Colorado

4-H DAIRY PROJECTS

Units 1 and 2

No. 1—THE DAIRY CALF
No. 2—THE YEARLING HEIFER

Extension Service • COLORADO STATE UNIVERSITY • Fort Collins
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Name __________________________________________ Age ______

Address _________________________________________

County __________________________________________

Leader's Name ____________________________________
Colorado 4-H Dairy Projects

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Colorado 4-H Dairy Projects

Unit 1—The Dairy Calf

H. A. Sandhouse, Extension Dairyman, Retired

This manual includes information on two dairy projects, the Dairy Calf and the Yearling Heifer. By combining this material for the two projects into one publication, the 4-H club members and their local club leaders will be able to follow more closely the recommendations given for feeding, managing, and caring for the young calf and conditioning and preparing the heifer forfreshening. Basic information is presented on subjects essential to the successful completion of 4-H Club Dairy Calf and Heifer projects.

There are now four dairy projects in 4-H club work. They are:

1. Dairy Calf, which includes both heifer and bull calves;
2. The Yearling Heifer;
3. The Producing Cow, and
4. Herd Management

Let us consider some of the reasons why you want to enroll in a 4-H Dairy Calf project, and why you will want to continue in the program with a yearling heifer, the producing cow, and herd management.

Dairying Is a Leading Industry

Dairying is an important industry in Colorado. The cash receipts from dairy products has ranked from third to fifth in recent years of all agricultural products marketed in Colorado. Cash farm income from milk in Colorado for the year 1951 totaled about $30,862,000. The value of milk cows and heifers on farms as of January 1, 1952, was $49,104,000. The present and future demand for dairy products is good. Colorado ranks fifth in the eleven western states on the value of milk cows and heifers on farms. Colorado statistics on livestock for January 1, 1953, show that milk-cow numbers have increased 2,000 head over last year with a total of 182,000 head, which is 18 percent less than the 10-year average. A total of 48,000 heifers from 1 to 2 years old, is 13 percent lower than a year ago. However, heifer calf numbers show an increase.

History of Dairying

Dairy cows were first brought into the United States at Jamestown Colony in 1611. When the frontier moved westward, the covered wagons were accompanied by cows.

Milk is one of the oldest known foods. Records exist of cows being milked in 9,000 B.C. The Bible contains many references to milk.

The Value of Milk and Milk Products

Our system of sanitation, pasteurization, supply and distribution creates a standard which is a model for the world. New research gives greater emphasis to the value of milk as a mainstay in the American diet. Our most widely used food, milk, including dairy products, comprises more than 20 percent of the foods purchased annually by the average American. Milk consumption today is more than 12 percent greater than before the war. More than half of the nation's milk is used for drinking and cooking.

The cash value of products from dairy farms far exceeds the produce from any other type farm.

Colorado ranked first in ice cream production, second in creamery butter production, and fourth in American cheese production in the Mountain States Division of Dairy Statistics for the year.
Milk and dairy products are economical foods containing vital elements of the diet. Nutritionists and government authorities say the nation's health will benefit with high-level consumption.

Enough milk is produced annually in America to fill a river 3,000 miles long, 40 feet wide and 3 feet deep.

There is no waste in milk as every drop can be used and the cost is very low in proportion to food value. One quart of milk weighs 2.15 pounds. It takes about 10 quarts of milk to make 1 pound of butter; about 4½ quarts for a pound of cheese; 1 quart for a pound of evaporated milk, and about 4 quarts for a pound of whole-milk powder.

Milk does more for the body than any other food. It provides high-quality protein, calcium, and vitamins A and G cheaply.

Milk is used in a wide variety of industrial products such as plastics, textiles, paper coating, paint, glue, films, pharmaceuticals, plaster, dyes, animal feed, preservatives, explosives and electroplates.

To furnish an adequate supply of milk and dairy products for the farm family, one or more milk cows should be kept on every farm or ranch. Of all the factors of man's environment, none is more important to his welfare than food. Of all foods, none is more important than milk.

Objectives of the 4-H Dairy Project

1. Create interest and give actual experience in growing and breeding dairy cattle of good type and high production.
2. Show the place and value of the dairy project in the general farm program.
3. Furnish club members with information on the fundamentals of dairying.
4. Develop initiative and responsibility by following better dairy practices under the guidance of local leaders and parents.
5. Develop pride of ownership.
6. Develop a dairy program that will help 4-H members in selecting, feeding, managing, fitting, and showing their animals.
7. Give training in judging, demonstrations, showmanship, and leadership.
8. Emphasize the importance of completing project requirements on time.

Membership Requirements

1. Club members agree to abide by local, state, and national rules.
2. Keep a complete record of the expense, income and value of their project animals and make reports when requested.
3. Exhibit their project animal in accordance with local club activities.
4. Each club member shall own and care for at least one animal.
5. Project animals may be either grade or purebred if they are heifers. If bull calves, they must be registered. Bull-calf projects are for one year only.

Selecting a Calf

Now that you have decided to enroll in the Dairy Calf project and have received your manual and record book you are ready to select your calf and start your dairy business. Before you select your calf you will need to consider the following:

1. Shall I start with a grade or a purebred calf?
2. Do I want a heifer or a bull calf?
3. What breed do I prefer?
4. What age calf can I handle, feed, and train best?
5. Where can I find a good calf of the breed in which I am interested?
6. How much will it cost?
This cow, born August 26, 1938, was purchased when 4 months old for a heifer calf project. On March 10, 1953, at the age of sixteen, she gave birth to her thirteenth calf. Of the 13 calves, there were 8 bulls and 5 heifers. Even though the number of heifer calves was less than the average, there were four generations of this cow’s female offspring, totaling 18 head, represented in this former 4-H club member’s dairy herd.

It was not possible to obtain Dairy Herd Improvement Association production records on each lactation of this cow, but the following records are indicative of the breeding and inherited production qualities of this individual. The following production records were made after this cow was 10 years of age.

<table>
<thead>
<tr>
<th>Age</th>
<th>Number of Days Milked</th>
<th>Total Pounds Milked</th>
<th>Total Pounds Butterfat</th>
</tr>
</thead>
<tbody>
<tr>
<td>11 years, 2 months</td>
<td>347</td>
<td>12,018</td>
<td>518</td>
</tr>
<tr>
<td>12 years, 3 months</td>
<td>360</td>
<td>10,730</td>
<td>439</td>
</tr>
<tr>
<td>13 years, 4 months</td>
<td>295</td>
<td>9,280</td>
<td>433</td>
</tr>
</tbody>
</table>

The average production for these three lactations was 10,676 pounds of milk and 463 pounds of butterfat. This average production is twice as much as the estimated production for the average cow in Colorado for the year 1952 which was 5,250 pounds of milk and 211 pounds of butterfat.

