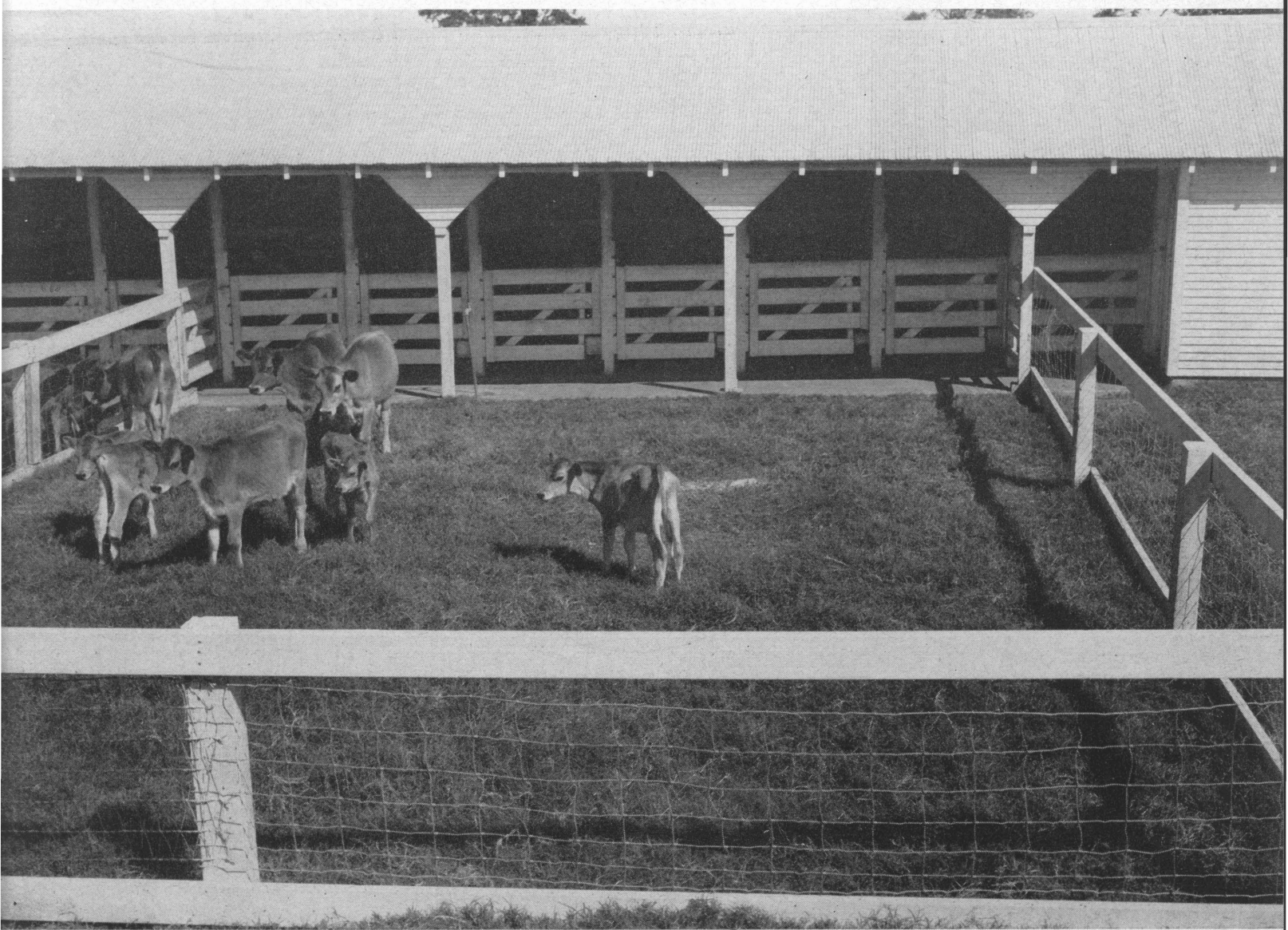


Raising

DAIRY CALVES



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In the writing of this publication, the assistance and helpful suggestions of Dr. I. Walker Rupel, Head, and other members of the Texas A. and M. College Dairy Husbandry Department have been most valuable.

ON THE COVER: Calf quarters similar to the plan illustrated on page 6.

RAISING DAIRY CALVES

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An Important Job

In general, dairymen in Texas who raise their own replacements show the most improvement in their herds from year to year. Therefore, the job of raising dairy calves should be considered as one of the most important undertakings in a herd improvement program. Moreover, because many Texas dairymen have followed a policy of buying rather than raising their replacements, the supply of young dairy females in the state is often short of demand.

