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## Colorado Agricultural College

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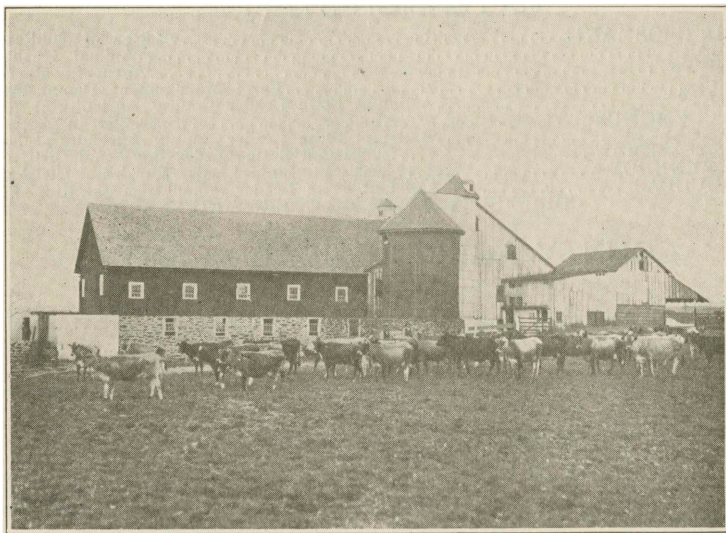
H. T. FRENCH, Director

# MANAGEMENT OF THE DAIRY HERD

By

R. W. CLARK

Specialist in Animal Husbandry



CO-OPERATIVE EXTENSION SERVICE IN AGRICULTURAL AND  
HOME ECONOMICS — COLORADO AGRICULTURAL COLLEGE  
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# MANAGEMENT OF THE DAIRY HERD

By

R. W. CLARK

*Specialist in Animal Husbandry*

Many herds of dairy cattle have been and are being established in Colorado. The main essentials for the owners to consider are barns, feeds and care. It is waste of money to establish herds and then ignore these essentials.

## BARNs

The dairy cow, to do her best and give satisfactory returns for the food consumed, must be properly sheltered from storms. They tend to lower the temperature of the body, which, if conditions are unfavorable, is maintained at the sacrifice of the milk flow.

Buildings need not be very expensive and can be constructed at very reasonable prices if the farmer possesses a little ingenuity. They may be made of straw or of lumber. Convenience, warmth, light and ventilation should be considered in their construction. Shelters made of straw may possess all of these qualities whether they be barns or straw sheds. They should be so constructed that during the coldest weather the temperature will not drop below 40 degrees F.

The light is very important in a dairy barn. Sunlight is favorable to healthful conditions and is one of nature's best disinfectants. The window sash should be attached by hinges and swing in at the top. This admits plenty of fresh air and does away with the need of a special inlet for it. The opening may be regulated by a cord so as to let in the required amount of fresh air. The windows should be placed at a height sufficient to prevent breakage by workmen or by the animals. The escape of foul air is important. This can be drawn off in a flue which should extend from near the floor up the side of the building and along the rafters to the ridge pole. A flue 16 in. by 22 in. will care for the exhalations from twelve mature cows. For the ventilating system to work well the barn must be almost air-tight. It is of no value in a building having large openings or cracks. The construction must be such that the proper amount of fresh air will be admitted and all of the foul air drawn off without drafts.

The size of the stalls will depend upon the size of the cattle. For large animals the stalls should be 5 feet long and  $3\frac{1}{2}$  feet wide, and for small animals  $4\frac{1}{2}$  feet long and 3 feet wide, 4 feet 8 inches being the average length of the platform.

There are many makes of stanchions on the market, the movable ones being most satisfactory. They are suspended from the top by a chain and are attached below to the floor in the same way. The farmer with a little ingenuity can easily make stanchions for himself, using some kind of hard wood, such as oak or hickory, but to buy them already made is less expensive.

The mangers need be nothing more than a tight board floor, sloping slightly up and away from the cow's head. With this con-



*Comfort and contentment are essential to successful dairy farming. Kindness is often as valuable as food*

struction the feed can be easily given and the mangers thoroly cleaned.

Floors may be made of cinders with planks under the cow's hind feet parallel with the gutter and sloping towards it. The gutter may be made of wood or cement, these being more sanitary than earth.