Discuss these questions with your parents and local club leader before making a selection. First, consider whether or not your parents have a calf suitable for your project; if not, see if one is available in your neighborhood. If you are not successful in locating a calf close to home, get in touch with the State Breed Association. Ask this association for a list of breeders having calves for sale. Most club members prefer a young calf as it costs less and is easier to handle. The calf should be at least a month old.

The Heifer Calf—Examine the udder of the heifer calf for uniform size of teats. Be sure that the teats are placed evenly on the udder. Avoid udders with extra teats, especially those that are between the normal teats. Do not buy a heifer that is a twin to a bull as very few such females will ever breed. The breed you like best is the one with which you will work best. The old saying, “Well bought is half sold,” still holds good. Take time to satisfy yourself as to the kind, age, and breed of calf you want.
Except where feed is cheap, the cost of raising heifers is often greater than the selling price of grade heifers of ordinary quality. The cost of raising a heifer from parents of poor breeding is about the same as for one from good breeding and known production ancestry. Good, growthy, well-developed heifers will mature earlier and can be brought into production 4 to 6 months sooner than undersized heifers that have not been properly fed and managed. Keep in mind that the heifer calf you select will likely be a foundation animal for your future herd.

The Bull Calf—Should you decide to select a bull calf for your project, remember that only registered bull calves are eligible and that the project is for only one year. A bull calf gives the club member an opportunity to start his project with a registered animal of his breed choice at less cost than a registered female. A bull-calf project also furnishes a quick cash return for the purchase of additional females. A limited number of registered bull calves may be obtained on a share agreement plan. For additional information on this project talk with your local leader or 4-H club agent.

The Cost of Raising a Calf

Usually the costs for feed and bedding are about two-thirds of the total cost of raising a calf. The cheapest and quickest gains are made in animals less than a year old. Therefore, feed your calf so that it will grow rapidly.

Feeding Your Dairy Calf

Some feeding tests indicate calves may be less likely to have digestive upsets when fed milk by means of a nipple pail or bottle, in comparison to feeding from open pails. Nipple feeding of milk prevents the calf from gulping or taking milk too fast. The calf sucks the milk in its natural way. However, nipple pails or bottles take more cleaning to keep them sanitary than do common, open pails.

The Calf's First Feeding—The calf's first feeding should be the colostrum—the first milk produced by the calf's mother. It is essential to...
the new born calf as it is high in vitamin A. Vitamin A will aid the calf in building up resistance against diseases. It is usually best to feed the calf its mother's milk for the first week. Thereafter the regular herd milk may be fed. Any unused colostrum milk which is not needed for one calf is excellent for others, especially for some of the younger or weaker calves.

To guide you in how much milk to feed your calf, know the average birth weights of calves by breeds:

<table>
<thead>
<tr>
<th>Breed</th>
<th>Weight in Pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jersey</td>
<td>53</td>
</tr>
<tr>
<td>Guernsey</td>
<td>65</td>
</tr>
<tr>
<td>Ayrshire</td>
<td>72</td>
</tr>
<tr>
<td>Holstein</td>
<td>80</td>
</tr>
<tr>
<td>Brown Swiss</td>
<td>100</td>
</tr>
</tbody>
</table>

**Whole Milk**

The whole milk you feed your calf must be fresh, clean, and warm. The temperature of the milk should be 95° to 100° F. for best results. Cold milk causes digestive troubles and scour.

The amount of milk to feed will vary with the breed, size, and vigor of the calf. The general tendency in feeding milk is to overfeed. Remember that a calf's stomach is small and can not handle large quantities of milk at one time. **Weigh or measure all milk accurately for each feeding and always feed at regular times.** One pound of milk per day for each 10 pounds of liveweight is a general rule for calf feeding. A good practice is to increase the milk from ¼ to ½ pound daily until the calf receives 12 to 15 pounds daily. The following table is a guide to minimum daily milk requirements for individual calves:

<table>
<thead>
<tr>
<th>Weight of Calf Pounds</th>
<th>Amount of Whole Milk to Feed Daily Pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>4.0</td>
</tr>
<tr>
<td>60</td>
<td>4.5</td>
</tr>
<tr>
<td>70</td>
<td>5.0</td>
</tr>
<tr>
<td>80</td>
<td>6.0</td>
</tr>
<tr>
<td>90</td>
<td>7.0</td>
</tr>
<tr>
<td>100</td>
<td>8.0</td>
</tr>
<tr>
<td>110</td>
<td>9.0</td>
</tr>
<tr>
<td>120</td>
<td>10.0</td>
</tr>
</tbody>
</table>

Feed one half of the daily amount for the morning feeding and one half for the night feeding. Feed three times a day for the first week or two by dividing the total amount into three equal parts.

Whole milk should be fed until the calf is well started; usually, 4 to 6 weeks are required.

**Skim Milk**

The change from feeding whole milk to skim milk may be started at 4 to 6 weeks of age, depending upon the growth, health, and vigor of the calf. A good plan is to replace 1 pound of whole milk with 1 pound of skim milk each day until the calf is receiving only skim milk. This changeover should be gradual and extend over a period of 5 to 7 days.

Feed skim milk which is fresh and warm, and either **weigh or measure each feeding accurately.** Remove all foam from freshly separated milk as it may cause bloat; it also is deceiving as to the amount of milk in the pail.
There is no better feed than skim milk for growing calves. If skim milk is available, a calf can be fed up to 12 months of age with good results. It is doubtful if there is any advantage in feeding calves more than 15 to 20 pounds of skim milk per day. It is better to gradually wean the calves from their skim milk feeding.

When your calf is 1 month to 6 weeks old, decrease the feeding of milk gradually and encourage it to eat grain and hay.

### Hay

When your calf is about 10 days old, it will start eating a little hay. The hay should be well cured, leafy, and have a bright-green color. In general, the leafier hay is the better it will be for your calves. Keep fresh, clean hay before calves at all times. Feed the hay from a small manger or rack. Any hay that is left over by the calves should be removed each day and fed to cows.

Fine-stemmed, leafy, legume hay is best for calves because it is high in protein, calcium, and vitamins. Occasionally, young calves may eat so much fine-quality legume hay that scours occur due to the laxative effect of the hay. Scours can be prevented by starting calves on mixed legume and grass hay and by feeding smaller amounts. A stemmy, coarse or moldy hay must not be used.

Roughage feeds such as hay, pasture, and silage not only supply cheap nutrients, but also help to develop the calf's body capacity.

### Grain

A calf can be taught to eat grain very early by putting some on its muzzle or in the pail following the feeding of milk. At 2 weeks of age a calf should be eating at least 1 pound of grain per day. Each feeding of grain should be weighed or measured accurately.