The average dairy cow in Texas is in production for about five years. This means that at least one-fifth of the herd must be replaced each year. The profit from a herd is determined largely by the productive capacity of the individual cow. The most certain method of developing a high producing herd is by replacing the low producers with well-bred, properly developed heifers of greater productive capacity.

With these facts in mind, the job of raising dairy calves takes on greater importance. The calves should be out of the best cows in the herd; they should be sired by a purebred bull which has been selected for ability to transmit high production; and they must be so raised and developed that they will have the opportunity to produce at that rate of high production. This one important fact should be remembered: a heifer may have the inherited ability for high production but she can turn out to be an ordinary producer if not given the opportunity through proper development.

Care of Dam

To insure a strong and well developed calf at birth, attention must be given to the condition of the dam before freshening. If she is an efficient producer and has just completed a lactation period, her body has been depleted of its reserves of vitamins, minerals, fat and other nutrients. It is, therefore, of utmost importance that she be given a rest period in which she will have an opportunity to get back into condition for calving and a new lactation period. It usually requires six to eight weeks for the cow to do this job.

During the rest or dry period, the dam should be fed good quality roughages, including hay, silage, and pasture. Her physical condition will determine the amount of concentrates she needs. If she is rather thin, concentrates should be fed with the roughages at the rate of five or six pounds daily. A cow in fairly good condition may need only two to four pounds daily. The important thing is to get her in good condition, and enough concentrates should be fed to bring this about.

If the grain ration contains as much as one-fourth of such feeds as wheat bran and cottonseed meal, the phosphorus need is fairly well met, but one per cent limestone or oyster shell flour and one per cent salt should be added. When little or no cottonseed meal and wheat bran are included in the grain mixture, add one per cent steamed bone meal, one per cent salt, and one per cent limestone or oyster shell flour. A mineral box with two compartments, one containing salt and the other a simple mixture of one part steamed bone meal and one part salt, will assure an ample supply of these minerals when the free-choice method of feeding is followed.



A cow, two or three days before freshening, showing good condition in calving quarters that will afford her protection and comfort during cold weather.



About two weeks before freshening, the dry cow's ration should be changed to laxative feeds only, such as wheat bran, alfalfa hay, or green grass. This ration should be continued four or five days after calving. The shift to the regular grain ration should be made gradually, requiring ten days or two weeks to make the change-over.

Calving Time

Two or three days before the calf is due to arrive, the cow should be separated from the rest of the herd and placed in suitable calving

Treatment of calf's navel soon after birth will prevent many losses.



quarters. When the weather permits, a small pasture near the barn is a desirable calving place. During cold weather the cow should be placed in a clean, well-bedded stall which will afford her protection and comfort.

Watchfulness by the dairyman as calving time approaches may save many losses of calves and cows. Do not be too hasty in giving assistance to the cow when the act of calving begins. If the calf is in a normal position as indicated by the front legs and nose appearing first, give the cow plenty of time to have a normal calving. In the case of an abnormal birth or a retained afterbirth, it would be advisable to obtain the services of a veterinarian.

Soon after calving give the cow all the lukewarm water she will drink.

The New-born Calf

Immediately after the birth of the calf, remove the mucous from its nose and mouth to prevent suffocation. If breathing has not started, apply artificial respiration by alternately compressing and relaxing the chest walls. During cold weather, the calf should be dried by rubbing with a burlap sack or similar material.

The navel opening is an avenue of infection in the young calf. An infected navel will become swollen through the formation of an abscess containing considerable pus. The calf becomes unthrifty, stiff in its joints, and is generally set back in its development. To prevent this loss, the calf's navel should be disinfected with tincture of iodine soon after birth.

If the calf is weak and does not nurse within an hour or two, it should be given assistance in getting its first meal. It is very important that the new-born calf gets the colostrum, or first milk,

from its mother. Colostrum contains antibodies which temporarily protect the newborn calf against certain diseases, especially infections of the digestive system. It is also high in albumin, globulin, and Vitamin A all of which are beneficial to the calf. Because of a laxative action, it aids in cleansing the digestive tract and getting it in proper order.

Calf Quarters

For valuable calves being raised for future herd replacements, individual pens or stalls are worthwhile for the first three or four weeks. Such an arrangement will prevent navel injury when sucked or jostled by other calves, and it will be easier to feed and care for the calf and note its condition of health.

