

Kansas State Agricultural College

EXPERIMENT STATION—Circular No. 24

OFFICE OF STATE DAIRY COMMISSIONER

D. S. BURCH, Commissioner

Better Butter for Kansas

**A Circular Explaining How Dirt and Bacteria Get Into Cream
and the Effect They Have on Butter-Fat Prices**

Kansas dirt in the proper place is a valuable agricultural asset, but when found in milk it is a sign of unclean dairying and criminal carelessness.



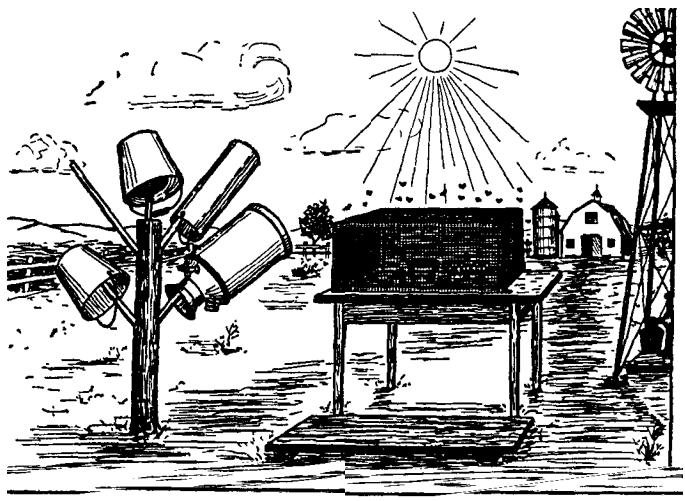
Cotton disks, showing dirt contained in twelve pints of milk of varying degrees of purity. All of the milk had previously been through an ordinary strainer.

It is difficult to convince a person who has never cleaned a separator bowl that average milk contains considerable quantities of dirt and manure, but an examination of separator slime should convince the most skeptical that painstaking methods in dairying are necessary if we expect to sell or consume clean and wholesome milk products.

The dairymen of the state pay dearly for the dirt in milk, since the standards of all dairy products on the market and the prices paid for milk and cream are determined by their flavor and purity. Butter of good flavor cannot be made from cream skimmed from dirty milk.

High Standard of Purity for Dairy Products

Most foods which are dangerous to health warn us of danger either by their odor of decay or by their change in appearance. Bad eggs proclaim themselves by an offensive odor and spoiled canned goods are either overgrown with mold or have an unnatural appearance. The souring of milk is regarded by many as the first indication of impurity, but both milk and cream undergo decomposition and may be dangerous to health long before



Sun-Rack and Table for Airing Milk Utensils

An efficient means of keeping milk utensils and separator parts clean and sweet. The wire cage made of window screen should fit the table fly-tight. Sunlight is a powerful disinfectant. Utensils should not, however, be thus exposed in dusty weather.

souring occurs. For this reason an exceptionally high standard of cleanliness must be observed in milk production.

The principal sources of contamination are dust from the air, dirt and manure from the cows bodies, and particles of old milk left in pails and utensils which were not thoroughly cleaned. All of this foreign matter is heavily laden with bacteria which will pass through the finest strainer, even though the coarser particles of dirt are strained out. Clean milk does not require straining.

Dirty Milk is Dangerous Milk

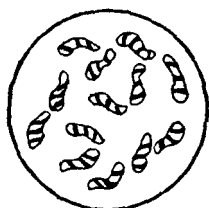
The illustration on the first page shows the amount of dirt in twelve pints of milk taken from twelve different dairies. Each pint was strained through a small disk of absorbent cotton, and the dark color indicates the amount of dirt contained. None of this milk had become sour and no dirt

could be seen in it, yet no sane-minded person would knowingly drink the milk which contained the dirt indicated in tests 5, 6, 9, and 12, and he would hesitate to drink any of the others except No. 7.

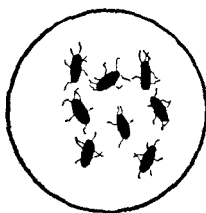
Although a large amount of the dirt in milk is left in the separator bowl, the great majority of the bacteria formerly on the dirt are washed into the cream, where they finally develop bad flavors and cause decomposition. The most skillful buttermaker cannot repair this injury to cream, and the low quality of butter made from it is responsible for low butter-fat prices.

Clean Cream From Start to Finish

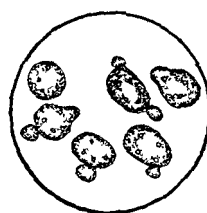
1. In favorable weather, keep the cows in the pasture as much as possible, thus preventing an accumulation of manure in the stable or corral.
2. Remove the dirt from the cows' udders and flanks before milking, and wipe the udders with a damp cloth.



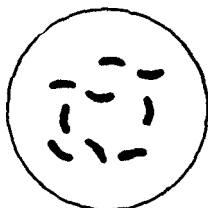
Bacteria which cause diphtheria



Bacteria causing typhoid fever



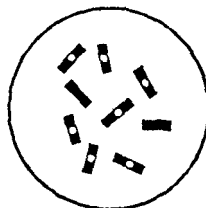
Yeast cells-principal cause of foamy cream



Bacteria which cause tuberculosis in cattle



Milk-souring bacteria



Bacteria causing anthrax in cattle

3. Do not feed hay or dusty feed just before milking.
4. To clean pails and cans, first wash them clean with warm water and a mineral washing powder, then rinse them well, scald them, and allow them to drain.
5. Skim about a 35 per cent, cream.
6. Take the separator apart and wash it thoroughly after each separation.
7. Remove the cream to a milk-house or cool place where the air is pure and where the can may be placed in a trough or barrel of cold water fresh from the well.
8. Do not mix warm cream with cold cream, nor keep cream in cellars or caves,
9. See that all cans and tinware coming in contact with cream are perfectly sweet and clean, especially in the seams and crevices.
10. Deliver the cream in the morning during hot weather. Make at least three deliveries a week in summer and two in the winter.
11. At all times protect the can containing cream against heat, cold and dust by covering t-he can completely with a clean canvas.

More About Grading Cream

The foregoing suggestions have called attention to methods for keeping milk and cream pure, but where contamination does occur, each dairyman should be held responsible for his own dirt.

The system of grading cream mentioned in a previous circular accomplishes this end by the payment of higher prices for better grades of cream.

The dirtiest milk and cream contain the largest number of objectionable bacteria. The average drop of second-grade cream has been found to contain over one million bacteria of objectionable nature. The Percentage of objectionable bacteria in second-grade cream is nearly three times as great as that in first-grade cream.

The State Dairy Commissioner and deputies have the power to condemn cream which is unfit for manufacture into human food, and they are using this power.

For Cleaner Dairying

- 1. Develop the habit of looking for dirt.**
- 2. By keeping dirt out of cream, you keep out the bacteria and retard souring.**
- 3. Bacteria are conveyed from place to place on dirt and dust—they cannot fly.**
- 4. The standard of purity for the cream you sell should be as high as that for the cream you use at home.**
- 5. The dairyman who sells cream which has passed through a dirty separator commits an insidious and criminal act against the nation.**

NOTE—(This is the second of a series of circulars dealing with the Production of better cream and showing how Kansas dairymen may earn for themselves better Prices for butter fat by assisting in a movement to make Kansas butter of such high quality as always to bring the highest market price.)