As soon as the calf will eat grain, a high-protein-grain mixture, such as listed below, will give about an 18 percent digestible protein ration:

- **Corn** .................. 150 pounds
- **Oats** .................. 150 pounds
- **Wheat bran** .......... 150 pounds
- **Linseed oil meal** ..... 50 pounds
- **Soluble blood flour** 50 pounds
- **Soybean meal** ......... 5 pounds
- **Salt** .................. 5 pounds

You may wish to use a simple home-mixed meal instead. Such a meal mix is given on page 6 of this publication under the heading Milk Substitutes.

Continue feeding high-protein grain until your calf is 4 to 5 months old. The calf should now be eating more roughage such as legume hay. Since hay also provides protein, change to a lower-protein-grain feed. Make this change gradually and over a period of several days. Such a grain mixture is 3 parts ground corn, 3 parts rolled oats, 3 parts wheat bran, 1 part linseed meal, and 1 percent by weight of salt.

The amount of grain fed may be gradually increased to 2 pounds per day at 3 months of age. When the calf is 4 to 6 months old, feed about 3 pounds of the grain mixture per day along with all the good-quality alfalfa hay the calf can clean up readily. Older calves like whole corn and oats better than ground grains.

### Pasture

Pastures alone are too bulky and watery to supply enough of the right kind of food nutrients for best growth and development of small calves. A calf under 6 months of age cannot eat enough grass to provide for its daily requirement of food. However, there is no better succulent feed for calves over 6 months old than pasture supplemented with grain and dry roughage. It is a good source of vitamin A.

### Milk Substitutes

Dried milk products have given good results where they have been tried. Mixing skim milk powder with 9 parts its weight of water gives a good product. If you sell whole milk to the market, the cost of raising calves may be very high unless milk substitutes are used.

A simple home-mixed calf meal that gives good results when fed with limited quantities of whole and skim milk is composed of equal parts by weight of ground yellow corn, crushed or rolled oats, wheat bran, and linseed meal. When using this grain mixture, the calf is fed whole milk for the first 3 to 4 weeks along with as much meal and high-quality hay as it will eat.

There are a number of commercial calf meals on the market made by reputable feed manufacturers. They may be fed with good results. If you plan to raise only one, two, or three calves, it probably would be simpler and cheaper to buy one of these ready-mixed calf meals rather than to mix your own. Generally, 1 pound (dry weight) of calf meal is a fair substitute for 4½ quarts or about 10 pounds of skim milk. Calf meals are preferably fed as dry meal, or in pellet form. They should be fed according to their manufacturer's instructions.

If skim milk is not available, buttermilk or whey may be used with fairly satisfactory results.
Silage

Silage should not be fed to calves under 4 months of age. It is too bulky and may cause scours. The amount of silage fed daily should be from 1 to 2 pounds per day when the calf is 4 months old. At 5 to 6 months of age, it can be fed 2 pounds per day for each 100 pounds of live-weight. The silage must always be of excellent quality. Dairy calves do well on good silage made from corn, alfalfa, grasses, and sorghums. The silage should be used as a supplement to hay.

Water

Water is necessary for calves even though they are young and are receiving milk. Provide them with an ample supply of clean, fresh water in a clean container each day. Water regulates body temperature, aids in digestion and circulation, and helps to remove waste materials from the body.

Fasten the water pail or container securely to prevent it from being spilled or upset by the calves.

Salt

Salt should be fed as soon as the calf starts eating hay and grain. Place the salt in a small box where the calves can have access to it at any time.

Minerals

There is little probability of a lack of minerals when calves are receiving milk, high-quality alfalfa hay and a good grain mixture. If it is necessary to feed minerals, they may be furnished in the form of steamed bone meal. Milk is high in minerals for growth. Good quality, green, leafy sun-cured alfalfa hay contains a good source of vitamins A and D. During the winter months, milk does not ordinarily contain as much vitamin A and D as when the cows are on pasture in the summer time. Small calves that are unhealthy during the winter may respond to the feeding of cod liver oil or shark liver oil, which is high in vitamins A and D.

Weaning

Calves are generally weaned when they are 4 to 6 months old. Put them in a pen or pasture which is large enough to give them ample room for exercising. Provide them with plenty of good roughage. Feed them some grain until they are a year old. The amount of grain to feed depends upon the size and age of the calf but 3 to 5 pounds per day until the calf is a year old is the usual practice.

The common tendency is to let weaned calves shift for themselves, but experiments have shown that any neglect at this age will result in a stunted cow with a limited production.

Quarters and Equipment

Calves require clean, dry, well-bedded pens that are protected from drafts and have ample sunlight. Small individual pens about 30 square feet are preferable at the start. Calves in individual pens are easier to teach hand-feeding of milk and grain and they are less exposed to contagious diseases.

The partition walls of calf pens should be boarded up tight to prevent calves from sucking each other and to help prevent the spread of contagious diseases. If small pens are not available, the calves may be kept separate by tying them in large stalls or pens.

When the calf is 2 to 4 weeks old, it can be put in a larger pen with calves of about the same age. These calves should be fed from small stanchions to prevent crowding and to prevent them sucking one another at the time of feeding milk. After milk is fed, it is well to hold the calves in the stanchions for a short time and feed them grain. After eating grain the calves are less apt to suck each other.

As soon as calves are on dry feed, several may be put together in one pen, but do not crowd them. Allow them plenty of room in which to exercise.

Remember to keep all feed buckets and troughs clean. Sterilize them after each time they are used.

Management and Disease Problems

Most of the common calf ailments can be prevented by keeping the calf in clean, dry, well-ventilated quarters, by proper care and feeding, and by using precaution against introducing disease into the herd.

Dehorning

Horns on older animals may cause painful, serious wounds to other animals by hooking. Under modern conditions horns are of no value except for beauty and general appearance.

If you decide to dehorn your calf, the best time is when it is about 10 days old. Apply a caustic or dehorning paste to the small buttons. Use care when dehorning to prevent injury to the calves' eyes and to yourself. Follow instructions carefully for the kind of treatment used. A formula for an improved non-running dehorning
preparation may be obtained from your county agricultural agent, or by writing to the Extension Service at Fort Collins, Colorado. The horns may also be removed with an electric dehorning iron. Older calves that have horns should be dehorned by mechanical methods. Consult your county agricultural agent about methods.

Using an electric dehorning iron.

Extra Teats

Dairy heifers may have extra teats in addition to the four normal ones; these extra teats may not be harmful, but can detract from the appearance of the udder, and in some cases secrete milk. An extra teat between two normal teats can be a nuisance at milking time. The extra teats may be removed easily when a calf is about a month old. Consult your local veterinarian about removal of extra teats.