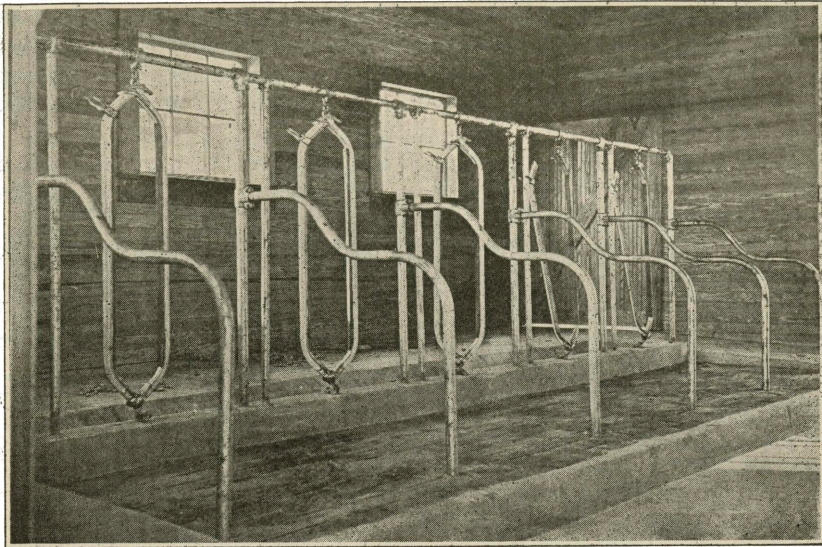
If the barn is to accommodate two rows of cattle their heads may be turned towards the center of it or towards the outside. The writer prefers the latter as the fresh air from the outside comes in beside the heads of the animals. With this arrangement the ventilating flues should be at the ends and center of the building.

#### *WIND BREAKS*

At certain seasons of the year cattle need protection from winds. A cold wind or heavy wind loaded with moisture or sand, has the same effect on cattle that it has on people. To get the most out of cows they must be comfortable at all times. Wind breaks are valuable, can be cheaply constructed and are worth more than they cost. If such are needed they can be made of straw, Russian thistles, rough lumber, slabs, adobe or even sage brush. Wind breaks made of such material are more or less in use in Colorado and are giving satisfactory results. If straw, Russian thistles, sage brush, or other similar material is used, set two rows of posts three or four feet apart and parallel. The posts when set should be about ten feet apart in the row and six feet above the ground.

Tack woven wire fence on the inside of the posts and





*A simple, cheap and satisfactory arrangement*

pack the material to be used in the space between the wire.

Wind breaks should be made to furnish shade and protection from the weather at all seasons.

### *PASTURE*

Good pastures are a necessity and should be provided wherever possible. Cows that give a large flow of milk cannot produce at their best and travel over extensive areas. In high class dairying, the food must be brought to the cow. In Colorado, permanent irrigated pastures are desirable and should be provided where there is water for such purposes. Brome grass, orchard grass, June grass, timothy and a little alfalfa and clover should be used in the mixture where it is known that they do well. For the dry farmer, sweet clover can be used. It causes bloat sometimes but is not as bad in this respect as alfalfa.

Professor G. E. Morton who has made a study of grass mixtures for pastures in Colorado recommends the following:

|                            |                 |
|----------------------------|-----------------|
| Orchard Grass .....        | 14 pounds       |
| Awnless Brome .....        | 12 pounds       |
| Meadow Fescue .....        | 8 pounds        |
| Fall Meadow Oat .....      | 4 pounds        |
| Timothy .....              | 6 pounds        |
| Alsike Clover .....        | 1 pound         |
| White (Dutch) Clover ..... | 1 pound         |
| Yellow Sweet Clover .....  | 4 pounds        |
|                            | <hr/> 50 pounds |

This mixture with slight modification has proven satisfactory

at the College on heavy clay soil. On low lying wet soil, reduce the orchard and brome grass and add more timothy and some red top.

"Heavy seeding is necessary to get an early sod. In order to get a first-class pasture a perfect stand must be obtained, so take pains with it."

"Sow with a light cover crop and remove the crop as soon as cut. Take a crop of hay by the second season to allow the grasses to become well rooted before pasturing."

"For horses or hogs, use alfalfa pasture; in high altitudes a mixture of alsike clover and timothy."

Many good pastures have been established in the state and in almost every irrigated section. Failure seems to be due to poor conditions at seeding time or to lack of water, especially to the latter. A small area should be sown if necessary and irrigated frequently. Sow early, the earlier the better, after you can get on the ground.