In any case, the pen should be light, dry, well ventilated, but free from drafts. In cold weather, a wire or slatted flooring kept well bedded with dry material is desirable. The pen should be thoroughly cleaned and disinfected with hot lye water before the calf is placed in it.

A solid partition at least three and one-half feet high will reduce drafts, keep the calf from licking or nursing the other calves, and also aids in preventing the spread of disease from one calf to another. The pen should be equipped for feeding grain, hay, and minerals as well as milk or its substitute.

After three or four weeks when the navel has healed and the calf is stronger, the calf may be placed in a larger pen with other calves. With this arrangement stanchions or tie stalls should be provided for individual feeding. A hay rack and a mineral box will also be needed. At this age calves should have access to a well-drained lot where they can get exercise and direct sunlight during suitable weather.

Regardless of the type of quarters used, careful attention should be given to having dry quarters that are clean and free of drafts.



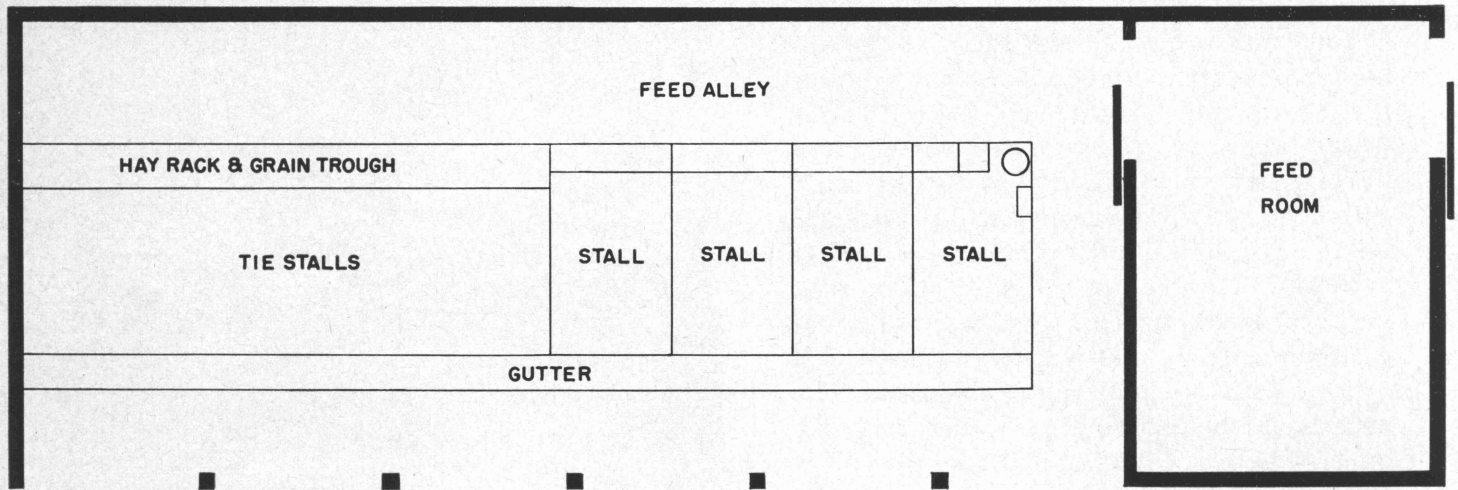
Individual stalls, similar to the one above, with wire or slatted flooring is recommended for calves up to three or four weeks of age.



