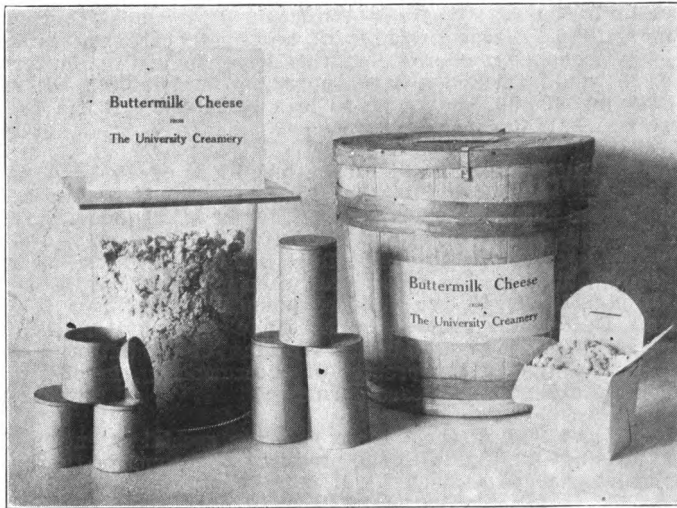


BULLETIN No. 211

THE UNIVERSITY OF WISCONSIN **Crop Production**  
Agricultural Experiment Station



Buttermilk cheese may be made a profitable by-product of the creamery if put up in attractive form and well advertised.

BUTTERMILK CHEESEMAKING AT  
THE CREAMERY

BY

J. L. SAMMIS

MADISON, WISCONSIN

## DIGEST

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### **Buttermilk Cheesemaking at the Creamery.**

**Buttermilk Cheese is a New Product** obtained by curdling buttermilk with heat, draining the curd, and adding salt. It was first described in Bulletin 195 of the Wisconsin Experiment Station, in February, 1910. Large amounts of buttermilk are wasted every year at Wisconsin creameries. If this were made into buttermilk cheese, it would furnish a large supply of palatable food, equal in food value, pound for pound, to lean beefsteak. It can be sold profitably at half the price of meat. Page 3

**To Make Buttermilk Cheese** the buttermilk is curdled by heating to 80 degrees, and left undisturbed for an hour. It is then heated to 130 degrees and after standing quiet for about an hour, the clear whey is drawn off the curd, and the latter is placed on a draining rack, which is covered with cheesecloth. Here it remains half a day or over night, until as dry as desired, when it is salted with one and one-half pounds of salt per hundred pounds of curd, and is ready for use. Buttermilk cheese can be made from buttermilk from cream which was pasteurized before ripening, or the buttermilk may be pasteurized during the process of cheesemaking, in either case insuring the absence of disease germs. Pages 4 to 8

**Packing and Selling the Cheese** requires special attention since the public is not familiar with the product and it must be thoroughly advertised to secure a market. It may be shipped in butter tubs and retailed in paper pails or other small packages. It will keep for a week or ten days at 50 to 60 degrees, but can be kept longer if stored at 32 degrees or lower. It may be sold for three to five cents per pound at the factory and retailed at seven to 12½ cents per pound and prove a profitable product for both the creamery and the retailer. If high color is desired, it may be secured by adding cheese color the same as used by Cheddar cheesemakers. Pages 8 to 9

**The Special Apparatus** for making buttermilk cheese is inexpensive and the draining rack, strainer and syphon may be made by almost any buttermaker. When only a small quantity is made daily the ordinary utensils of a creamery may be used. Pages 9 to 13

**Buttermilk from Rich Cream** containing 50 per cent or more fat, as well as buttermilk from cream which was pasteurized when very sour, is not suitable for making buttermilk cheese. The curd from such buttermilk is always so fine grained that it runs through the draining cloth, and is lost. Pages 13 to 16

**The Food Value of Buttermilk Cheese** is high when its low cost is considered. It is very palatable when eaten alone like cottage cheese, seasoned with salt, pepper, paprika, or when used in salads. On account of the smooth texture of this cheese it can be spread like butter on bread and made into sandwiches. Because of its fine buttermilk flavor it is generally preferred to cottage cheese by consumers. Pages 16 to 17

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## Buttermilk Cheesemaking at the Creamery

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BY J. L. SAMMIS.