Brucellosis (Bangs Disease)

Follow the calfhood vaccination program by vaccinating your calf at 4 to 8 months of age with U. S. Strain 19. Be sure to have your veterinarian do the vaccinating, tattoo the calf and report it to the State Veterinarian. Obtain further information from your county agent.

Tuberculosis

Check test for this disease with your veterinarian.

Pneumonia

Pneumonia is caused by infective organisms, but poorly ventilated barns or pens or sudden exposure to storms may develop a weakened condition that favors the disease. The symptoms are rapid breathing, depressed appearance, a cough, and temperature or feverish condition. The sick animals should be removed from the herd and placed in a dry, comfortable, well-ventilated stall and have access to plenty of water. A veterinarian should be called to treat the animal.

Blackleg-Malignant Edema

Have a veterinarian vaccinate with the combined blackleg-malignant edema vaccine soon after the calf is weaned.

Scours

Scours or diarrhea is the most serious disease of young calves and a veterinarian should be consulted for diagnosis and treatment. Scours are caused by feeding in dirty buckets and troughs, irregular feeding, overfeeding, feeding cold or sour milk, abrupt changes in feeding milk or grain, or by keeping the calf in damp, dirty pens. As soon as scours are noted, check your feeding and management practices carefully, reduce the milk feeding about one half for several days and consult your veterinarian.

A lack of vitamin A (often termed the antinfective vitamin) causes the physical condition of a calf to weaken. This makes the calf susceptible to scours and other diseases. Alfalfa hay of bright-green color and green pasture are two of the best and cheapest sources of vitamin A.

Bloat

Bloat is generally due to carelessness in feeding milk, grain, hay or turning calves on green feed. If the bloat condition is not serious, a stick tied bridle-fashion in the mouth may relieve the bloated condition by allowing the gas to escape. If the bloat condition is severe, a veterinarian or some person familiar with treatment should be consulted immediately. The best treatment for bloat is “prevention.”

Alfalfa hay allowed to become wet from rain or snow is likely to produce bloat. Keep hay as dry as possible. Too much barley in the ration also has a tendency to cause bloat. Taking the chill off water during cold weather will tend to lessen bloat.
Warts

Warts are knobby growths often appearing around the head and neck, but may be anywhere on the animal's body. These should not be confused with ringworm described later. Certain warts are due to a virus infection. Where there are only a few, repeated treatment of application of castor oil may be effective for their removal, however, the best control is a wart vaccine that should be administered by a veterinarian. If not promptly treated warts tend to spread on the animal and may be spread to other animals.

Sore Eyes

This condition may be caused by irritation from weeds, flies, an injury, or from infection. The condition may be relieved and cured by bathing the eyes with a saturated boric acid solution. For infections such as pinkeye, consult your local veterinarian.

Lice

Lice are more common during the fall and winter months than in the summer. The animals may become so infested with lice as to lose flesh or not gain well, and be very uncomfortable. Control is effected by the application of insecticides, either dry or in solution form. They may be applied by dipping or with spraying or dusting apparatus. See your county agricultural agent regarding control materials and methods.

Ringworm

This disease is caused by a fungus which usually appears about the head and neck in the form of a white, scaly crust. Separate the infected animals from the herd to keep the disease from spreading. Treatment consists first in removing the crust with soap and water, then treating the affected part with equal parts of tincture of iodine and glycerine. Repeat the treatment once a day for several days.

Poisoning

Cattle are very susceptible to lead poisoning. Keep them away from old paint buckets and freshly painted buildings. Care should be exercised also to keep them out of areas where poisoned baits have been prepared and spread for the control of pests and insects. Poisonous weeds in pastures and fields may poison and kill animals if they are eaten. Check pastures for poisonous weeds before turning cattle in. Sorghums, when frosted or stunted by drought, contain prussic acid which is fatal poison to cattle. If you are in doubt about the condition of the crop or pasture, turn in only one or two animals at first rather than the entire herd. In this way, losses would be minimized.

Flies

Flies affecting cattle include the horse fly, cattle grubs, heel flies, stable fly and horn fly. These insects injure cattle considerably in various ways. Usually, specific control measures are required for each species of fly. Some flies can be controlled by treating their breeding places, or by using insecticidal sprays when they attack the animals. For others, it is necessary to apply insecticidal ointments, washes or dusts to the body of the animal. See your county agent for information on the control of external parasites.

Calf Diphtheria

Calf diphtheria causes the death of many calves. The symptoms of this disease are a marked fever, weakness, ulcers in the mouth, and slobbering. Swallowing becomes difficult and an offensive odor is exhaled. Separate the infected animals from the herd and disinfect the shed immediately. Treatment for calf diphtheria consists of frequent swabbing of the affected areas with equal parts of tincture of iodine and glycerine. Call a veterinarian when possible.

Cattle Grubs

Cattle grubs, sometimes called ox warbles, cause heavy cattle losses. They cause the cattle to be restless which in turn causes them to lose weight. Larvae also damage hides by burrowing through on the top of the animals' backs. See your county agent for methods of control.

Constipation

Usually a constipated condition can be corrected by giving the calf from 2 to 6 tablespoonsfuls of castor oil, depending upon the size of the animal. An enema consisting of a rounded teaspoonful of fine salt to a quart of warm water may be used.

"Remember that an ounce of prevention is worth a pound of cure." Good management and sanitary practices are important in keeping an animal healthy. If an animal becomes sick, it is very important that you consult immediately with your local veterinarian.
Fitting and Showing

Each 4-H club member should exhibit his project animal, if possible, at a local, county or State Fair. The experience gained in training, fitting, entering and showing livestock helps club members in judging livestock and learning how to get along with fellow members.

The time to start fitting the dairy animal should be not later than 6 to 8 weeks before the show. The important factors in fitting your animal are growing, training, grooming, blanketing, washing, clipping, trimming feet, and polishing horns.

Equipment should include blanket, halter, soft brush, curry comb, bucket, soap, rasp, emery paper, woolen cloth, hoct nippers, and a show box in which to keep equipment.

Feeding your calf should be managed in such a way as to have the calf in a good thrifty condition with a good coat of hair and a soft pliable skin. Remember that regular feeding of the right kind of feeds and plenty of exercise are important. Teach your animal to eat grain from a bucket and drink water from a pail before starting for the show. Do not over condition your animal or get it too fat.

Blanketing—The calf should be first washed and then blanketed until time of showing. The blanket helps to improve the condition of the hair and makes the hide softer and more pliable. Blankets may be made from burlap (gunny) sacks or they may be bought ready made. A light woolen or cotton-flannel blanket may be used under the burlap to improve the condition of the hide and hair. During extremely hot weather the extra blanket should be removed during the day. A good blanketing job does away with the need for clipping the entire body.

