calf from its mother, it pays to provide an individual pen for your calf. A four by five pen with three solid walls, open at the top, and small stanchion or removable feeding panel at the front should make very satisfactory quarters.

Calves should be kept in individual pens as long as they are receiving milk or milk replacer. Individual pens reduce the chance of spreading disease from one calf to another, and make it possible to watch the eating habits of the individual calf more closely.

After your calf is on all dry feed, it can be penned with other calves of the same size.

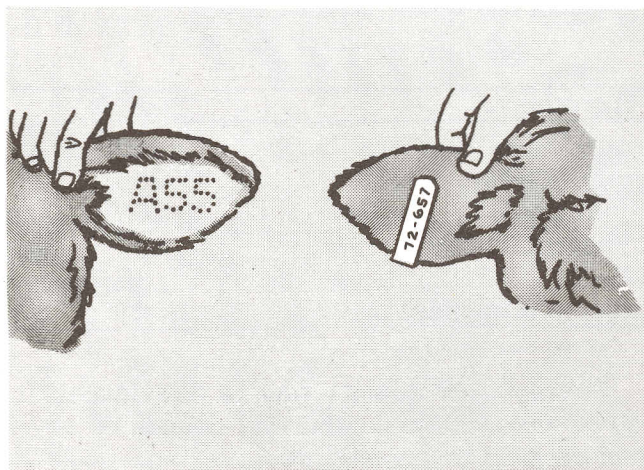
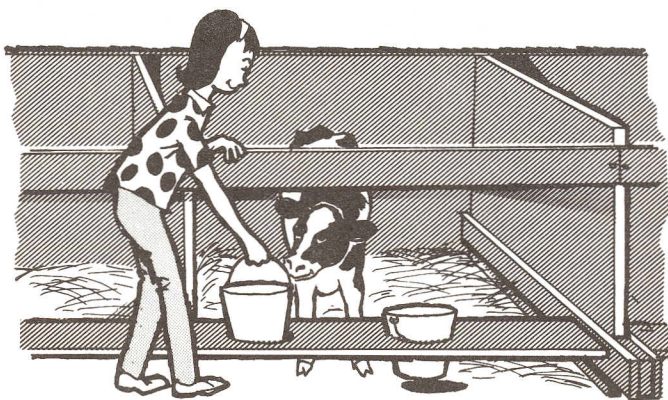
Identification - It is a good idea to positively identify your calf in some way before she is separated from her dam. If you have a calf you want to register, some type of permanent identification is required.

Solid colored animals, such as Brown Swiss, Jerseys and Milking Shorthorns, must be tattooed in one or both ears if they are to be registered. Broken colored animals such as

Ayrshires, Guernseys, or Holsteins are usually photographed or sketched for identification purposes.

If you have a grade calf, a plastic or metal eartag makes the quickest and easiest way to identify your calf.

Regardless of how you decide to identify your calf, it is important to make a written record of what you do.



Dehorning - Horns on dairy cattle are nothing but a nuisance. If done early, dehorning is a simple task, and with practice a neat job can be done with little discomfort to the calf.

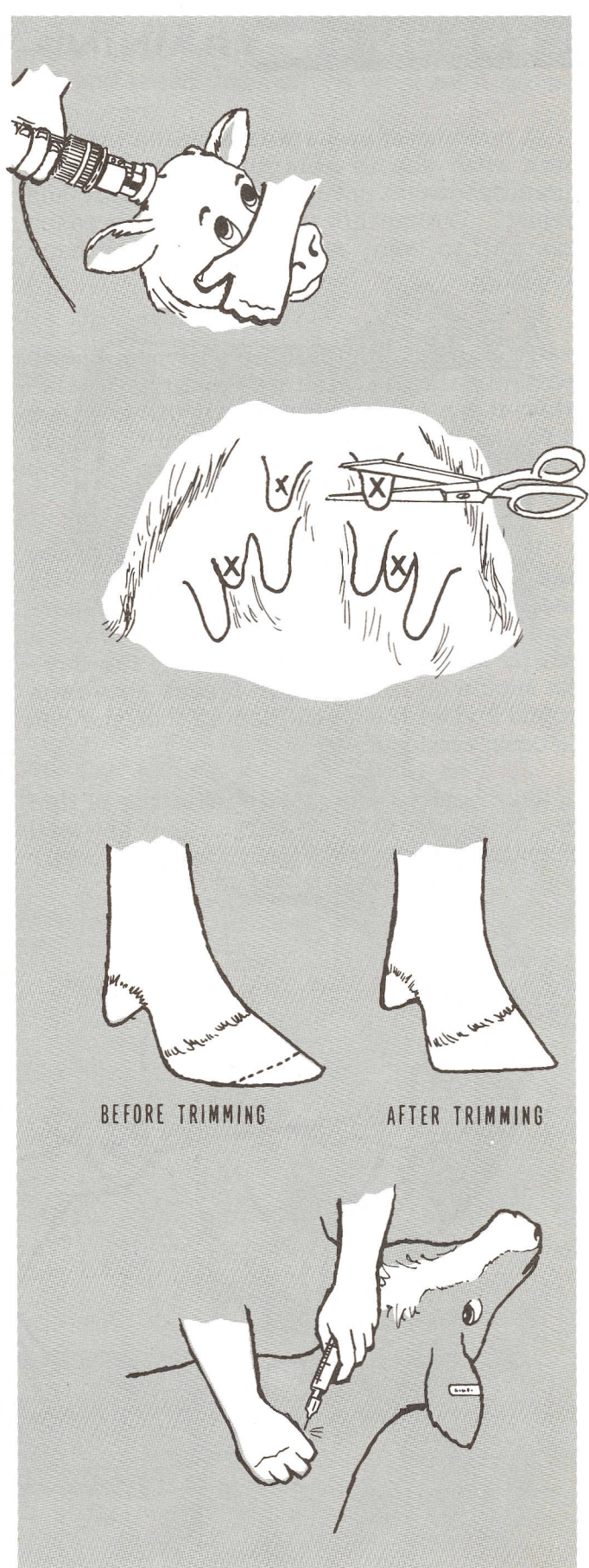
You can prevent horns from developing by using a dehorning paste on the small horn button a few days after the calf is born or you can use an electric dehorner on a calf up to a month of age.