The manufacture and sale of buttermilk cheese at the University Creamery has been conducted for over a year, since this product and a method for its preparation were described in a previous bulletin.<sup>1</sup> During this period, improved methods of draining the curd in large quantities have been devised, and the practicability of these methods has been demonstrated to dairy students, and by outside creamerymen.

### WASTE OF BUTTERMILK UNNECESSARY.

Large quantities of buttermilk have been wasted every year at Wisconsin creameries, by letting this by-product run into drains or streams. The reasons for this waste have been:

First, with the widespread use of hand separators on farms and consequent abundant supply of skimmilk at the farm home, farmers have generally neglected to use the buttermilk and have left it at the creamery.

Second, creamery men have taken the easiest methods of getting rid of this by-product, either to sell it to a neighbor at 7 to 15 cents per hundred pounds, or to throw it away.

Third, no good method was known for making buttermilk into cheese, such as the cottage cheese made from skimmilk, which could be shipped to market.

The manufacture of buttermilk cheese is now practicable in any creamery and once introduced to consumers in any neighborhood, the product is likely to find ready and continued sale.

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<sup>1</sup> Wis. Expt. Sta. Bul. 195, Feb., 1910.

**FIRST, HEAT BUTTERMILK TO 80 DEGREES.**

To make buttermilk cheese, the buttermilk is run directly from the churn into any convenient container to which heat can be applied. The wash-water from the butter is not added. A steam heated cheese vat, cream ripener or starter can is suitable. A tin lined cream vat or an old weighing can may be used, but it is necessary to provide a heating coil, made of two or three turns of one-half inch galvanized or black iron steam pipe. Such a coil used for heating 150 pounds of buttermilk in a milk can is shown in Figure 1. Any container too heavy to tip, to

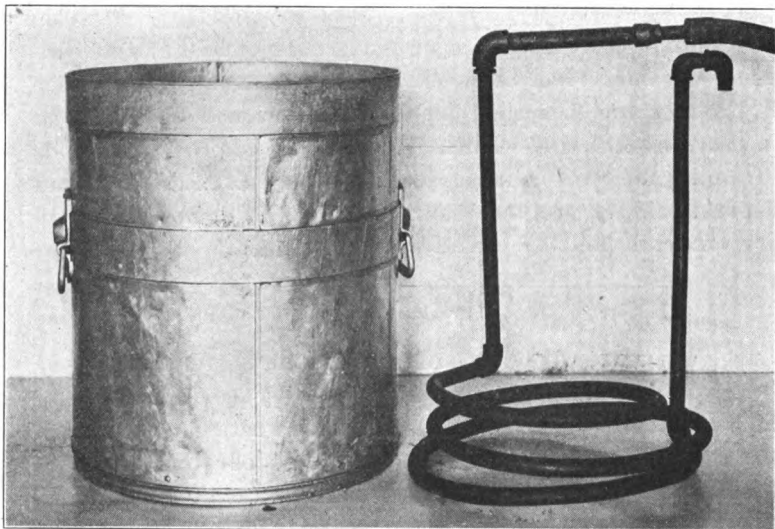


Figure 1.—A milk can may be used for heating the buttermilk and a home-made coil of steam pipes will prove a great convenience in this process.

pour out the whey and curd, should be provided with a gate for an outlet. On the small scale, a pail, a shot gun can, a new wash boiler or any milk can, heated in a tub of hot water, can be used. No rennet is needed in making buttermilk cheese.

As soon as the buttermilk is in the vat and, usually, before the butter is salted, it is convenient to heat up the buttermilk to 80 degrees, as rapidly as possible, stirring enough to ensure even heating of the vat contents. Then leave the vat undisturbed for about an hour, until it is convenient to return. The buttermilk needs no attention whatever, during this period of coagulation. The curd collects in a mass, surrounded by clear whey,

and may float near the top or settle partly or wholly to the bottom, but the position of the curd is of no consequence.