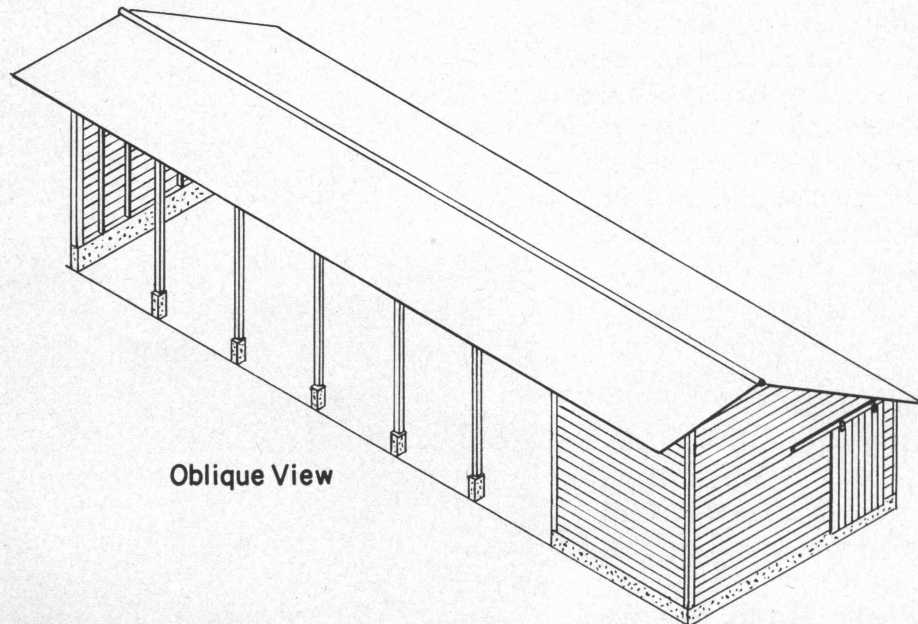
At about one month of age, the calves may be grouped together in a larger pen and stanchions or tie stalls used to provide individual feeding.



CALF DAIRY BARN



Floor Plan-Dairy Barn



Oblique View

Plan No. 366
May be obtained from the Texas Agricultural Extension Service, College Station.

Feeding Calves to Six Months of Age

The first three or four weeks of the calf's life is a critical period. Regardless of the feeding schedule being followed, the fundamentals of a successful calf raising program will be the same during this period.

Milk is important in the early feeding of calves and it is well worth the time to weigh or measure the amounts fed. The milk should be fed at a constant temperature of around

98° F. Caution should be taken to prevent over-feeding and only clean, sterile pails should be used in feeding milk.

At about two weeks of age, the calves being off to a good start on milk, grain and hay should be made available to them according to the recommendations in the schedules.

Good calves may be raised on whole milk, skim milk, or milk substitutes.

Feeding Schedule for Calves Using Limited Whole Milk

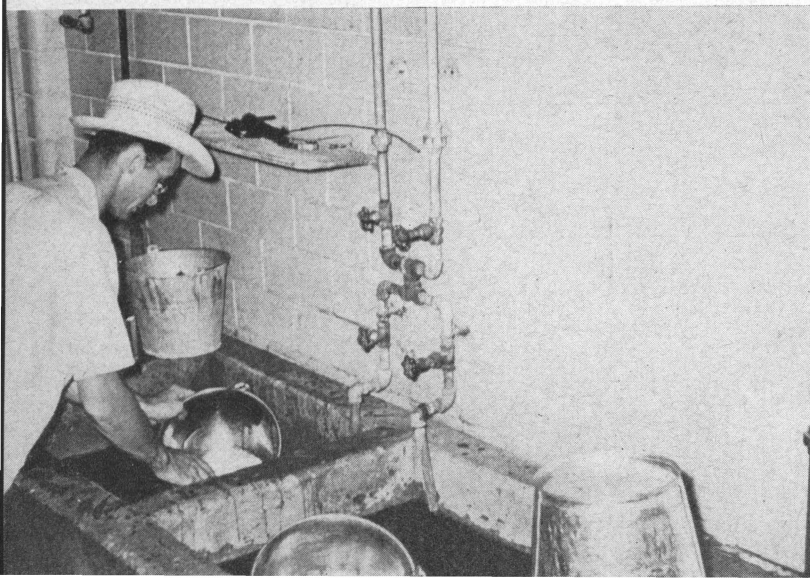
Age in Days	Milk	Grain and Hay
1-4	Feed 1 lb. of colostrum (first milk) per day for each 8 to 10 lbs. of body weight.	None
5-14	Feed whole milk from low testing cows (3 to 4% fat); 1 lb. milk to each 8 to 10 lbs. body weight.	None
15-21	Same as 5-14 days	Feed a top quality hay (legumes preferred) and a good grain mixture containing 20 to 24% protein and less than 10% fiber. Limit grain to 5 lbs. per day but feed unlimited quantities of hay. (See suggested grain mixture on page 9.)
22-56 for Holsteins or 22-70 for Jerseys	Continue to feed whole milk at same rate except Jerseys should be limited to 7 lbs. and Holsteins to 9 lbs. of milk per day. About two weeks before the end of the milk feeding period begin to reduce the quantity of milk offered until calves are off of milk entirely. (From birth to end of this period 350 lbs. of whole milk are fed.)	
Up to 180 days	No Milk	Same as Above

Keep clean, fresh water and a mineral mixture containing equal parts of steamed bone meal and salt before calves at all times.

