

Cheese Department

Makers are invited to send contributions to this department, to ask questions on matters relating to cheesemaking and to suggest subjects for discussion. Address your letters to The Cheese Maker's Department.

The Action of Rennet on Milk Kept in Rusty Cans

In the 24th Annual Report of Wisconsin Experimental Station some valuable work has been done regarding the effect of different metals on the action of rennet in milk. The effect of rusty cans is summed up as follows:

Milk kept over night in very rusty cans may require from 1 to 40 minutes longer to coagulate than milk that is kept at the same temperature, the same length of time in cans free from rust. It was shown that milk placed in a rusty can for 8 hours at 88° F. required 25 minutes to coagulate and contained 171 per cent of acid, while the same milk kept at the same temperature for the same length of time in a vessel free from rust coagulated in 15 minutes and had 176 per cent. of acid.

The reason for a slow or retarded action of rennet which cheese-makers often experience may possibly be attributed to some extent at least upon the action of acid on iron in rusty cans, and not entirely to the amount of acid salts present in the milk as was formerly supposed. Milk with more than 2 per cent of acid is considered unfit to be made into cheese. At the same time it may be quite possible to accept from patrons, milk which really has developed more than 2 per cent acidity but which cannot be re-sold by the acidimeter because the acid is partially neutralized by the iron of the can.

This is an important matter. To make the highest quality of cheese and butter it is necessary to have all dairy utensils in good condition and free from rust. The quality of the milk depends a great deal more than is generally supposed on the condition of the cans in which it is stored and brought to the factory. The amount of influence of the rusty iron of the can on the milk will depend largely on the temperature, the length of time kept in the can, and the amount of rusty surface of the can to which the milk is exposed.

The Dairy Inspectors have always made war on rusty cans from a sanitary standpoint. It is impossible to keep them clean and the above paragraph gives another strong reason why they should be discarded.

In taking up last year the question of pasteurizing the whey the writer felt that this would be one of the means to the end of preventing to some extent at least of cans becoming rusty. When whey is heated properly and the tanks kept clean it should go home in the cans comparatively sweet, and in that case will not take the tin off nearly so quickly as when the whey is returned unheated and sour. I still maintain that all the whey which is returned in milk cans should be from tanks

which are kept perfectly clean and the whey pasteurized in order to keep it sweet. The pasteurizing of the whey, however, does not mean that the tanks do not require any further cleaning. They will require cleaning just the same, but will be found very much easier to clean and keep clean.

It is hoped that the large number of factories that have adopted this year the system of pasteurizing the whey will do the work properly so that a fair trial may be given the system. Heating to temperatures below 160 or 165 degrees and heating two or three days a week will not give proper results. The heating must be done at the proper temperature 160 to 165 degrees and done every day at the proper time and that is before the whey has started to take on any more acid than what it had at dipping and the tanks must be kept clean.—Frank Herms, Chief Dairy Instructor, Western Ontario.

Criticisms of Director's Report Provincial Laboratory, Quebec.

(Continued from last week.)

We must remember that rennet serves as an excellent food for bacteria, and experiments have shown that in unpasteurized rennet the bacteria increased in 48 hours from 11,000 to 111 million under favorable conditions. The salt in the rennet has a very weak antiseptic action and is by no means used with the intention of preserving the rennet, but is used on account of its extractive action.

On page 311 the Director says: "The nature and the quantity of the preservatives used may have an influence on the manner in which the rennet acts and the curd it produces."

The preservatives used, however, such as boric acid, are so much diluted, at 1000 as they are placed into the milk that their influence is of no account. Should rennet contain 5 per cent. boric acid it would have no effect on the strength of the rennet, when used in the usual dilution of 3 ounces rennet to 1,000 lbs. of milk.

Should rennet contain 5 per cent. boric acid (a more than saturated solution) then 3 ounces of this rennet would contain 15 grammes of boric acid, or about 1-100 lbs., and this small quantity is brought in 1,000 lbs. of milk, so that the boric acid is diluted to .001 per cent.

Let us now direct our attention to the bacteriological results dealt with in this report. On page 311 is the following statement:

"The membranes left exposed to the air, sun, wind, become covered with dust, with germs of all kinds and even with mould."

The membranes, however, are so quickly dried out that bacteria and moulds cannot grow on them; but if the condition of affairs existed as stated by the Director in the above sentence, then the putrifying bacteria would very quickly change the stomachs into a decomposing mass.