Grooming should be done at least once daily. Good grooming will make the hide softer and hair smoother. It helps to remove dead hairs and stimulates the oily secretions that add luster to the animal’s coat. A stiff brush may be used at first to remove dirt, but should be replaced with a softer brush that will not irritate the hide. To remove dead hairs, one can use coarse sand paper tacked on a block or an old rubber heel. After brushing, smooth the hair with a cloth that has been moistened with a little olive or vegetable oil.

Washing should be done on a warm day. Use warm soft water and tar soap. A coarse or soft brush will help to remove dirt and dandruff. Rinse out all soap suds after washing. After washing the calf should be blanketed to keep it warm and clean. The tail switch should be washed the night before showing and while still damp braided into several small braids. The next morning or just before showing, the braids are combed out which adds to the appearance of the switch. Washing an animal too often is not good in that it removes secretions from the skin which leaves it hard and dry.

Blanketing helps condition hair of animal for show.
Clipping—One should first check over the conformation and condition of the animal before deciding on how much clipping will be done. The entire body of the animal should not be clipped except where the hair coat is long and coarse. Clipping may be done 2 months before time of showing. The appearance of most animals can be improved by clipping their heads, necks and tails about 4 or 5 days before showing. Clipping the udders and bellies of cows and heifers may also improve their appearance. The edges of all clipped areas should be blended in with the long hair either by clipping with the hair or by rubbing hair with coarse sand paper tacked to a block. The tail should be clipped from a point just above the switch to the rump. The neck should be clipped to the withers and down to the point of the shoulder. The entire head should be clipped.

Care of Horns

Horns cleaned and polished add to the attractiveness and appearance of animals. One should start from a month to 6 weeks previous to prepare horns for showing. A piece of window glass or a rasp should be used first to smooth down rough or uneven spots. When smoothed, polish them with emory cloth or fine sand paper and finish by applying linseed oil with a woolen cloth.

Care of Feet

Examine your calf's feet to see if they are worn down evenly, and whether or not they show the animal to best advantage when he is walking or posing; if not, use a hoof nipper and rasp to trim the feet so the calf can stand squarely on all four feet. The hoofs should be smoothed, cleaned and polished in the same way as the horns.

Getting Animal Ready for Showing

It is easier to keep your animal clean rather than try to brush out or wash off dirty spots just before entering the show ring. A good showman is always on the job until the show is over.

To avoid a gaunt appearance, it is well to have your calf thirsty and willing to take a medium fill just before entering the ring. To do this, do not water the animal until about half an hour before you start into the ring. Too much water at this time will give the animal a paunchy or pot-bellied appearance and will also tend to make it sluggish.

Wipe the hair with a slightly oiled cloth just before entering the show ring. This should be followed by rubbing down with the hands which adds to the appearance of the coat.

Before Clipping

After Clipping
Time, patience, and training are needed to train an animal to stand in proper position for showing.

When Your Class Is Called

Lead your calf slowly into the show ring with a neat rope or leather halter. As you enter the judging ring, walk on the left side of your calf with lead strap in the right hand; a short grip on the halter lead, about 15 inches from the animal’s head, will give you better control of the animal while showing. Keep your animal and yourself on the alert from the time you enter the show ring until the placings have been made, awards presented, and you are out of the judging arena. This is important.

When moving, walk your animal slowly. When standing, see that all four legs are standing squarely under the calf’s body. Keep its head up. Do not jiggle the lead strap while posing the calf. If your animal gets out of position, lead it back into position rather than trying to back it. Do not walk between your animal and the judge or lead your animal in front of others who are showing. Dairy cattle should be trained to "show" without the aid of sticks or canes. Train your animal to respond to a gentle pull on the halter or a restraining touch on its shoulder. If your calf should become excited and unruly, do not lose your temper and jerk it, kick it or hit it with the lead strap. Gentleness and calmness will win in the end.

Remember you should always be on the alert in the show ring and move as directed by the judge. A safe rule is to keep one eye on the calf and the other on the judge at all times.

Practice makes perfect, and the club member who starts early to fit and train his calf and continues to exhibit year after year, win or lose, is usually rewarded in the end by placing in the top group.

Judging

Judging livestock is one of the best means of training club members to study breed types, the conformation and relative value of the different parts of the animal according to official score-card rating. Members also develop intelligent thinking by balancing points for class of animals judged, by making decisions, and presenting reasons for placings. For copy of a circular and information on livestock judging, see your county agent. For information on County Judging Team, see your local leader or county agricultural agent.

Demonstrations

Every club member should be interested in giving a demonstration on some phase of his club work during the time he is enrolled in 4-H Club work. A demonstration develops initiative, leadership, self-reliance and cooperation for the team members who are willing to show others by doing some of the approved practices that have helped them in their projects. Your club leader may obtain a copy of a circular on 4-H demonstrations from the county extension office.
Uniform Score Card For Judging Junior Fitting and Showmanship Contests*

<table>
<thead>
<tr>
<th>Appearance of Animal</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Condition</strong></td>
<td>10</td>
</tr>
<tr>
<td><strong>Grooming</strong></td>
<td>10</td>
</tr>
<tr>
<td><strong>Clipping</strong></td>
<td>10</td>
</tr>
<tr>
<td><strong>Cleanliness</strong></td>
<td>10</td>
</tr>
<tr>
<td><strong>Appearance of Exhibitor</strong></td>
<td>10</td>
</tr>
<tr>
<td><strong>Showing Animal in the Ring</strong></td>
<td>50</td>
</tr>
<tr>
<td><strong>Leading</strong></td>
<td>15</td>
</tr>
<tr>
<td><strong>Posing</strong></td>
<td>15</td>
</tr>
<tr>
<td><strong>Showing animal to best advantage</strong></td>
<td>10</td>
</tr>
<tr>
<td><strong>Poise, alertness, attitude</strong></td>
<td>10</td>
</tr>
</tbody>
</table>

Explanation of Score Card

A—Appearance of Animal

1. Condition and thriftiness, showing normal growth, being neither too fat nor too thin.

2. Grooming

   a—Hair properly groomed and the hide soft and pliable. Hair dresser should not be used in excess.
   b—Hoofs trimmed and shaped to enable animal to walk and stand naturally.
   c—Horns (if present) scraped and polished.

3. Clipping

   a—The final clipping should be done about two days before show.
   b—Head, ears, tail, udder, and elsewhere clipped as needed but not over entire body. Belly and udder not to be clipped on heifers that have not freshened and are not springing close.

4. Cleanliness

   a—Hair and switch clean and if possible free of stains.
   b—Hide and ears free of dirt, and legs and feet clean.