Extra Teats - Many calves have one or two teats in addition to the four normally present. Extra teats distract from an animal's appearance in the show ring and may be a nuisance on a milking cow. These extras can easily be removed with a sharp pair of scissors when the calf is one to two months of age.

Foot Care - When calves are confined to pens or stanchions, their feet often grow faster than they are worn off. The toes may turn under, and the walls of the hoof may grow below the sole of the foot and turn under. Poorly shaped feet may cause your calf to walk improperly or may encourage the development of weak pasterns or crooked legs.

Ordinarily, only the toes and the wall of the hoof that extends below the sole needs to be trimmed. Hoof trimming is usually a two man job so you had better plan to have your dad or club leader help you with this project.

Vaccination - It is quite likely that you will be taking care of your calf when she is the proper age to be vaccinated for Brucellosis. Since all milk cows are required to be "calfhood vaccinated," it is important that you get this job done while your calf is the proper age. To be calfhood vaccinated your calf must be vaccinated between 3 and 8 months of age. You should consult your veterinarian or county Extension agent about getting this job done.



LESSON 9 TRAINING YOUR CALF FOR SHOW

A good herdsman starts training his calf soon after she is selected. The training should continue until show time in July and August. During this time you need to teach your calf to lead, stand correctly and back easily.

Proper Handling - A top showman knows that animals like kind treatment. He also knows that a roughly treated calf will continue to be stubborn and difficult to train. Proper handling is a must if your calf is to develop into a well mannered show animal.

Halter Breaking - The first step to training your calf to show is to halter break it. This means to teach your calf to get used to wearing a halter. You can usually halter break a calf by keeping her tied up during the day. She should be tied about 18 inches above the ground and with enough lead so that she can lie down comfortably.

Visit your calf every day while she is tied up. Brush and pet your calf so that she will know that you are her friend. It helps to talk

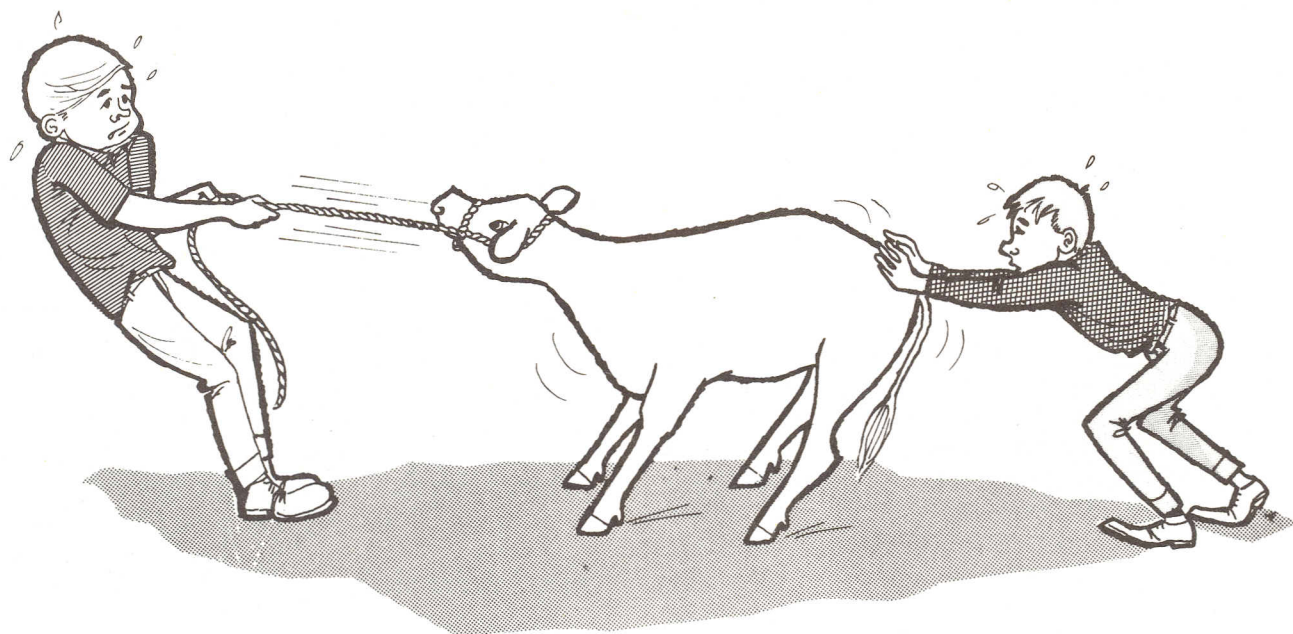
to your calf so that she will recognize your voice.

Teaching the Calf to Lead - The next step is to teach your calf to lead. You should begin to teach your calf to lead as soon as she is halter broken. Don't wait too long. The older and larger your calf gets the harder it will be to train her to lead.

Have your dad help you when you begin leading your calf. She may fight the halter and try to get loose. Do not work alone and run the risk of letting your calf get away from you. If she gets away once she'll try it again. You will know when your calf leads well enough for you to do it alone.

A good way to teach your calf to lead is to lead her to places she likes to go to--to feed and to water. Do this for a few days and she will lead with ease.

It is a good idea to lead your calf every day if you have the time. In addition to learning to lead easily, your calf needs to learn to walk slowly and to take short steps.



Teaching Your Calf to Pose - A proper pose improves the balance and general appearance of your calf. Train your calf to stop with her feet in proper position. Generally this is with the front feet side by side and four to six inches apart. The rear feet should be placed so the rear legs appear straight from both the rear and side. Usually one hind foot is back six to eight inches.

Part of posing your animal correctly is showing her to best advantage. You need to teach your calf to bring her loin down when you pinch her lightly, or to straighten up her back when you place your hand underneath her barrel.

You also need to teach your calf to move forward, or backward, or to move just one foot as you apply pressure or pull on her halter.

A top dairy showman doesn't have to use his feet to pose his calf once she is trained.