### SOILING

Under intensive dairying, the pastures should be supplemented with soiling crops. Fall rye, wheat, clover, alfalfa, oats, peas, sweet sorghum and other crops may be grown for this purpose. The spring crops should be sown on different dates to secure succession. The blossoming stage for clover and the milk to dough stage for oats, wheat and barley are the best times for cutting. Rye needs to be cut before blossoming, as it becomes woody and unpalatable after that stage of growth.

If soiling crops cannot be grown, a little good alfalfa or silage should take their place.

### THE SILO

Dairying is increasing in Colorado and the silo is indispensable. The business is often not profitable because the cows are fed too much dry ration, especially during the winter months. The average of nine different experiments conducted in the United States, shows that for 100 pounds of feed consumed, the silage ration produces about four more quarts of milk than the dry corn-fodder ration. If milk is selling at 12½ cents a quart, as it is in many places, it would mean that silage has a value per cow per day of at least 25 cents. It would mean that the income per day from ten cows would be increased \$2.50. Because much more feed can be produced by the use of the silo than without it, silage should be fed more or less thru the summer season. Animals that shrink or are underfed cannot do their best later, even though put up and fed good rations.

The silo is absolutely necessary in Colorado for most successful dairying.

### WATER

Good water should be provided at all times. Cows should not be forced to drink stale and polluted water from ponds and marshes. When this is the case their demands are not supplied and a low milk

flow will be the result. Eighty-seven per cent of milk is water and a cow giving five gallons of milk a day would require about thirty-five pounds of water for it alone, beside a larger amount for the other requirements of the body.

Water should be accessible at all times.

### *LIBERAL FEEDING*

Liberal feeding must be practiced if profit is expected. A large portion (50 to 75 percent) of the food given a cow is required for maintenance, the remainder being required for the manufacture of milk. With a scant feeding, the whole amount given may be used for maintenance, leaving nothing for milk production.

In feeding for large returns, a variety of foods gives better results than a single diet. Such a ration is better digested, relished longer, and is more likely to meet all the requirements of the body. Large consumption of food is important and this will be accomplished with a mixed diet. If certain needs of the body are not supplied, the animals will develop a depraved appetite, leading them to eat bones, leather, paper and similar materials to satisfy the craving which arises because the ration is lacking in some particular nutriment.

Regularity in feeding is important. Animals know when feeding time arrives and irregularity in this respect will result in a decreased milk flow.

Salt is necessary and the animals should have access to it at all times. A box containing the salt may be securely fastened in one corner of the pasture or yard.

These provisions and attentions, tho they may appear insignificant to the ordinary farmer, are nevertheless very important.

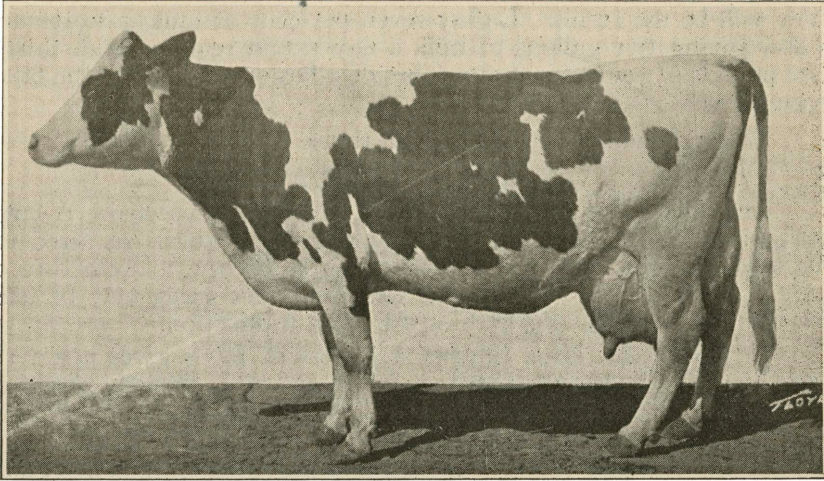
Cows are naturally affectionate animals and respond very quickly to kind treatment, therefore the attendant should not be rough or boisterous.

