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## THE PRODUCTION OF CLEAN MILK

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Milk readily absorbs odors and is an ideal medium for the growth of bacteria; therefore, it is more difficult than most other foods to keep in perfectly sanitary condition. The production and delivery of clean milk to the creamery or consumer is a problem which a considerable number of dairymen have not solved.



Fig. 1.—Sanitary milkhouse. A milkhouse should be provided in which the milk may be handled apart from all other operations.

Ever since the beginning of the creamery industry one of the big difficulties of the creameryman has been that of obtaining clean milk and cream. By applying the best scientific methods in the manufacture of dairy products the ill effect of impure milk can be partly overcome, but it is impossible to manufacture a strictly first-class product from low-grade milk. The price received by the manufacturer for the finished product varies directly with the quality, and this determines the amount which he can pay the producer for the raw product. So long as dairymen are careless in the production of milk and cream, the manufacturer will be making an article low in quality, and the price received by the dairymen will be proportionately low.

Owing to the very keen competition of the so-called "substitutes for dairy products" it behooves the dairyman now as never before to produce a strictly sanitary product. Many use these substitutes, not because they are cheaper, but because they are said to be cleaner. The demand for strictly sanitary food is increasing; and of all foods, dairy products are in greatest need of strictly sanitary handling.

An increase in consumption of dairy products in the United States to an amount equal to two tablespoonfuls of milk for each person daily for a year would more than equal the amount of milk exported in 1918. This increased consumption would cause a shortage of dairy products, which in turn would raise the price received by the dairyman. This could easily be accomplished by the production of better milk and cream.

To be successful in his business, the dairyman must fully understand the importance of applying the best sanitary methods in producing and handling his product. Dirty milk is not only dangerous as a food, but it is the cause of considerable loss to the producer, as it often sours before it has been consumed. Spoiled milk is a total loss to the producer, and there is possibly nothing quite as vexing to the housewife as milk that has soured shortly after being received.

The principal sources of contamination of milk are the dust of the air, the dirt from the udder and flanks of the cow, and contamination by the milker and milk utensils. Some bacteria may come from the cisterns and ducts of the udder.

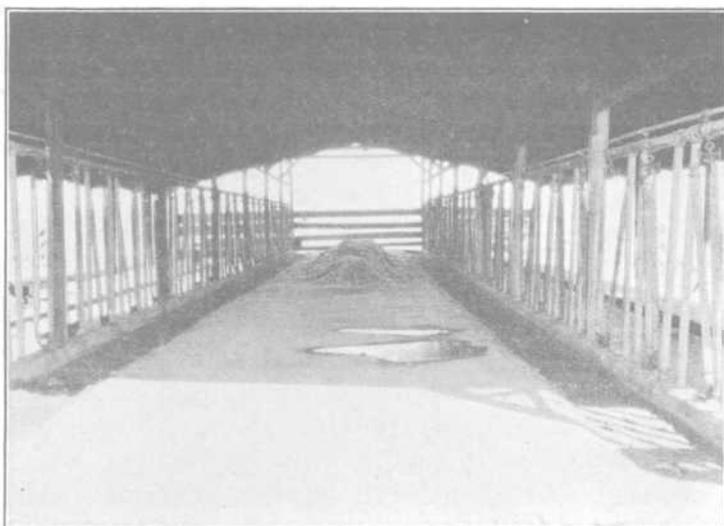


Fig. II.—Sanitary Dairy Barn. The barn is thoroughly cleaned daily. The manure is hauled away and spread over the fields at frequent intervals.