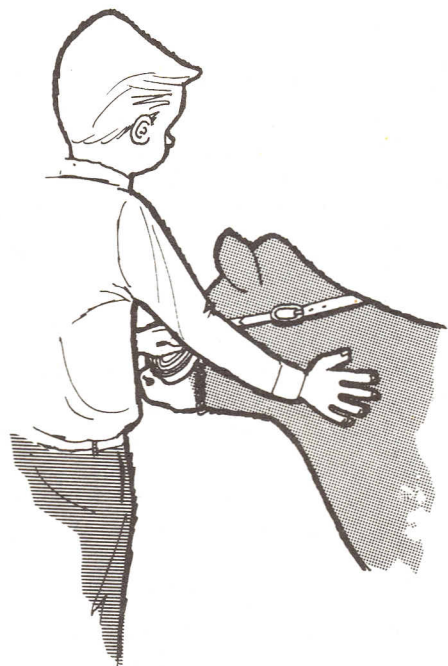
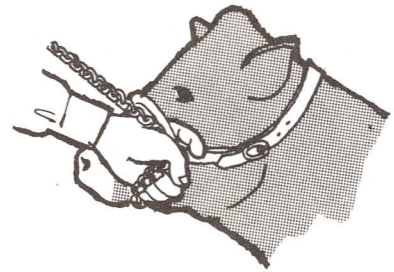
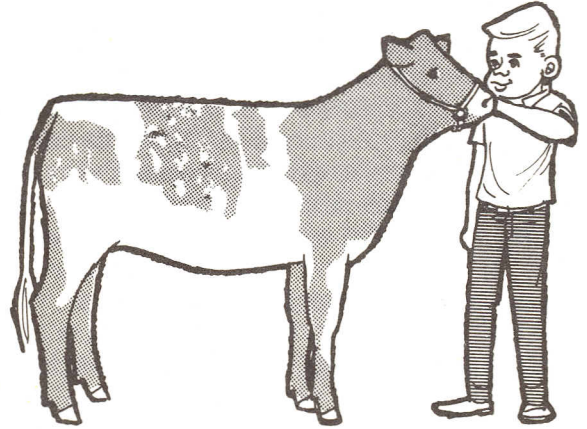
One good way to be sure that you are posing your calf correctly is to have your dad or brother help you. First, you pose your animal in the position that you think shows her to best advantage. Then let someone else hold her in the position without letting her move, and you then move out away from her and look at her critically as a judge might do.

Teach The Calf to Back - One final training step is to teach your calf to back up easily. Many times at a show you will be asked to change positions in the show line and you will need to back your calf out of line.

Most calves will learn to back up if you are patient in your training. The best way to back up a calf is to push on the point of the shoulder with your right hand and at the same time exert a backward pressure on the halter. Keep practicing this procedure until your calf moves easily and in a straight line.

Showing Training Will Help You and Your Calf - Some of the best training you can give your calf is to take part in fitting and showing training. Your county Extension agent will provide training sessions that you and your calf can take part in. Some club leaders plan a club show as one of their meetings in the summer. Many breed associations have spring and early summer shows. Take part in as

many fitting and showing contests as possible. It will be good for both you and your calf and teach you both to work as a team.



LESSON 10 GROOMING YOUR CALF FOR SHOW

General appearance is the first thing a judge notices about an animal in the show ring. This first impression is important because it influences the judge's opinion of your calf.

Proper grooming will not make a dairy calf of red ribbon quality into a purple ribbon calf. However, it will often make the difference between a calf being placed a top blue instead of a second or third place blue, or it may make the difference between a calf receiving a blue ribbon instead of a top red ribbon. Grooming can be easy and pleasant work. It begins after you have finished halter breaking and training your animal.

Washing A Calf - Your calf should be thoroughly washed before you start blanket-ing her. The steps to a good washing job are:

1. Soak calf thoroughly with water that is not too cold.
2. Protect calf's ears so water doesn't get in them.
3. Apply soap and scrub thoroughly with a stiff brush.
4. Rinse with clear water and scrape off excess water with your hand. If your animal is still not clean, wash her again.
5. Dip the tail into a bucket of soapy water, rub it, and squeeze the switch in your hands. Rinse the switch with clear water, and snap out the water. Bluing added to the water will help bring out the white in a switch.
6. Cover her with a clean blanket until dry and the hair will set in place.

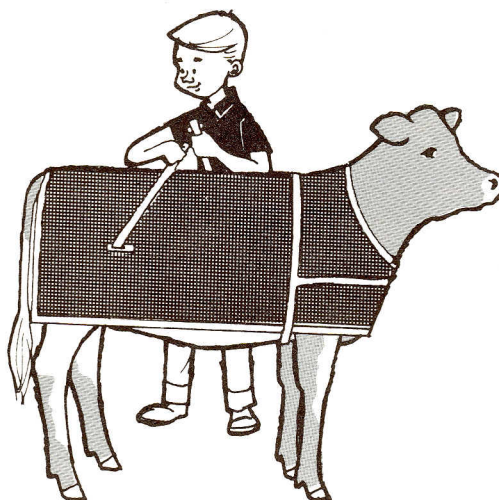
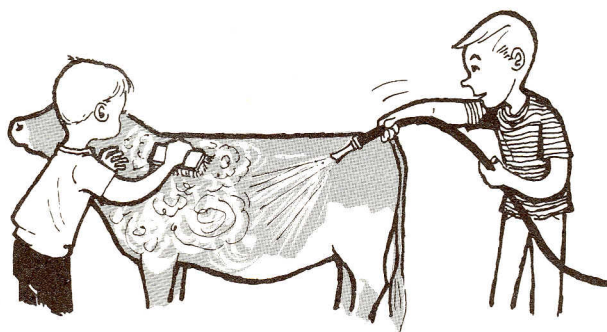
Blanketing - To properly condition the hide and hair of your calf, she needs to be blanket-ed several weeks before showing. A canvas blanket is the most serviceable and is the type most commonly used. A burlap blanket does not keep the calf as clean. A pattern for making a blanket is shown on p. 25. The blanket should fit your calf properly to do the most good. Place the blanket on your calf the same way each time. Don't just throw the blanket

on your calf. Fold the blanket double and place the front part on the withers. Unfold the rear half and pull backward and downward. This procedure will pull the hair down and cause it to lie flat.

Remove the blanket each day and brush the hair vigorously.