### *SELECTING DAIRY ANIMALS*

There are four leading dairy breeds, the Jersey, Guernsey, Holstein and Ayrshire. There are many good Shorthorn cows and it may be advisable to start with such a breed. The farmer should select whichever one of these he likes that is adapted to his purpose. There are good and inferior animals in every breed. The main thing is to get a good, pure-bred sire with good individuality and strong dairy inheritance. Then, by rearing the heifer calves from the best cows, a large-producing herd will be secured in a few years. To ascertain the best individuals of the herd, the milk should be weighed and tested for butter fat three or four times each month thruout the year. A single weighing or testing is not sufficient. There are some cows that are heavy milkers for a short time only, while on the other hand there are some that do not milk heavily at

### *POINTS OF SELECTION*

Shorthorns are the best milkers among the beef breeds, but in



*A good dairy type. Note the large udder, big middle piece, full girth, long, lean neck, sharp shoulders, bare rump, and leanness. (Courtesy Woodcroft Farm, Pueblo, Colo.)*

selecting them it must be remembered that there are two types. any time yet are very profitable producers. The weighing and testing should be continued thruout the entire lactation period. One is broad and beefy, the other angular and lean when giving a full flow of milk. It is the latter kind that is desired in the dairy.

The first consideration in selecting any kind of dairy cow should be given to the udder; this should be large but not fleshy and should collapse to a considerable degree after the milk has been drawn. Second, the middle piece, or barrel, of the animal should be large, extending well out and dropping low. These are the most important points, but there are minor ones to be considered. The head should be long and lean, the neck thin, the shoulders spare fleshed, and the thighs thin and incurving.

### HEALTH

It makes no difference how wisely one may select, if disease is present the efforts will end in failure. Tuberculosis is common in cattle and the disease may be well developed even in robust looking animals. All cows added to the dairy herd should be tuberculin tested and an expert should be employed for this purpose. While the test is reliable, it has been misused greatly by dishonest and incompetent people. Often it has been used to deceive, and therefore the integrity of the test should be determined. Abortion is another serious disease. There are two forms known, contagious and non-contagious. It is the former that must be avoided if possible by becoming familiar with the disease and then dealing only with honest owners of clean herds.

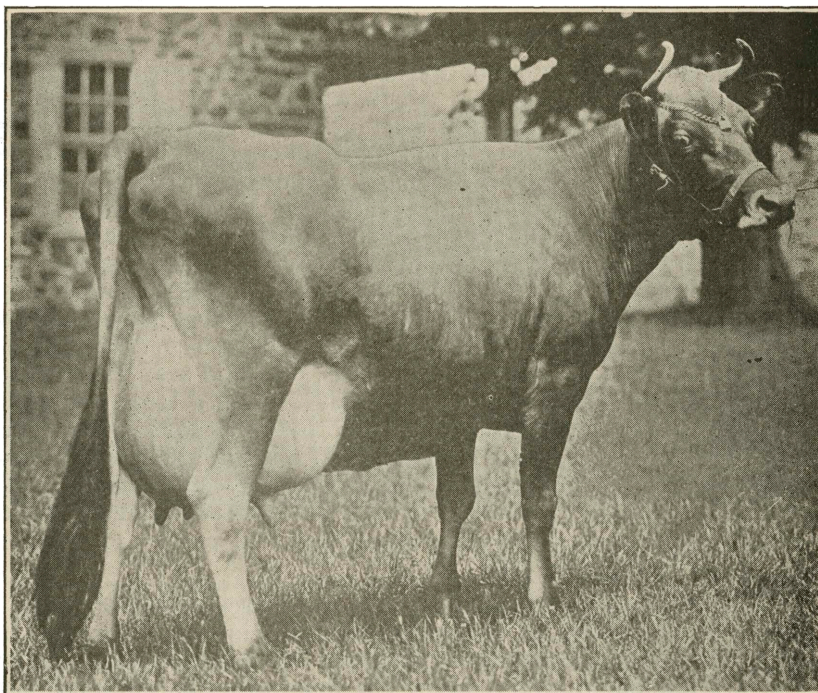


### FEEDING DAIRY COWS

A balanced ration is one that meets the requirement of the animal. This is a relative term. A balanced ration for a cow is entirely different from that of a fat steer because their requirements are different. There are three groups of compounds in all foodstuffs that must be considered in making a mixture of feeds. They are known as protein, carbohydrates and fat. Protein includes those compounds containing nitrogen which enter into the composition of muscle, hair, skin, blood, milk, etc. The white of an egg is an example of protein. It is impossible to develop a young animal properly without a sufficient amount of protein. A cow cannot produce all the milk she is capable of producing unless she has a sufficient amount of protein. Alfalfa, clover, peas, oats and bran are especially valuable to the dairyman because they contain a large amount of protein. Cows that receive only timothy hay, corn fodder, beet pulp, roots, corn and barley do not produce to their capacity because they are not getting enough protein. No other substance can take the place of protein as a milk producer and a tissue builder. In addition to these uses, it also furnishes heat and energy to the body and may be changed into fat.