B—Appearance of Exhibitor

1. Clothes and person, neat and clean, white costume preferred.

C—Showing Animal in the Ring

1. Leading

   a—Enter leading the animal at normal walk around the ring in a clockwise direction walking opposite her head on the left side, holding the lead strap (or rope) with the right hand quite close to the halter with the strap neatly, but naturally (not necessarily coiled) gathered in one or both hands. Holding close to the halter insures a more secure control of an animal.

   b—Animal should lead readily and respond quickly.

   c—Halter of right type, fitting properly and correctly placed on animal. A leather halter with leather lead strap is best.

   d—As the judge studies your animal the preferred method of leading is walking slowly backward facing the animal and holding the lead rope in the left hand with the remainder of it neatly, but naturally, gathered in one or both hands (face forward when leading at all other times).

   e—Lead slowly with animal's head held high enough for impressive style, attractive carriage and graceful walk.

2. Posing

   a—When posing and showing an animal stay on the animal's left side and stand faced at an angle to her in a position far enough away to see stance of her feet and her topline.

   b—Pose animal with feet placed squarely under her with the hind leg nearest to the judge slightly behind the other one.

   c—Face animal up-grade, if possible, with her front feet on a slight incline.

   d—Neither crowd the exhibitor next to you nor leave enough space for another animal when you lead into a side-by-side position.

   e—Animal may be backed out of line when judge requests that her placing be changed. Many prefer to lead animal forward and around the end of the line or back through the line. Do not lead animal between the judge and an animal he is observing.

*Approved by The American Dairy Science Association and The Purebred Dairy Cattle Association
f—Do most of the showing with the halter lead strap and avoid stepping on animal’s hind feet to move them.

g—Step animal ahead by a slight pull on the lead strap.

h—Move animal back by exerting pressure on the shoulder point with the thumb and fingers of the right hand as you push back with the halter.

i—When judge is observing the animal, let her stand when posed reasonably well.

j—Be Natural. Overshowing, undue fussing and maneuvering is objectionable.

3. Show Animal to Best Advantage

a—Quickly recognize the conformation faults of the animal you are leading and show her to overcome them. You may be asked to exchange with another and show her or his heifer for awhile.

4. Poise, Alertness and Attitude

a—Keep an eye on your animal and be aware of the position of the judge at all times. Do not be distracted by persons and things outside the ring.

b—Show animal at all times and not yourself.

c—Respond rapidly to requests from the judge and officials.

d—Be courteous and sportsmanlike at all times.

e—Keep showing until the entire class has been placed and the judge has given his reasons.

Total—100

County Dairy Cattle Judging Teams compete at the State Contest for State Champion. The Champion Team represents Colorado at the National 4-H Dairy Cattle Judging Contest.
Unit 2—The Yearling Heifer

H. A. SANDHOUSE, Extension Dairyman, Retired

For convenience, basic information regarding the yearling heifer is given in this section of the 4-H dairy project manual. By combining these two units—(1) the Dairy Calf, and (2) the Yearling Heifer—into one manual you will have a handy reference for refreshing your memory from time to time.

Material for this project includes information regarding the feeding, breeding, and caring for the heifer from 12 months old to the time of freshening. It is outlined under the following headings: objectives; requirements; selecting the heifer; feeding and caring for the heifer; breeding the dairy heifer; care of heifer at calving time; milk production records; common ailments, diseases, and parasites; fitting and showing; judging; demonstrations; and registration of offspring.

Members are encouraged to grow out animals and develop herds from initial stock.
Objectives

See page 2 in the Dairy Calf Section.

Requirements

See page 2 in the Dairy Calf Section.

Selecting the Dairy Heifer

General recommendations are that the club member continue with the heifer through the development, breeding, freshening and maturity of a producing cow, and eventually to the management of a small herd and completion of all dairy projects offered for enrollment.

Before choosing a heifer, the club member should consider what breed is popular in his local community, its adaptability to local conditions, and the possible market for products and breeding stock. A club member's personal preference should be considered in selecting the breed as he will take a greater interest in one he likes.

Briefly, the club member should consider the general appearance of the heifer, her type, breeding, constitution, capacity, dairy temperament, size, and mammary development as well as the production record of her ancestry. Too often heifers are purchased on their general appearance alone without any consideration of the udder and mammary system. The udder should be long, level, attached well forward and high behind with good width. The teats should be uniform in length and evenly placed.

A pedigree is a diagram of the ancestry of an animal by generations, showing their relationships, and should contain records of production, type classification, and show-ring winnings. The male line always appears at the top of the bracket, and the female line at the bottom. In studying a pedigree, the immediate ancestors appearing in the second and third generations should be given the most consideration. Too often animals are bought because there is a famous animal's name or a high production appearing as far back as the fourth or fifth generation. It is advisable to have good production records appear the second and third generations.

The yearling heifer has been referred to as the ugly duckling or awkward age in the animal's development to maturity and should be given consideration before the heifer is sold, traded or discarded for another younger animal. For additional information, see page 2 "Selecting the Dairy Calf."

Feeding and Caring for the Yearling Heifer

The proper development of heifers is a very important part of the dairy business since there are good demands for both increased numbers of cows and increased milk production. Yearling heifers of good breeding, quality, and producing capacity should be developed as soon as possible as replacements for the low-producing and unprofitable cows.

One should estimate the weight of his heifer and compare it to the figures obtained for heifers of similar breeds and ages. By using a special tape, available from the cow tester in your area, you can obtain a closer estimation of the weight.
of the calf. The following is a summary of several feeding trials on weights and daily gains of heifer calves at 1 year of age. Ayrshire, 335 pounds; Guernseys, 490 pounds; Jerseys, 462 pounds; and Holsteins, 653 pounds. The average daily gain during the first year on these four breeds varied from 1.12 pounds to 1.54 pounds, and for the second year was less rapid than the first, varying from .79 pound to 1.16 pounds per head daily. The weights and gains on Brown Swiss should be approximately the same as those for Holsteins. At 18 months of age, the weights of Guernsey, Jersey, and Ayrshire breeds should be from 570 to 625 pounds and at 24 months, from 700 to 750 pounds. Holsteins and Brown Swiss should weigh from 675 to 825 pounds at 18 months, and from 850 to 1,050 pounds at 2 years of age.

Feed, including pasture, represents about 75 percent of the cost of raising heifers to calving time. About 2 tons of hay and 1,200 pounds of grain are required for developing the average heifers from 1 year up to 2 years. Yearling heifers generally do not gain as fast as calves, but can make a normal growth from more roughage feeds of good quality and less grain. Growing heifers should have all the hay they will consume or its equivalent in pasture, silage or other succulent feed to make good gains.

The heifer ration recommended, which is about a 10 percent digestible protein ration, is as follows:

- Corn or barley .......... 600 pounds
- Oats .................. 600 pounds
- Beet pulp ................ 600 pounds
- Linseed oil meal .......... 100 pounds
- Steamed bone meal .... 20 pounds
- Salt .................. 20 pounds

If the hay is of low quality, increase the linseed oil meal to 200 pounds.