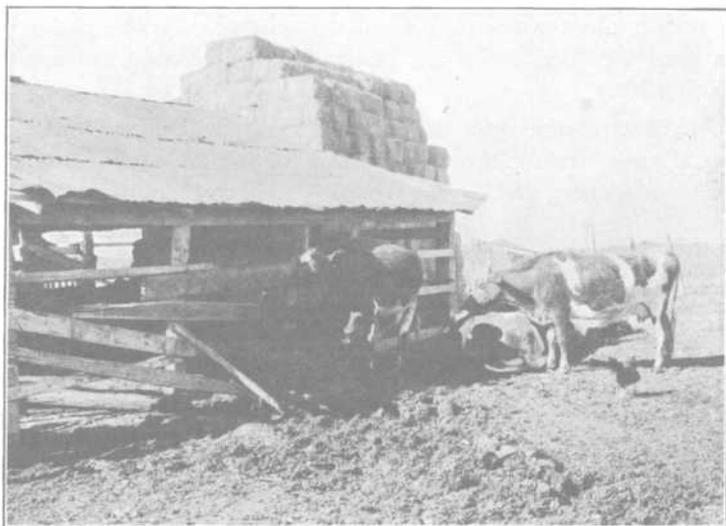


Fig. III.—Unsanitary Milk Barn. Manure is left in a pile at the end of the stanchions. This greatly increases the number of flies, and it is impossible to keep cows clean when they are standing and lying in manure.

## DISEASED COWS

The first essential for clean milk is healthy cows. Milk from diseased cows is likely to contain disease-producing bacteria and may be abnormal in composition. It is advisable to reject milk from all such cows unless they have been examined by a trustworthy veterinarian and pronounced safe.

## CARE OF THE COWS

The dirt on the udder and flanks of the cow is an important source of contamination. The long hairs of the udder and flanks should be kept clipped to reduce the accumulation of dirt and manure in this region. The udder and flanks should be wiped with a damp cloth just previous to milking, regardless of how clean they may appear to be. Cows kept in a barn or small corral should be groomed at least once every day.

Cows on pasture are generally expected to be easier to keep clean than those kept in corrals or barns. This, however, is not necessarily true in the irrigated sections of the State where cows frequently stand in water to keep cool. Their udders and flanks become covered with mud, which is difficult to remove. Adobe water-holes, where the water becomes stagnant, should not be used as they are a source of filth.

The cows should not be fed, groomed, or bedded immediately before milking because these operations fill the air of the stable with dust and bacteria. When the weather will permit, it is generally advisable to feed the hay in the corrals and feed only silage and grain in the barn. This reduces the dust in the barn to the minimum. This method is practicable for a large portion of the State.

## THE DAIRY BARN AND CORRALS

The dairy barn and corrals should be located on well-drained ground, at some distance from any buildings or surroundings which attract or furnish breeding places for flies or develop bad odors. If inclined to be muddy, the corrals, lanes, and connecting lot should be filled in with gravel or cinders. Well-drained and clean corrals will be a great help in keeping the cows from becoming dirty by mud and manure.

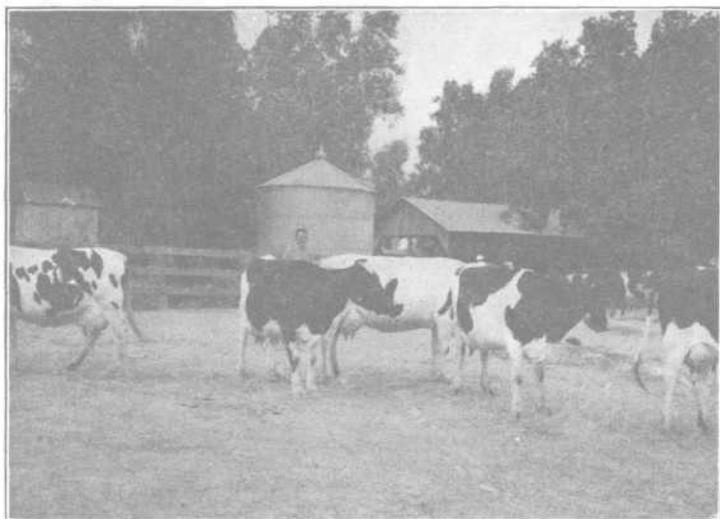


Fig. IV.—Clean cows and corral. Clean cows and corrals are essential to clean milk production.