Grooming - Brush your animal thoroughly once a day. You may need a stiff bristle brush to start with to remove loose hair and dirt. After the dirt is removed, it is better to use a soft bristle brush. Brushing vigorously makes the hair soft and silky, removes dead hair, and helps give your calf that slick, well fed look.

Rubbing with your hands is also good for the hide and hair. In grooming animals, there is no substitute for "elbow grease" applied daily.



Clipping - After your animal is washed and brushed, she is ready for her first clipping. No two animals will be clipped exactly the same, since no two animals will have exactly the same conformation. A good job of clipping can overcome or minimize many type faults.

The first clipping should be done at least a month ahead of the first show to give the sharp edges of the clip pattern a chance to blend in smoothly. The final clipping should be done within one or two days of the show. On most heifers only the head, neck, and tail will need clipping.

Clip the Tail First - The calf will give you less trouble if you clip the tail first. Before clipping the tail, let your calf feel the vibration of the clippers on her tail head.

Clip the tail against the grain of the hair. Clip from just above the twist (the point at which the thighs come together at the back of the animal) to the tail head. When clipping the tail head, take the hair off the top only. Try to make the topline look as smooth and

straight as possible. If there are low spots in the topline just ahead of the tail setting, leave the hair long in the depression, and clip it short in the high areas.

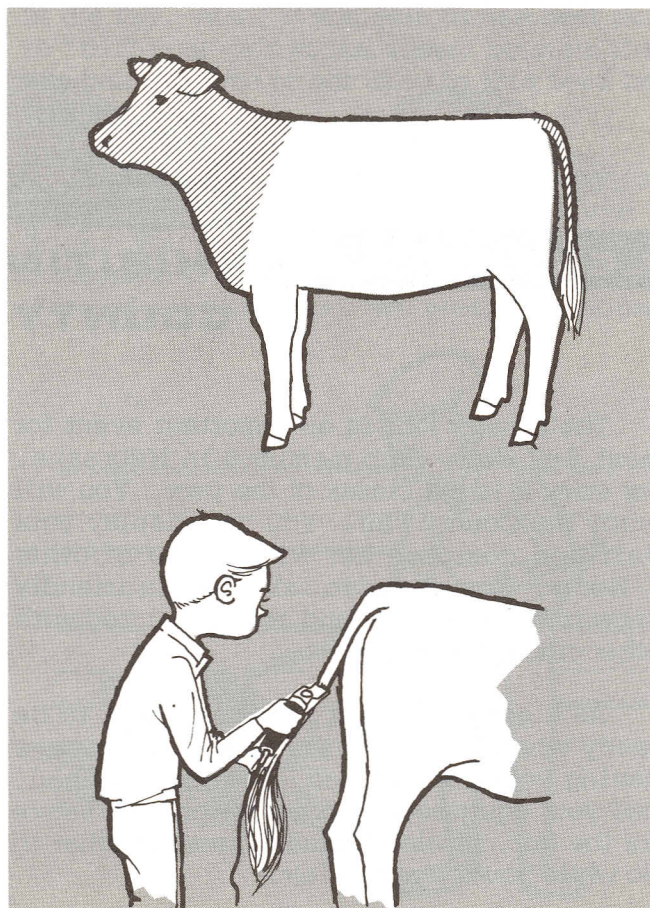
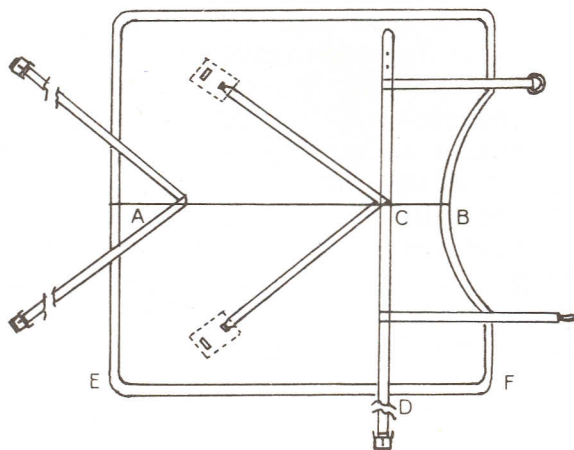
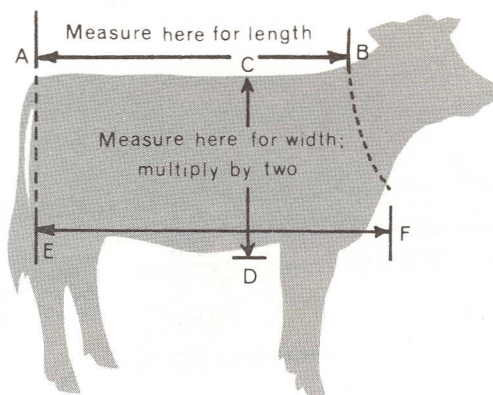
Clipping the Head and Neck - Before clipping the head, let your calf feel the vibration of the clippers on her forehead. You will get a closer, smoother clip if you will clip in the opposite direction from the way the hair lies.

Most dairy calves and heifers will be improved in their general appearance if the entire head and neck is clipped. One possible exception is the Milking Shorthorn. Some 4-H club members prefer to clip only the ears on their Shorthorns and this is quite acceptable.

The neck may be clipped all over or just along the top, but it improves the dairy character of most calves to clip the entire neck.

Never clip the belly or underline of heifers. Leaving the hair long helps make the heifer appear deeper in the body.

Dairy animals should never be clipped all over.



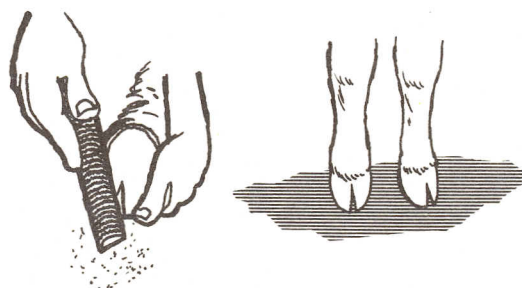
Care of Clippers - Electric clippers are expensive and should be taken care of carefully. Before and after each use clippers should be cleaned and oiled. Never clip an animal that has not been washed. Clipping a dirty animal causes unnecessary dulling of the clipper blades.