The average amount of feed, pasture, and labor per animal required to raise dairy heifers to 2 years of age is:

- Whole milk ........... 826 pounds
- Skim milk ............. 1,323 pounds
- Concentrates .......... 643 pounds
- Hay .................. 2,125 pounds
- Silage ................. 1,848 pounds
- Fodder ............... 217 pounds
- Straw ................ 1,300 pounds
- Pasture .............. 332 days
- Labor ................ 65 hours

The following is a summary of feeding tests on growth with yearling Holstein heifers. The heifers received the same feed until they were 12 months old, when they were divided into two lots and fed different rations until 24 months old. One group received only alfalfa hay; the other received alfalfa hay plus grain. When they were 12 to 18 months old, one group was fed 17 pounds of hay and the other 14 pounds of hay plus 2 pounds of grain; at 18 to 24 months, one group was fed 20 pounds of hay and the other 17 pounds of hay plus 2 pounds of grain; from 24 to 27 months, both groups were fed 17 pounds of hay plus 3 pounds of grain daily. There was no significant difference in the size of these heifers at calving time. This emphasizes the value of high-quality hay for growing heifers from 12 to 24 months of age. While no pasture was used in this feeding test, both pasture and silage can be used to supplement the hay. The total amount of feed for these heifers from birth to 27 months of age was:

<table>
<thead>
<tr>
<th>Group fed hay and grain</th>
<th>Group fed hay and limited grain last 3 months only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole milk ... 330 pounds</td>
<td>330 pounds</td>
</tr>
<tr>
<td>Skim milk ... 2,220 pounds</td>
<td>2,220</td>
</tr>
<tr>
<td>Grain .......... 1,895 pounds</td>
<td>1,165 (fed grain last 3 months only)</td>
</tr>
<tr>
<td>Hay ............ 9,445 pounds</td>
<td>10,540 (months only)</td>
</tr>
</tbody>
</table>

Too often heifers are fed only fair-to-poor roughages in the winter months, turned on some distant pasture for the summer months, and rounded up in the fall when it starts to snow. If possible, at least half of the winter roughage should be well-cured legume hay since it supplies some of the protein, calcium and vitamins needed for development. If heifers are fed early cut, well-cured leafy hay in winter, especially legume hay, and are on good pasture in summer, they will receive a large amount of vitamins.

Good pasture, when available, can replace both hay and grain for older heifers. When pastures get short, both grain and hay should be fed to keep the heifer growing. If practical, heifers about the same age and size should be kept together; if not, at least the heifer calves and heifers should be pastured and housed together for convenience in feeding.

Raising yearling heifers is much easier than raising calves up to 6 months of age or weaning time. Heifers stunted at any age seldom develop into as profitable cows as do well-fed heifers. If heifers have made their normal growth during the first year, they may then be fed roughages alone within 3 to 5 months of calving, depending upon their condition. Dairy heifers can be brought into production from 4 to 6 months earlier than usual by feeding well from weaning age up to the time of freshening, according to results from several experimental feeding tests.

After the heifer calf is past the danger stage that is always present with young calves, and before she has reached a productive stage, she should be fed so she will make a good gain and
obtain full size. An undersized cow is limited in her capacity to consume and digest feed. She cannot compete with a larger cow even though she has inherited the stimulation to an equal degree to give milk.

Heifers that are undersized at the time of their first calving because of calving when too young, or because they were underfed, should be fed during this first lactation so as to increase their weight and size as much as possible. Heifers should be growthy and in good condition at calving time. If they are undersized and not in condition they may not produce as much milk as they should or grow at a satisfactory rate during their first milking period of lactation. If the heifers are not undersized, breed them to freshen when they are 2 years of age. Nothing is gained by freshening at a later date since they do not bring in an income until they are in production.

Quarters for heifers, when not on pasture, should be an outside shed with an opening to the south and a well-drained yard; or, a clean, well-ventilated pen in the barn where they can be kept separated from other cattle. Feed them from clean feed mangers and boxes and have a large corral or yard for exercise during the day.

The heifers should have free access to plenty of clean drinking water, salt, and a mineral mixture. A simple mineral mixture used extensively and successfully consists of 40 parts of ground limestone, 40 parts of steamed bone meal and 20 parts of coarse salt. The mineral mixture should be fed in a small self-feeder or box separate from and in addition to their salt.

**Breeding the Dairy Heifer**

The age to breed heifers will depend upon their growth and development. Well-developed growthy heifers can be bred when they are 15 to 18 months of age. They will then freshen when about 2 years old. Stunted or late-developing heifers should be bred 2 to 3 months later in order to increase their size, if possible, before freshening. The Jersey and Guernsey breeds mature more quickly than larger breeds and can be bred younger.

Heifers bred too early will not develop into profitable cows. The weight of the heifer is a good guide as to whether or not she is large enough to breed at a given age. Below is a table with suggested age and minimum weights at which to breed heifers of different breeds.

<table>
<thead>
<tr>
<th>Breed</th>
<th>Age to Breed</th>
<th>Weight to Breed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jersey</td>
<td>15 to 18 months</td>
<td>500 to 575 pounds</td>
</tr>
<tr>
<td>Guernsey</td>
<td>16 to 20 months</td>
<td>550 to 625 pounds</td>
</tr>
<tr>
<td>Ayrshire</td>
<td>16 to 20 months</td>
<td>600 to 675 pounds</td>
</tr>
<tr>
<td>Brown Swiss</td>
<td>18 to 22 months</td>
<td>675 to 775 pounds</td>
</tr>
<tr>
<td>Holstein</td>
<td>18 to 22 months</td>
<td>700 to 800 pounds</td>
</tr>
</tbody>
</table>

It is important to keep a record of the breeding dates in order to know when your heifer settled to service and when she will calve. Breeding up a dairy herd is a long-time program. The development of a good-producing herd requires careful study, patience, and skill.

A heifer should be bred to a registered bull of the same breed. This bull should be of good type, good breeding, and have known production records on his immediate ancestors. Study carefully the pedigree of the bull you are to use. Give equal attention to the records of both the sire and dams. Keep in mind that animals in the second and third generations will contribute most to the animal's genetic make up. In other words, the sire and dam of your calf (second generation) each contribute 25 percent or one-half of the qualities in the calf. The grandsire and granddams (third generation) each contribute 12 1/2 percent or one fourth. The great grandsire and great granddam (fourth generation) each contribute only 6 1/4 percent or one eighth; therefore, records beyond the third generation will have less value than those in the first, second and third generations.