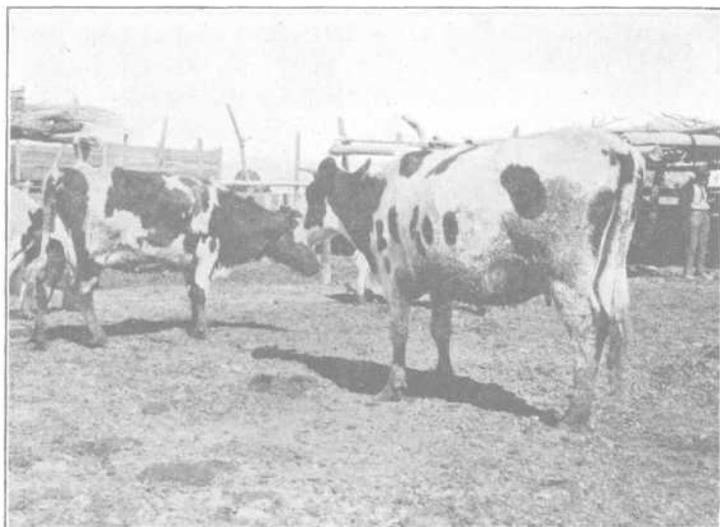


Fig. V.—Dirty cows and corral. Filthy corrals and dirty cows result in bad milk.

It is very desirable to have a modern dairy barn for the production of clean milk. However, a great many dairymen cannot afford to build such barns and must of necessity get along with cheaper buildings. It is best that some kind of a sanitary building be provided. The day of milking in the mud or on top of a manure pile has passed if dairy products are to keep the place in the human diet that they should. The man who cannot afford to provide a sanitary place for milking his cows is a detriment to the dairy industry and had best follow some other occupation for a livelihood.

Fig VI shows picture of milking shed which is cheap and yet sanitary. This shed is large enough to accommodate twenty cows, and has concrete floor and manger, iron roof, and wood stanchions. It was constructed in January, 1921, at a cost of \$275 for materials and labor. Being provided with water hose to wash off the floor, this is a fairly good substitute for a modern dairy barn and a sanitary place for the production of milk.

Shelter should be provided in each corral so that the cows may have a dry place to lie down and protection from inclement weather and the hot sunshine.

There is possibly nothing with which the dairymen have to contend as filthy as flies. Flies carry bacteria as well as filth, and every effort should be made to keep them out of the dairy barn and milkhouse. Cow manure is an ideal medium for the breeding of flies, and accumulations of manure around a dairy are very untidy to say the least. By removing the manure and spreading it over the fields at least twice a week the number of flies will be greatly decreased and the appearance of the dairy improved. Fly poison and traps should also be used in combatting flies.

#### THE MILKHOUSE

A milkhouse should be provided so the milk may be handled apart from all other operations. It should be so located that it will be convenient to the barn and also be free from dust and odors. The milkhouse as well as the dairy barn should have a concrete floor and be so constructed that it can be easily and thoroughly cleaned. Screens should be provided to keep out the flies. Proper ventilation is essential to prevent the development of bad odors in the milkhouse.

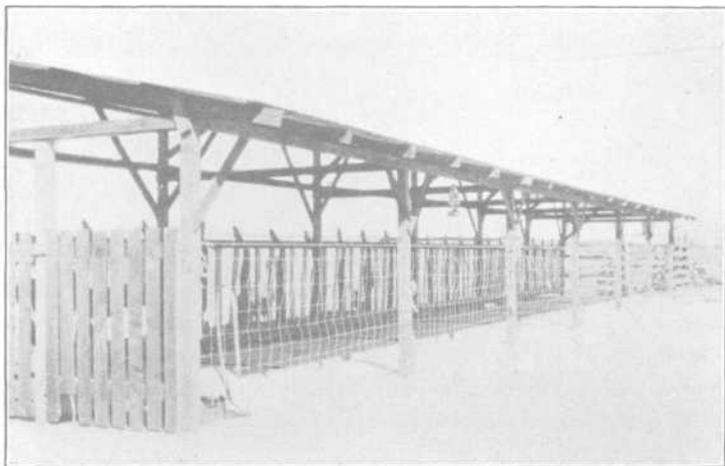


Fig. VI.—A cheap but sanitary milk shed. This shed was constructed in January, 1921, at a cost of \$275 for material and labor. The floor is thoroughly washed daily.