To clean the blades dip the head of the clippers in kerosene or diesel fuel while the clipper is running. Do this several times while you are clipping or whenever the clippers slow down or get too warm.

Care of Horns and Feet - If your calf has horns, shaping and polishing them will improve your calf's appearance.

If the hoofs on your calf are long and the toes turn up, the calf will not stand or walk properly. If trimming is necessary, trim to keep the sole level, smooth down the side walls, and have the toes even. Most of the trimming should be done on the underside of the foot.

Trim the feet three or four weeks before the first show. Just before the show, clean the hoofs thoroughly, dry and apply a very little sweet or olive oil to improve the appearance.



LESSON 11

EXHIBITING AT THE COUNTY FAIR



The County Fair is an important event for most 4-H dairy club members in Nebraska. For many it is the climax of the year. You will enjoy the County Fair. You can display your calf and compare her with those of other 4-Her's. You can also take part in friendly show ring competition and get acquainted with other club members.

As a good exhibitor, you will want to be ready when you go to the fair. This means having your calf trained, washed, clipped, and your equipment in order before you leave for the fair. It also includes knowing what to do while you are at the fair.

Final Preparation at Home - All previous training before the fair should be regarded as rehearsal for show day. Use your show halter as much as possible to give your calf a chance to get used to the feel of a chain under her jaw. Practice walking, posing, and backing your calf. It is helpful if you can have someone act as the judge so that you can have actual experience in show ring procedure. If you have brothers or sisters or even other club members who are going to exhibit dairy animals, you can practice together and get some useful show ring practice.

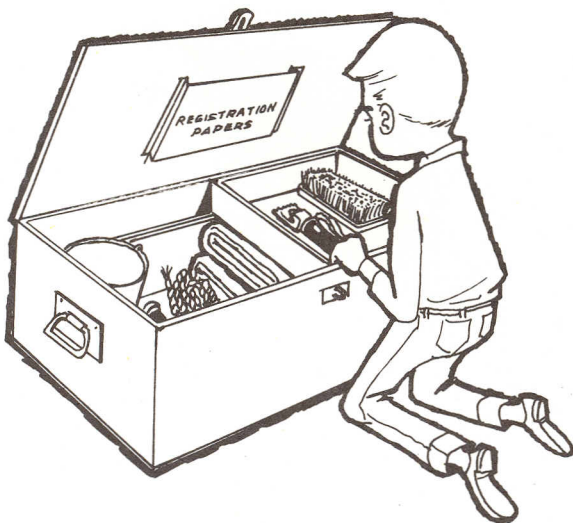
You should encourage your calf to eat the same grain mixture and hay at home that she will be getting at the fair. If your calf has been getting straight alfalfa hay, you may want to switch her over to a combination of alfalfa and grass hay.

Two last minute jobs include getting your animal entered in the show and getting your show box ready to go.

You should be familiar with the rules and regulations of your county show. Know when the entry date is and have your entry blank completely and accurately filled out ahead of show day. Be sure you have your calf entered in the right class. If you have a registered calf have the calf's registration papers ready to go with the calf.

Check over your show box and show equipment and be sure you have everything you need. Here is a list of some of the things you will need:

1. Halters - show & rope
2. Blanket
3. Feed pail
4. Water bucket
5. Brushes
6. Washing equipment
7. Tail comb
8. Hair dressing
9. Fork
10. Rags
11. Show clothes
12. Registration papers



When You Arrive At the Fair - As soon as you get to the fair check at the livestock office and find out where your calf is to be stalled.

Locate your calf's stall and get it bedded down with fluffed straw. See that your calf has water, tie her up and let her rest.

Be A Good Herdsman - Keep your calf, her stall and the alleyway behind her clean and neat. Do not leave feed pans and water buckets in the stall after your calf has eaten. Keep your calf clean and well bedded at all times. Normally your calf will be unblanketed during the day so that visitors can see her. Put her blanket on at night to help keep her clean.

If your calf's feet need trimming, this should be done at least two weeks before the show. If you wait until show day to do your hoof trimming, you will have to be very careful not to trim too deep.

Starting at least two weeks before the show, feed and water your calf in the same feed pan and water bucket that you plan to use at the fair. Also, if you plan to use beet pulp to "fill" your calf at the show, be sure that she has had time to get used to this feed before show day.

Sometimes the water at the county fair tastes different and your calf will refuse to drink. You can avoid this problem by adding a teaspoon of molasses per gallon of drinking water during the last two weeks at home.



Your calf will get used to the molasses flavor and when you go to the fair the molasses will cover up any odd flavor in the water.

Show Day - If you plan to wash your calf on show day, do it early enough in the day so that your calf will be thoroughly dry at show time. No judge likes to handle a wet calf.

Half an hour before show time, set a bucket of beet pulp in front of your calf. After she has eaten it, and before you go in the ring, give her some water. If you have experimented with "filling" your calf at home, you will have a good idea of how much beet pulp and when to give it to her to make your calf look her best.

Just before the show give your calf her final grooming:

1. Be sure her show halter fits properly
2. Curry and brush her hair clean
3. Apply a light coat of hair dressing
4. Fluff out the switch
5. Clean off the hoofs

Before you lead into the ring, make sure you are properly dressed and well groomed yourself. In Nebraska, appropriate dress includes a 4-H cap, white shirt or T shirt. A white blouse is appropriate for girls. White trousers are common at many dairy shows, but generally are not required.

Showing Your Calf - When your class is called, lead your calf promptly to the show ring. The ringmaster will direct you to your proper place.

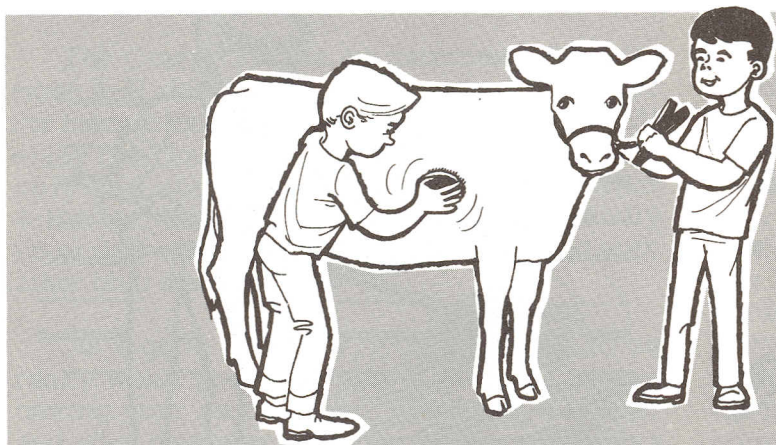
Enter the show ring, leading your calf around the ring in a clockwise direction. Walk opposite her head on the left side. Hold the lead strap neatly gathered in one or both hands. Keep an eye on the judge, and at the same time be sure your calf is looking her best. Keep her head up and move slowly.