On page 312 the Director, referring to Table V, writes: "As a result of this examination (bacteriological) I deemed it right to condemn six of these Rennets as containing the germs of mould in harmful quantity. After the above statements, no one will be surprised at the fact that rennet holds germs of mould and other micro-organisms."

We presume that the Director means by "germs" of mould, spores of mould, because the term germs is usually synonymous with bacteria.

Table V, page 311 gives the origin of the samples of rennet in detail, and next to them long lines of figures, sufficient to scare every reader. According to the Director



product." To get all the profit he must use an

IMPROVED
1908

DON'T THROW MONEY TO THE PIGS

The mine owner gets his gold mixed with rock and combined with other metals. He gets out all the gold and then makes in addition what he can from the lead and silver, the "by-products."

The dairyman's gold is cream; the skim-milk his principal "by-product." To get all the profit he must use an

CREAM
Separator

With this Separator he gets out all the cream, and then uses to best advantage the skim-milk. He can't afford to feed cream to pigs.

Our Catalogue No. 100 tells why. Let us send you one.

VERMONT FARM MACHINE CO., Bellows Falls, Vt.

Prompt Delivery from well assorted stocks of U.S. Separators in Sherbrooke and Montreal, Que., Hamilton, Ont., Winnipeg, Man., and Calgary, Alta.

FACTORYMEN!

DO you need anything for your Cheese Factory or Creamery?

If you do we can furnish you with all supplies necessary for the manufacture of butter or cheese.

We sell Boilers, Engines, Agitators, Simplex Separators and all machinery used in the factory or dairy.

PRICES REASONABLE

SATISFACTION GUARANTEED

WHITE & GILLESPIE

PETERBORO, ONT.

the worst sample is No. 7 from Gilmore Bros., containing 2,240,000 bacteria per c.c. and moulds too numerous to be counted. It is not really clear how it is possible to count the bacteria on a plate, when on the same plate the moulds are uncountable. If the plate was overgrown with mould it does not necessarily mean that the original number of spores in the plate was very large, for every bacteriologist knows that a few mould spores can easily grow over a whole plate in a few days. In the second place it makes a strange impression to find reported the number of colonies of bacteria per c.c. of the original rennet and the number of mould colonies on the whole plate, of which the area is not given, nor the dilution of the rennet used.

There were 2 million bacteria per c.c. of rennet, and it would have been interesting to know what species were present, as no information is given, how far they were injurious.

But why does the Director condemn these samples of rennet on account of the presence of mould? He writes down himself the following statement, page 312: "I deem it right to condemn six of these Rennets as containing the germs of moulds in harmful quantity," and on page 313: "The spores of mould should not exist in rennet intended for Cheddar. I am not yet in a position from the standpoint of the manufacturing practice to state to what extent their bad effect influences the making, keeping, ripening and taste of Cheddar (Bitterness, fruitiness, or fishy taste etc.)," and on page 323: "After making cheese with rennet containing

mould germs and sound Rennets, it will be seen, whether it is prudent to accept, these Rennets with mould spores."

These statements are more or less contradictory, and surely when he confesses ignorance of the effect of mould in rennet used for making Cheddar cheese, it is pertinent to ask why he condemns the rennet? and again he evidently thinks that bitterness, fruitiness and fishy tastes are produced by moulds.

Every maker of Cheddar cheese knows that it is very difficult for mould to grow in the interior of hard cheese. They develop especially on the outside surface, are caused by aerial contamination, and the ensuing growth is favored by a moist atmosphere. That their influence is without any result is best shown in the Dutch Gouda Cheese, where the number of moulds growing on the surface is so enormous that every other day, this layer must be scraped off with a knife; yet in the Gouda Cheese had smells and tastes produced by moulds, are unknown. The conclusion is that the bacterial content of rennet is of slight or no influence on the character of the cheese. Further, that nobody has the right to condemn a product on such weak experimental evidence as the Director has done in his report, and which gives the public an absolutely wrong view of the real situation, and may injure the reputation of the manufacturers of the condemned rennet.

(Continued next week.)

Clean up the cheese factory yard.

Windsor Cheese Salt

It gives that smooth, firm, rich, and good colour to cheese, only possible with pure full-flavoured salt. It dissolves evenly—and it does not carry off in the whey. By bag or barrel—at all grocers'.

is absolutely pure.