Fig. VII.—An unsanitary, untidy and wasteful method of disposing of manure. The manure should be removed at least fifty feet from the dairy barn daily. It should be hauled away and spread over the fields at least twice a week.

An ample supply of pure water should be provided. Impure water is a source of contamination and should never be used in the dairy. Under no circumstances should a dairyman use ditch or other surface water.

#### MILK UTENSILS

The milk utensils should not be used as containers for anything other than milk. As soon as the milk has been emptied, the utensils should be rinsed in cold water and thoroughly washed in warm water containing an alkali washing powder such as Wyandotte or Gold Dust. Use a bristle brush to wash milk utensils. Never use a rag and soap. Never mop out milk containers with a cloth. After utensils have been washed they should be thoroughly scalded with boiling water and placed where they can air and sun. Let the utensils dry from the heat they have absorbed from the hot water. Do not dry them with a cloth. The above instructions for the care of milk containers apply also to the care of the cream separator. It should be washed immediately after it has been used.

Only good, smooth-surfaced containers should be used in the handling of milk. Containers which are battered or rusty are hard to clean and rusty ones may injure the flavor of the milk or cream.

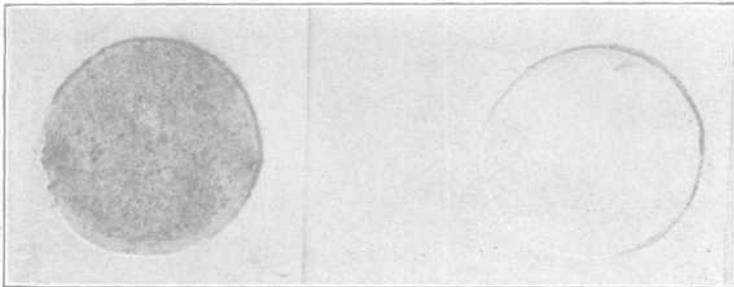


Fig. VIII.—Sediment test of clean and dirty milk. Which kind of milk are you producing? Are you helping to increase or decrease the consumption of dairy products?

#### CARE OF MILK AND CREAM

The milk should be thoroughly strained to remove any undissolved dirt or other foreign substances. This may be accomplished



Fig. X.—The milker well equipped. The milker should have a clean white suit for milking, which is worn only during time of milking. He should use a small top milk pail.

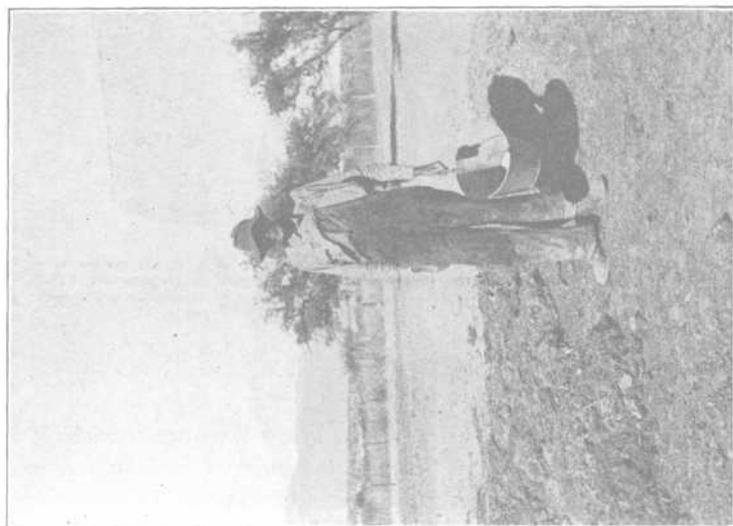


Fig. IX.—The milker poorly equipped. This man is well equipped to "slop the pigs". Dirty milkers and open top pails greatly increase the amount of dirt in the milk.

by pouring the milk through one or more layers of linen or fine wire gauze. The milk should be strained promptly on being drawn and cooled to 50° F. or lower to check the bacterial growth. If cream is being sold, separate it immediately and cool at once. Remove lid and cover can with clean cloth. This will prevent contamination from the dust of the air and flies and admit air which is very essential. Cream should be stirred at least once daily. Fresh separated cream should never be added to cream from previous milkings until it is thoroughly cooled.