Feeding Schedule for Calves Using Skim Milk

Age in Days	Milk	Grain and Hay
1-4	Feed 1 lb. of colostrum (first milk) per day for each 8 to 10 lbs. body weight.	None
5-14	Feed whole milk from low testing cows (3% to 4% fat): 1 lb. milk to each 8 to 10 lbs. body weight.	None
15-21	Same as 5-14 days.	Begin feeding dry grain mixture containing ground farm grains. No protein supplement is needed. Also, begin feeding top quality hay.
22-28	Replace whole milk with skim milk, substituting one additional pound each day until change-over is complete.	
29-120	Feed skim milk at the rate of 1 lb. per day for each 10 lbs. of body weight, feeding a maximum of 18 lbs. a day.	Feed 2 to 5 lbs. of mixed farm grains, ground or whole, plus top quality hay.
121-180	Discontinue skim milk feeding. Decrease should be gradual over a period of 7 to 10 days.	Feed 3 to 5 lbs. of 20% protein grain mixture with non-legume roughage, or 16% protein grain mixture with legume roughage or good pasture. Silage may be fed.

Keep clean, fresh water and a mineral mixture containing equal parts of steamed bone meal and salt before calves at all times.



← Sanitation is of utmost importance in the feeding of calves. Only clean, sterile pails should be used in feeding milk.

Feeding Schedule for Calves Using Milk Substitutes

Age in Days	Milk or Milk Substitute	Grain and Hay
1-4	Feed 1 lb. of colostrum (first milk) per day for each 8 to 10 lbs. body weight.	None
5-14	Feed whole milk from low testing cows (3% to 4% fat): 1 lb. milk to each 8 to 10 lbs. body weight.	None
15-28	Begin replacing milk with milk substitute. Follow manufacturer's directions.	Feed top quality hay (legumes preferred) and a good grain mixture containing 20% to 24% protein and less than 10% fiber. Limit grain to 5 lbs. per day but feed unlimited quantities of hay. (See suggested grain mixture below.)
29-70	Continue feeding milk substitute gradually reducing the amount fed during the last 14 days of this period.	
71-180	None	

Keep clean, fresh water and a mineral mixture containing equal parts of steamed bone meal and salt before calves at all times.

The following grain mixture (23% protein and 7.3% fiber) may be used for calves not on skim milk:

- 400 lbs. cottonseed meal
- 300 lbs. ground milo grain
- 100 lbs. ground oats
- 100 lbs. wheat bran
- 100 lbs. dried whey
- 10 lbs. each of bone meal, salt,
and ground limestone.

The mixture above has been used very successfully in the A. and M. College dairy herds for two years. Because of the high percentage of cottonseed meal, the amounts fed per calf should be limited to five pounds per day. The dried whey improves the palatability of the mixture and therefore is a valuable ingredient. At 1949 prices the mixture above cost \$3.35 per cwt.



↑ Young heifers between the ages of six and ten months will require supplemental grain feeding. Well developed heifers, over ten months old, will do well on high quality hay and good pasture.

Feeding Heifers Over Six Months Old

Calves under 10 months old do not have enough rumen capacity to do well on even the best quality roughages alone. Therefore, it is advisable to feed some grain (2 to 5 pounds) between the ages of six and ten months. The regular dairy herd grain mixture is usually satisfactory.

Well developed heifers, over ten months old, will do well on any of the following rations:

- Good pasture
- Legume hay and silage
- Good non-legume hay and fair pasture
- Good non-legume hay plus 1 lb. of cottonseed meal and 1 lb. of ground corn or milo per day
- Silage plus 1 lb. of cottonseed meal and 1 lb. of ground corn or milo per day.
- Legume hay plus 2 lbs. ground corn or milo.

All roughages should be fed liberally so that the heifers have all they will clean up. The mineral mixture mentioned on page 3 should be available in a box protected from the weather.

Breeding Dairy Heifers

Dairy heifers should not be bred until they are at least fifteen months of age (eighteen months for large breeds) and are properly developed and grown out. Early breeding of small heifers usually results in stunted cows that cannot produce at an efficient rate.