In most shows the class will continue to parade around the ring until the whole class is in the ring and until the judge has had a chance to see all the animals move.

Watch the judge for instructions. When he signals for the class to stop stand your calf up quickly and correctly. She will look her best if her head is up, her back straight, and her legs squarely under her. Once you get your calf properly posed leave her alone and don't fuss with her any more.

Many judges will want to handle the animals while they are standing so be sure you have a good hold on your calf in case she is surprised. As the judge inspects your calf you should move yourself so that you are not between the judge and your calf.

If your calf becomes restless and nervous don't lose your temper and mistreat the calf. Be patient and work gently and try to get your calf to stand and walk as well as you can. If you fight your calf the job will only become more difficult.



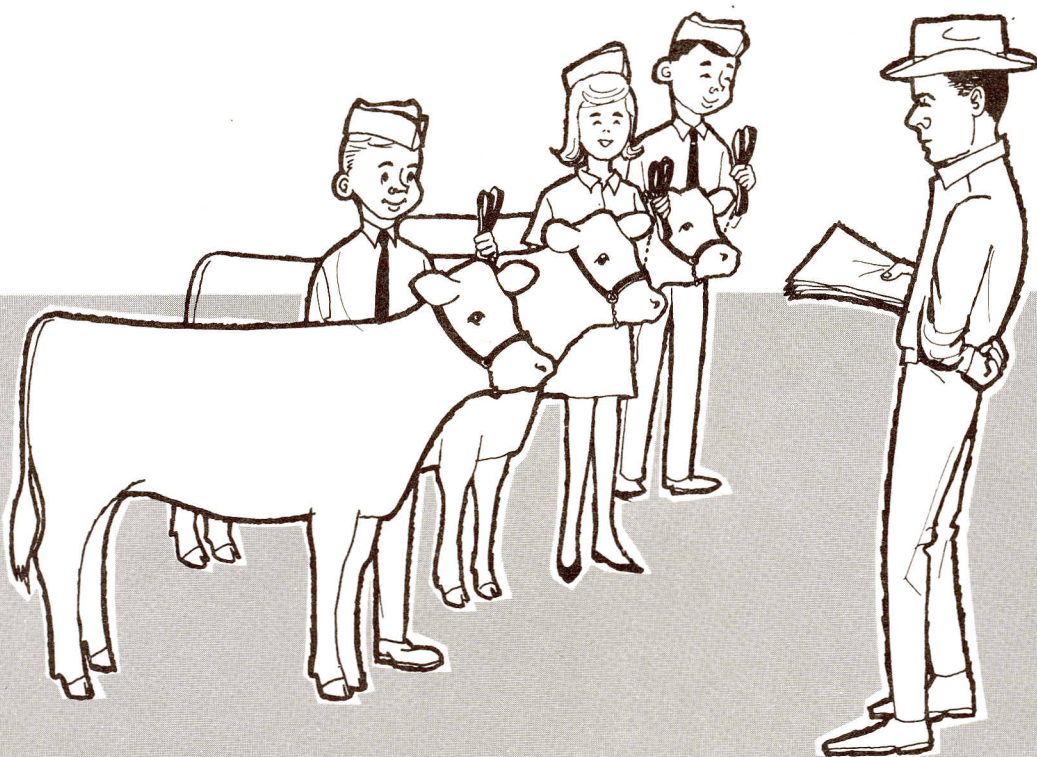
When the judge signals you to bring your animal into line, bring her up promptly and stand her up so she looks her very best. You may get moved down the line if you don't do your very best at this time. Be sure to keep your calf lined up with other animals when you are in line. All calves should be in line with the calf in first place. When your calf is in line, there should be no more than six inches between your calf and the calves on either side of her.

All 4-H club members are good sportsmen, so whether you win or lose smile, and be ready to congratulate the winner or to encourage those who didn't do as well as you did. It is quite proper to ask the judge for his reasons for placing your calf where he did if there is any doubt in your mind. Visiting with the judge may help you do a better job next time.

After the Show - Once the class has been judged, and the ribbons handed out, take your calf back to her stall and let her rest. Remove her show halter, and tie her with a rope halter.

This is a good time to check your equipment to be sure you still have all of it. Equipment is often misplaced in the last minute rush of getting ready to show.

After the show it is important that you keep your calf well groomed and her stall and the area around it clean and neat. You owe it to your club or county and to the show management to present your exhibit to the public in the best possible manner at all times.



WORKSHEET FOR LESSON 1

1. Name the different kinds of dairy projects you might carry.
2. How will you decide which breed to select?
3. Which will be best for you, a grade calf or a registered calf?
4. Which do you plan to do, buy a calf or raise your own?