The cans of milk or cream in transit from the farm to the creamery should be covered with canvas to protect them from heat and possible infection from mud or dust. In hot weather the cream can should be wrapped with a wet gunny sack to keep the cream cool while in transit.

Cream should be delivered to the creamery at least three times a week.

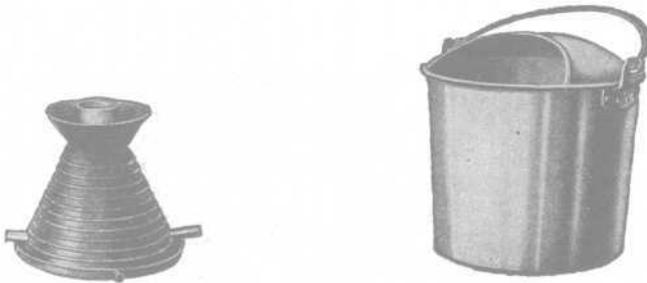


Fig. XI.—“Baby” Cream Cooler and Sanitary Milk Pail. The cream cooler sets on the separator shelf and cools the cream as it comes from the separator. The covered pail used in a barn where little care was given to cleanliness has reduced the bacterial count from 3,439,300 for the open pail to 103,600 per c. c.

#### MILK PAILS

There are several types of milk pails on the market which are satisfactory. A good milk pail should be made of well-tinned metal and have smooth surfaces so it can be easily cleaned. The top should be partly covered to reduce to the minimum the chances of contamination during the time of milking.



Fig. XII.—The Ideal Sanitary Cream Cooler. This cooler is constructed to fit under the cream-spout of the smallest separator and still deliver cream into a 10-gallon can. It protects the cream from contamination and cools promptly. The stand is adjustable.

#### MILKING

The milker should have a clean white suit for milking, which is worn only during time of milking. His hands should be clean and dry. Wetting the hands with milk is a filthy practice. The first two streams from each teat should not be saved. This milk usually contains very little butter fat and may contain a considerable number of bacteria which have entered the udder through the milk duct of the teat.

#### SUMMARY

##### RULES FOR THE PRODUCTION OF CLEAN MILK

- Keep dairy barn, corrals, and milkhouse clean.
- Keep cows clean and healthy.
- Keep flies out of milkhouse and barn.
- Keep hairs on udder and flanks clipped.
- Do not groom cows or feed dusty feed in the barn just previous to milking.
- Have the dairy barn and milkhouse well ventilated.
- Provide an abundance of pure water for cows and for use in the milkhouse and dairy barn.

Provide cows with sufficient good feed.

Wipe udder and flank with damp cloth just previous to milking.

Wear clean clothes when milking.

Have the hands clean, and milk with dry hands.

Milk away the first two streams from each teat.

Reject milk from diseased cows or spoiled quarters of the udder.

Use only sanitary milk pails with small openings

Do not save milk from fresh cows until all inflammation has left the udder.

Strain and cool the milk promptly on being drawn. If selling cream, separate and cool Use only good fine mesh strainers.

Use a good milk cooler and keep it clean

Do not mix fresh cream or milk with previous milking until thoroughly cooled Stir thoroughly when mixed.

Stir milk or cream frequently while cooling.

Keep milk or cream cool until shipped. Remove the lid and cover can with clean cloth. If in icebox where it is protected from flies and dust, the lids may be tilted to admit air and lids left on cans.

Send cream to creamery at least three times a week.

Protect cans from heat, cold, dust, and mud while in transit to the creamery.