Carbohydrates include the fibre, the starch and the sugar of the feeds. They also, as well as protein, provide the body with fat, heat and energy. Paper is an example of fibre, while starch and sugar are familiar to everybody. The fats in the food produce heat, energy and fat in the body. Linseed and cottonseed oils are examples of plant fats. One pound of fat produces about 2.2 times as much heat as 1 pound of protein or of carbohydrates. Only part of the protein, carbohydrates and fat given in the food can be digested and used by the body, the rest passing away in the excrement. Only the digested compounds benefit the animal. The non-digestible compounds that pass away in the excrement have no value. Non-digestible fibre has no value and an excess of it is an injury to a cow, as energy is required to get rid of it. This is particularly true of straw and shows why straw should not form a large part of the ration. If a cow eats 100 pounds of clover hay, she digests 7.1 pounds of protein, 37.8 pounds of carbohydrates and 1.8 pounds of fat; 53.3 pounds passes from the body and is of no value as food. A large portion of the nutritive compounds are soluble in water and when hay or other foods are wet by rains or improperly cured their food value is decreased.

Special attention should be given by the dairyman to the preparation and combination of his feeds and especially to the curing of his forage. When giving a large flow of milk on dry feed, cows generally require considerable grain to maintain the milk yield. The amount of grain given with the ration should be gauged by the milk flow. A good rule is to give 1 pound of grain per day to every 3 or 4 pounds of milk produced per day or give as many pounds of grain per day as pounds of butter fat produced per week.



*An ideal udder. Lay emphasis on it when selecting. (Courtesy American Jersey Cattle Club)*

The following suggestive rations are for cows weighing 1,000 to 1,200 pounds, allowing as much of the forage as will be eaten up clean twice a day. When clover and alfalfa hay are fed, less grain is required than when prairie hay or the like is used.

|                 |           |
|-----------------|-----------|
| Alfalfa .....   | 20 pounds |
| Beet pulp ..... | 40 pounds |
| Barley .....    | 6 pounds  |

|              |           |
|--------------|-----------|
| Clover ..... | 25 pounds |
| Bran .....   | 3 pounds  |
| Barley ..... | 3 pounds  |

|                   |           |
|-------------------|-----------|
| Corn silage ..... | 25 pounds |
| Clover hay .....  | 10 pounds |
| Corn .....        | 4 pounds  |
| Wheat bran .....  | 4 pounds  |

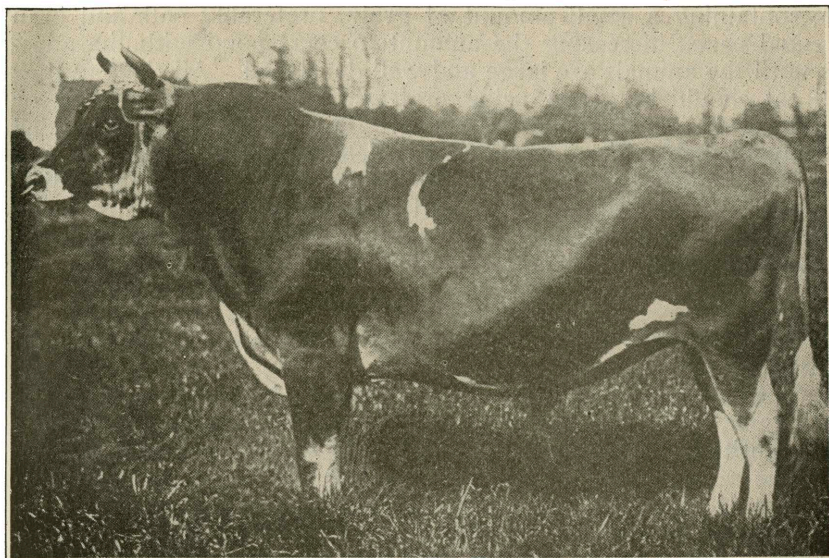
|                  |           |
|------------------|-----------|
| Clover hay ..... | 20 pounds |
| Corn .....       | 4 pounds  |
| Oats .....       | 4 pounds  |