5. Name several places where you would look for a project calf.

6. How much do you expect to pay for a project age calf?

7. Name some individuals who might help you locate a calf.

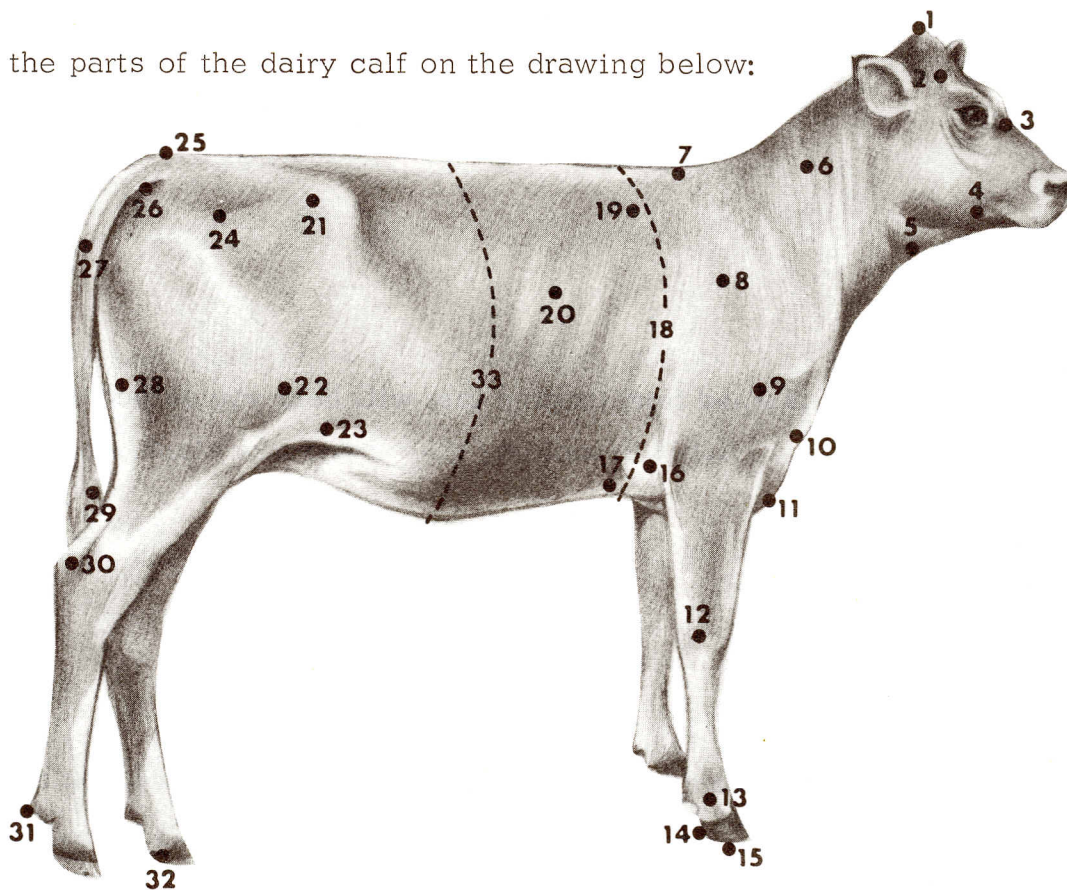
8. Why is it important to keep an accurate project record?

-

5. What do we mean by the term calthood vaccinated?

6. How important is disposition?

7. Identify the parts of the dairy calf on the drawing below:



- 1 _____
- 2 _____
- 3 _____
- 4 _____
- 5 _____
- 6 _____
- 7 _____
- 8 _____
- 9 _____
- 10 _____
- 11 _____

- 12 _____
- 13 _____
- 14 _____
- 15 _____
- 16 _____
- 17 _____
- 18 _____
- 19 _____
- 20 _____
- 21 _____
- 22 _____

- 23 _____
- 24 _____
- 25 _____
- 26 _____
- 27 _____
- 28 _____
- 29 _____
- 30 _____
- 31 _____
- 32 _____
- 33 _____

WORKSHEET FOR LESSON 3

1. Who were some of the earliest users of milk and milk products?
2. What reference does the Bible make to the dairy industry?
3. When did dairy cattle first come to America?
4. Which of the modern dairy breeds was the first to be imported into the United States?

5. Where was Nebraska's first dairy herd located?
6. How many dairy cows are there in Nebraska today? How does this compare with thirty years ago?
7. When was the University of Nebraska dairy herd established? Where is it located now?

WORKSHEET FOR LESSON 4

1. What is the most popular breed of dairy cattle in the United States?

2. Where did our modern breeds of dairy cattle originate?

Ayrshire_____

Brown Swiss_____

Guernsey_____

Holstein_____

Jersey_____

3. Which breed has the largest cows and calves? Which breed has the smallest?

4. Which breed gives the richest milk? The most milk?

5. Why are Milking Shorthorns called a dual purpose breed?

6. Who is the state breed secretary for the breed which you own?

WORKSHEET FOR LESSON 5

1. Animals use their feed to _____, _____, _____, _____, and _____.
2. Young animals use all of their feed to _____ and _____.
3. Adult animals use much of their feed for _____.
4. A concentrate which is rich in protein is called a _____.
5. A feed which is high in energy and low in fiber is called a _____.
6. Fat is stored for use by the body when the animal's feed does not furnish enough _____.
7. A dairy cow can eat and utilize a large amount of forage because she has a stomach with _____ compartments.

WORKSHEET FOR LESSON 6

1. Scientists have discovered over _____ different nutrients.
2. _____ are used mainly to build bones and teeth.
3. Soybean oil meal and tankage are high in _____.
4. Carbohydrates and fats are nutrients which furnish _____.
5. Corn and milo are low in protein but high in _____.
6. Proteins are made of building blocks called _____.
7. A _____ is a food substance which can be used by the animal's body.
8. An animal can live much longer without feed than without _____.
9. _____ are nutrients that do not furnish energy or help build the body.
10. A mixture of salt and bonemeal is a good example of a _____ supplement.

WORKSHEET FOR LESSON 7

1. What is colostrum? Why does your calf need colostrum?
2. Which is the best way to feed milk or milk replacer? With an open bucket or with a nipple bucket?
3. How much milk or milk replacer should you feed a Holstein calf that weighs 90 pounds?
4. Which is best milk or milk replacer?
5. What is a "starter" ration?

6. When should your calf start getting a "grower" ration?
7. Is silage a good feed for young calves?
8. Which two vitamins are commonly fed to calves in the form of a supplement?
9. Why do we recommend feeding antibiotics to calves?

WORKSHEET FOR LESSON 8

1. How should your calf be housed after she is separated from her mother?
2. Which breeds require that you tattoo the calf before it is registered?
3. What are two common methods of dehorning young calves?
4. When is a good time to remove extra teats?
5. Why should a calf's feet be trimmed and kept in good shape?
6. What is the proper age to vaccinate a calf if we want her to qualify as "calfhood vaccinated?"

WORKSHEET FOR LESSON 9

1. When should you begin to train your calf?
2. What can you do to help halter break your calf?
3. How can you be sure you are teaching your calf to pose correctly?
4. Explain how you would teach a calf to back up.