The continued improvement of dairy cattle is dependent on the use of good bulls, continual testing and culling, and adequate feeding for production and growth. Consult your local leader, county agricultural agent or local breeder on how to look over and evaluate the pedigree of a registered animal. If a good bull is not available on your home place or in the local community, you should consider the services of a bull in a bull stud or artificial breeding association.

Sires are evaluated according to the number of tested daughters and the kind of production records they have, and to conditions under which they were made as to age, number of times milked daily, and the length of the lactation. A proved sire is one that has a comparison of at least five dam and daughter production records for milk, test and butterfat. These records are all standardized to mature equivalent basis, as to age, and also for lactation of 305 days or less on two-milking-per-day basis. A proved sire record may be good or bad, depending on whether or not he has increased or lowered the production of his daughters over those for their dams.

Most bulls cannot be proved until they are about 6 years old and have five or more daughters that have completed their first lactation. Sons of proved bulls, with a good proving, are almost as valuable as sires as are proved bulls.

**Type Classification** is a program sponsored by the different breed associations. Each animal classified is given a rating as to type and conformation by an official classifier. The ratings vary
from excellent, very good, good plus, good, fair, and poor. Bulls cannot be registered from dams classifying fair. Registration papers are cancelled on animals classifying poor.

Classification ratings on pedigrees are generally abbreviated as follows: Excellent, E., Very Good, V.G., Good Plus, G.P., Good!, fair, and poor. Bulls cannot be registered from dams classifying fair. Registration papers are cancelled on animals classifying poor.

Production records may include those for the Dairy Herd Improvement Association abbreviated as D.H.I.A., or sometimes known as Cow Testing Association, C.T.A., Official individual cow, Official Herd Test and proved sire dam-daughter comparisons. The age of the animal, number of days milked, total milk, percentage test, and pounds of butterfat should be included; it may be abbreviated to this: 3 yr-305d-M 10640-4.0%-B.F. 435.6. Official records may have abbreviations A.R. or A.R.T., which mean Advanced Registry or Advanced Registry Test. Official Herd Improvement Registry testing is abbreviated H.I.R.

The age of animals may be abbreviated under two general divisions for each year. An example of a year-old record would be: A junior 4-year old is less than 4 years 6 months old, while a senior 4-year old is more than 4 years 6 months old, but is less than 5 years old.

For information on the different dairy cattle breeds, the addresses of the associations are listed:

Ayrshire Breeders’ Association, Brandon, Vermont
American Guernsey Cattle Club, Peterborough, New Hampshire
Brown Swiss Cattle Breeders’ Association, Beloit, Wisconsin
American Jersey Cattle Club, 1521 East Broad Street, Columbus 5, Ohio
Holstein-Friesian Association of America, Brattleboro, Vermont
Milking Shorthorn Society, 313 South Glenstone, Springfield 4, Missouri

Care of Heifer at Calving Time

From 1 to 3 months before freshening, the heifer should become accustomed to her stall in the barn and should be handled gently. She will be easier to feed, care for, and milk if she is used to her surroundings.

Your heifer should be in a good, growthy condition, and carrying good flesh but not fat at calving time. Fat or over-conditioned heifers may have difficulties in calving and have congested, caked udders. Heifers that are small, thin, and unthrifty should be fed a grain ration of from 4 to 6 pounds per day for 2 to 4 months before calving.

The grain mixture should be balanced with protein supplement according to the kind of roughage used. From 2 to 4 weeks before calving time, replace the grain mixture with one that is more cooling to the system and also more laxative. Feed alfalfa or clover hay, and small amounts of silage. A good grain mixture is 3 parts oats, 3 parts bran, and 1 part linseed oil meal. If the heifer is on good pasture, it would not be necessary to feed hay or silage.

A warm bran mash fed just before and just after calving is usually beneficial. At calving time, reduce the amount of grain and take the chill off drinking water if necessary. Following calving, feed the heifer only small amounts of grain, approximately 4 pounds per day, for several days to prevent digestive troubles and inflammation or caking of the udder. As soon as the heifer resumes her normal condition after calving, increase her grain ration gradually, according to her production. From 2 to 4 weeks after calving are usually required to make this change in the grain ration.

Good pasture with some shade is a good place for a heifer to calve during the pasture season. If she freshens during winter months, put her in a box stall several days before calving. Be sure the stall has been well cleaned and fresh bedding added.

As soon as the calf is dropped, its mother will usually lick it dry; if for any reason she does not, you can dry the calf by rubbing it with straw, a burlap sack or old piece of blanket. The calf’s navel or cord should be painted with iodine as soon as possible to prevent possible infection. Help the calf to get up and nurse in a short time. If the calf is weak, it should be helped to nurse within the first hour. The calf should be left with the heifer two or three days so that it can nurse often and get plenty of colostrum milk.

It is easier to break the young calf to drink milk if you start when it is several days old. You will have less trouble in raising your calf, if you feed it the first three or four weeks with a calf nipple. The nipple can be fitted either to a wide-mouth bottle, or pail with a special opening. For information on feeding calves refer to page 4 in the Dairy Calf Section.

Heifers that calve at too early an age or are small and undersized due to lack of feed, may develop into fair sized cows if they are properly fed during their first lactation.
Kindness and patience in handling and milking the heifer for the first time will determine largely her habits as a milk cow. A nervous heifer can be made a fighter, kicker and unprofitable milker by abuse and rough treatment during the first milkings.

Milk Production Records

Club members will find the weighing and testing of their heifers' milk of interest and value in determining the costs and profits of their projects. If the club member's family is in a Dairy Herd Improvement Association, the production records can be obtained each month in connection with his parents' herd. If this service is not available, weights and samples of milk may be taken of each individual cow once a month and butterfat tests made through the cooperation of local school, cream station or creamery. Production records will help you in feeding your heifer properly and in finding out how good a producer she will be for the year.

Common Ailments, Diseases and Parasites

See the Dairy Calf Section, pages 7 to 10.

Fitting and Showing

See the Dairy Calf Section, page 10.

Judging

For circular and information about livestock judging, see your county agent.

Demonstrations

See the Dairy Calf Section, page 12.

Registration of Offspring

You should get information from the breed associations on the registration and transfer of registered animals, just as soon as you have decided on the breed of dairy cattle you will use for your project. Some breed associations have departments for juniors which you may wish to join.

When selling registered animals, the seller furnishes the buyer with a certificate of registration and transfer. The certificate of registration has no value to you or an animal purchased, unless the animal has been properly transferred to you. A good policy is to hold back part of the purchase price until the registration papers and transfer are delivered to you. Should you have questions on the registration of offspring from your animals, consult your local leader or county agricultural agent.

You have now completed the Yearling Heifer Project and are ready to enroll in the next project, "The Producing Cow."

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Notes

Unit 1—The Dairy Calf
Notes

Unit 2—The Yearling Heifer