|                   |           |
|-------------------|-----------|
| Prairie hay ..... | 20 pounds |
| Bran .....        | 10 pounds |
| Oats .....        | 4 pounds  |

|               |           |
|---------------|-----------|
| Clover .....  | 20 pounds |
| Timothy ..... | 5 pounds  |
| Bran .....    | 2 pounds  |
| Oats .....    | 2 pounds  |

|                   |           |
|-------------------|-----------|
| Corn silage ..... | 30 pounds |
| Alfalfa hay ..... | 15 pounds |
| Corn .....        | 6 pounds  |
| Wheat bran .....  | 2 pounds  |

|                   |           |
|-------------------|-----------|
| Alfalfa hay ..... | 15 pounds |
| Corn fodder ..... | 10 pounds |
| Corn .....        | 6 pounds  |
| Wheat bran .....  | 2 pounds  |



*Splendid type of dairy sire. (Courtesy American Jersey Cattle Club)*

### *RAISING THE DAIRY CALF*

In dairying, the farmer should raise his own calves. Many farmers are not successful in raising them on skim milk. Whole milk may produce the best calf but not necessarily the best cow. As good an animal can be produced on skim milk as can be produced on whole milk, but greater care and attention is required in producing the former.

The calf should nurse its mother for the first few days, after which it should be removed and fed by hand. Whole milk, warm and fresh from the mother, should be given for ten days or two weeks at least. Ten to twelve pounds per day in two or three feeds should be given at first, and the length of time that it should be continued depends upon the strength of the calf. Ordinarily ten days to two weeks will be required to make the change from whole milk to skim milk. Gradually substitute skim milk for whole milk, increasing the former until the whole milk is entirely replaced. This may be a week or it may be a month. Skim milk should be warm and sweet when fed, as cold sour skim milk is the greatest cause of scours. It may be fed for six or seven months, depending mainly upon the supply. It should be given until 5 months of age at least.

As soon as a calf will eat, hay or grain should be given. The calves should be fed in stanchions so that each one will get its proper share. Calves not so fastened sometimes learn to suck each other and this is undesirable. After feeding the milk, place in the manger a

box containing a small amount of grain, preferably oats and bran in equal parts, increasing the amount to correspond with the appetite until the animals are large and well developed. All the hay they will eat should be given, using preferably a mixture of clover, or alfalfa, and some kind of grass hay. The feeder must be guided entirely by the condition of the calf in determining how much of any one food shall be given. While ill results may come from feeding too much, the aim should be to feed sufficiently well to secure large daily gains. If properly fed and taken care of, the skim milk-fed calf should weigh from 500 to 800 pounds at one year of age.

### *CALF SCOURS*

Some farmers are very unsuccessful in raising calves by hand because of scours.

The following conditions are the causes of common scours: too much milk, too cold milk, sour milk, irregular feeding as to time and quantity of milk given, dirty feed pails, dirty and damp quarters.

The remedies are as follows: first remove the cause, then give an ounce of castor oil and the trouble will usually disappear. If the scours persist feed lightly of milk in a warm, sweet, clean condition and add a little common salt or a little lime water. Raw egg, parched flour or a teaspoonful of dried blood flour added to the milk is often helpful. Another good treatment is to give a tablespoonful of formaldehyde mixture in each feed of milk. In making the mixture use  $15\frac{1}{2}$  ounces of water to  $\frac{1}{2}$  ounce of formaldehyde. Common scours will usually disappear under one of these treatments.

If the scours are contagious and do not respond to the above treatments, secure at a drug store a mixture of one part salol and two parts of subnitrate of bismuth and of this give what will lay on a ten cent piece. After the calf has taken milk pull out its tongue and put the mixture on it, far back. In severe cases the mixture may be given oftener. This and the formaldehyde treatment may be carried on together.

In case of contagious scours the place where the calves are kept should be thoroughly clean, kept so and thoroughly disinfected.

### *AGE AT WHICH TO BREED HEIFERS*

In order that heifers may be bred young and begin milking at an early date, they should be well developed. This is important. Cows that acquire considerable age and become mature before beginning to milk will not usually make as deep and persistent milkers as cows that are bred at a comparatively early age and begin to milk before they are mature. The aim is to get the system of the animal into the habit of producing milk at as early an age as possible. Therefore the heifer should be well fed and cared for from birth.

If the heifer is well developed she should be bred at 15 to 18 months of age, otherwise she should not be bred until 18 to 20 months of age.

For further information write to the Agricultural College, Fort Collins, Colo.