5. How often should you work with your calf?

6. Why do you need to teach your calf how to back up?

WORKSHEET FOR LESSON 10

1. Why should you spend time grooming your calf?
2. Describe how you would go about washing a calf.
3. Why should you blanket your calf?
4. What does daily brushing do for your calf's hair coat?

5. Explain how you would clip the tail of a calf.
6. Do all breeds recommend clipping the entire head of the calf?
7. What should you do to keep your electric clippers in good shape?
8. Explain how you should trim your calf's feet.

5. What feeds do you plan to take to the fair for your calf?
6. What are some of the last minute jobs you need to do just before you enter the ring?
7. If you are the first one in line, which direction do you lead your calf?
8. How should you line up your calf when the judge calls you into line?

Career Opportunities in Dairy Science

DAIRY PRODUCTION

Production

Farm Owner

Farm Manager

Milk Sanitarian

Extension Service

Artificial Insemination Work

Foreign Assistance Program

BUSINESS

Agricultural Loans

Dairy Equipment Sales and Service

Feed Sales

Public Relations and Promotion

Extension Service

Government Regulatory Agencies

Farm Owner or Manager

SCIENCE

Education and Research with
Universities, Government Agencies,
Industry, and Health Centers in:

Animal Physiology

Animal Nutrition

Animal Genetics

Agricultural Chemistry

Nutritionist and Pathologist

DAIRY MANUFACTURING

PROCESSING

Supervisor

Dairy Foods Manufacturing

Chemical and Bacteriological Control

Technical Sales and Service

Dairy Engineering and Maintenance

Milk and Food Sanitarian

General Manager or Owner

BUSINESS

Supervisor

Accounting and Audit

Personnel and Job Evaluation

Wholesale and Retail Marketing

Public Relations and Promotion

Foreign Service Specialists

General Manager or Owner

SCIENCE

Education and Research with
Universities, Government Agencies,
Health Centers, and Food Industries in:

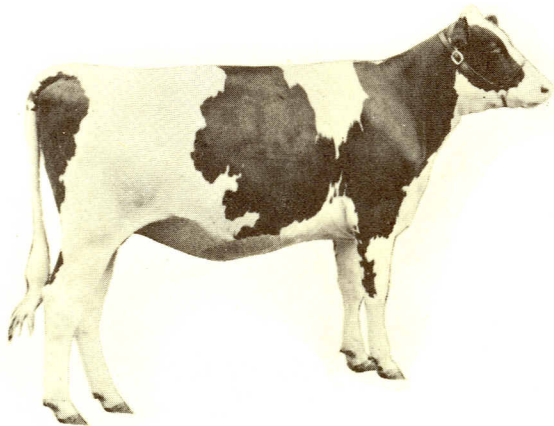
Microbiology

Food Chemistry

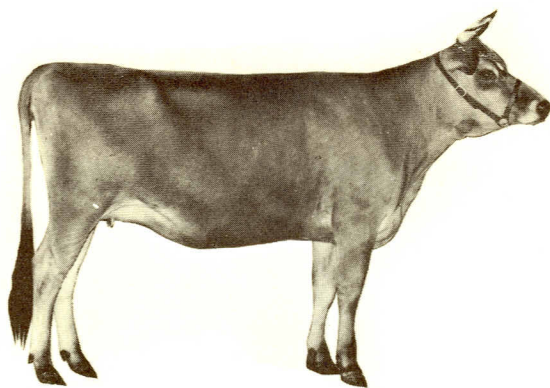
Food Technology

Pathogenic Microbiology

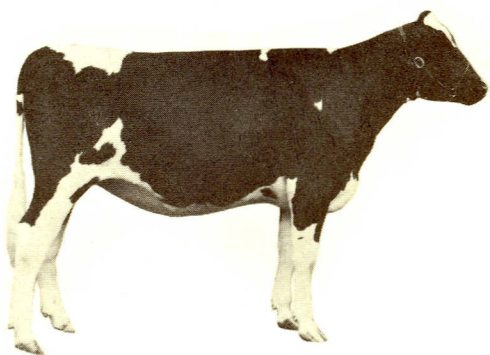
Nutritionist and Pathologist



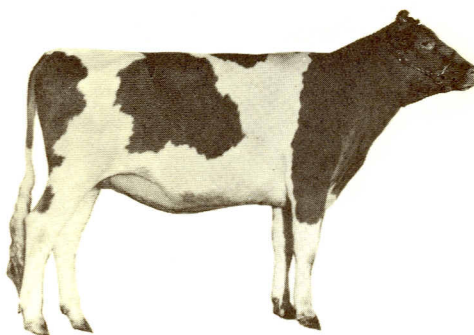
AYRSHIRE



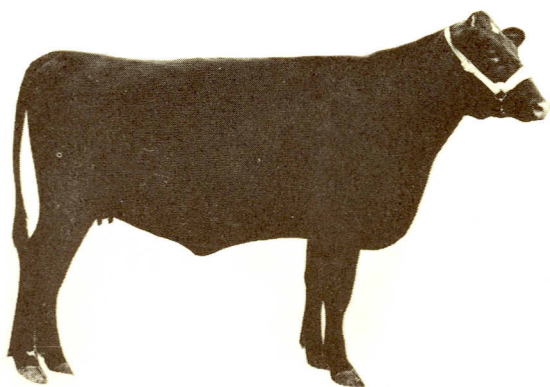
JERSEY



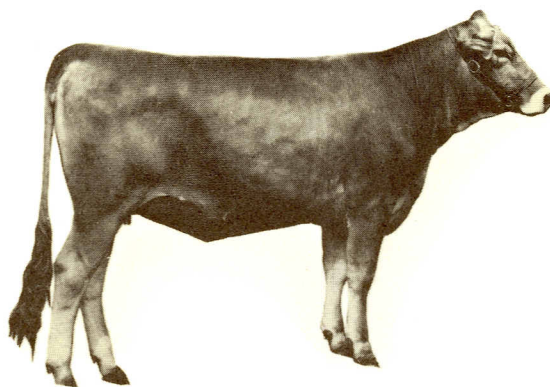
HOLSTEIN



GUERNSEY



MILKING SHORTHORN



BROWN SWISS