Management Practices

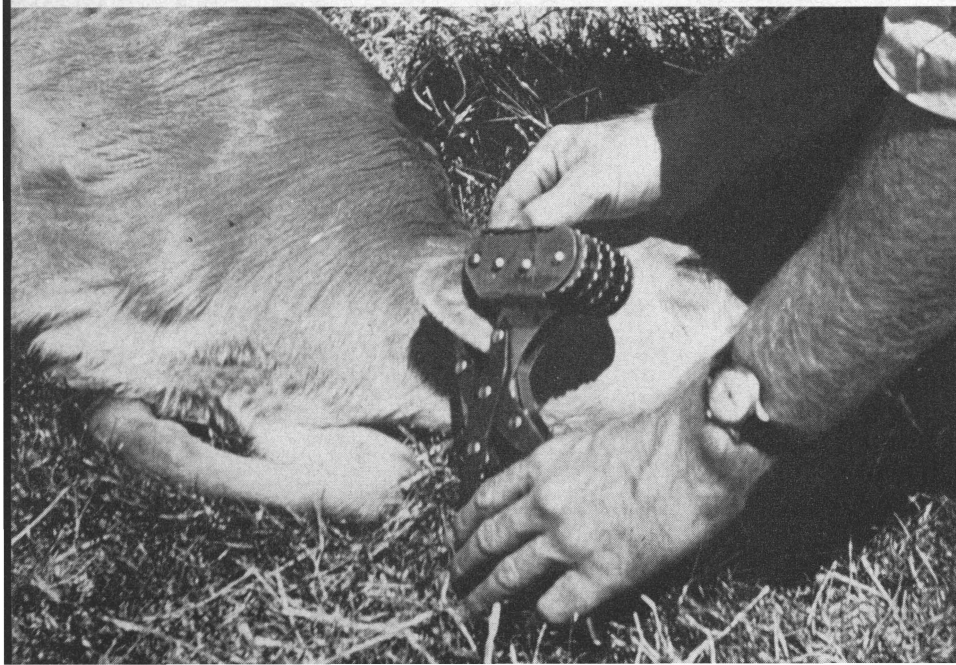
Identification

For registration of purebreds, calves must be positively identified. In a grade herd where a progressive breeding program is being followed, proper identification of each calf is also desirable. The following simple methods of identification have proven satisfactory:

- **Tattoo solid-color breeds.** Clip long hair inside ear, wipe off wax, apply tattoo ink between the ribs in the upper one-half of the ear, punch, and rub ink well into each mark.
- **Photographs or sketches for broken-color breeds.**
- **Ear Tags.** Do not fit ear tag too close to edge of ear, but allow space for ear growth.

The identification should be made early to prevent loss of identity.

← Young calves should be tattooed or otherwise identified soon after birth to prevent loss of identity.



Dehorning

Dehorn at an early age, preferably between one and two weeks. Caustic potash, or similar dehorning compound, is very satisfactory for dehorning young calves. The steps are simple: clip the hair around the horn button, scrape with sterile knife until red and about to bleed, and apply the stick of caustic potash or dehorning compound until the entire surface of the button has come in contact with it. Vaseline may be applied around the edges of the clipped area to limit the extent of the burn. Too much compound should not be applied, and the operator must use caution to prevent finger and hand burns.

Electric dehorning devices that will do a good job are now available.

Removing Extra Teats

Extra teats are unsightly and should be removed while the calf is small and easy to handle, around four to six weeks of age.

The calf should be thrown and iodine applied to the teat that is to be removed. If the teat is stretched and held firmly, it can then be snipped off with a pair of clean, sharp shears. Iodine should be applied after the operation.

Healthy Calves

Unhealthy calves often mean stunted heifers that will not produce at the rate of their inborn ability. Prevention of diseases and various calf ailments is much more satisfactory than trying to correct them after they occur.

Raise healthy calves by following these sound practices:

- Provide clean, dry quarters that are free from drafts.
- Disinfect navel soon after birth.
- Feed the dam's milk for the first four days.
- Use only clean and sterile pails for milk feeding.
- Do not feed too much milk. Force calves to take milk slowly.
- Feed milk at constant temperature (98°F).
- Do not make sudden feed changes.
- Provide plenty of exercise and direct sunlight.
- Control lice and other parasites.
- Isolate all ailing calves to prevent the spread of disease.
- Vaccinate for brucellosis and blackleg.



Early dehorning of all dairy animals is recommended. Horns have no place in a milking herd.



Extra teats should be clipped around four to six weeks of age.



A group of healthy calves, similar to the one below, can be developed only through the prevention of diseases and various calf ailments. When it is necessary to resort to treatment, the dairyman is in trouble.



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