#### SECOND, HEAT TO 130 DEGREES.

Steam is now turned on and the vat heated rapidly to 130 degrees, stirring enough to ensure even heating. If desired to pasteurize the material, it may be heated to 140 or 150 degrees. It is then left undisturbed for about an hour, until the butter-maker can spare a few minutes time to put the curd on the draining rack. It is well to keep the vat covered after the second heating, in order that it may cool as little as possible, since the curd drains faster if warm, when put on the rack, than if cold. It should not be re-heated or stirred again before draining. The draining rack can be constructed by any carpenter, and is described below.

#### PUTTING THE CURD TO DRAIN.

After the vat has stood at 130 to 140 degrees for about an hour the draining cloth is placed in the rack, and this is pushed under the gate of the vat, which should stand near the floor drain. Upon examination of the vat contents, it will be found that the curd has shrunk in bulk, and has collected in a mass

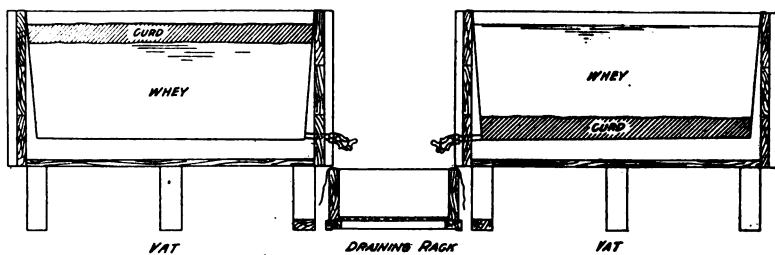


Figure 2.—The curd usually floats on the whey, as shown at the left, but sometimes may settle to the bottom, as shown at the right. In the latter case it requires different treatment subsequent to drainage.

which is either floating at the surface, as shown in Figure 2 at left, or has settled entirely to the bottom, as at right. The next operation is to transfer the curd with as little whey as possible to the draining rack, below the gate. This may be done in two ways.

First, if the curd is floating with clear whey beneath, as shown at the left upon opening the gate of the vat, the whey

will run out first, into the draining rack, through the cloth, and into the drain in the floor below, through which it can be drawn into the whey tank. As the whey runs out, the layer of curd settles and finally runs through the gate and is caught in the cloth. By this means it is easy to get rid of most of the clear whey first and put the curd on the draining rack in the form of a thick mush. It is well to set a small pan under the gate on the draining cloth to prevent the curd from beating through the cloth, at the place where it falls.

Second, in case the curd in the vat has settled to the bottom leaving the whey above, shown at the right, it is best to put a strainer and siphon into the vat and draw out as much as possible of the clear whey without disturbing the curd. Afterward the gate is opened and the curd with the small amount of remaining whey is run on to the draining rack.

In either case as soon as the curd is all on the rack, it is covered and left undisturbed for half a day or over night to drain.

#### HOW LONG TO DRAIN THE CHEESE.

A most important factor in the success of the buttermilk cheese business is to see that the curd is drained equally dry, so as to appear of uniform consistency, day after day. It is interesting and instructive for the beginner to watch the draining process as it progresses by looking at the curd about once in two hours, after putting it on the draining rack. The portions of curd nearest the cloth drain most rapidly and may become quite dry, while there is yet some whey standing on top of the curd, as shown in Figure 3 at 1. To observe this layer of dry curd next the cloth and also to hasten the draining, the maker may lift up the cloth at one end of the vat, as shown in Figure

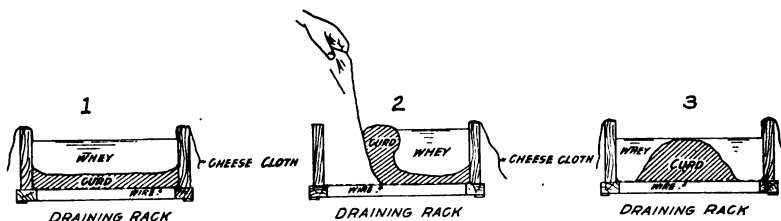


Figure 3.—Three stages of the draining process. At 1 the curd is lying on the cheese-cloth in the bottom of the draining rack; at 2 the cloth is lifted on one side to pile the curd in the center of the rack, and at 3 the operation is completed. This hastens the draining.

3 at 2. This will cause the dry curd to peel off clean from the cloth, and settle in a pile in the middle of the rack, as shown in the figure. Lowering the cloth into place again will allow the loose whey to run down over the clean cloth surface and

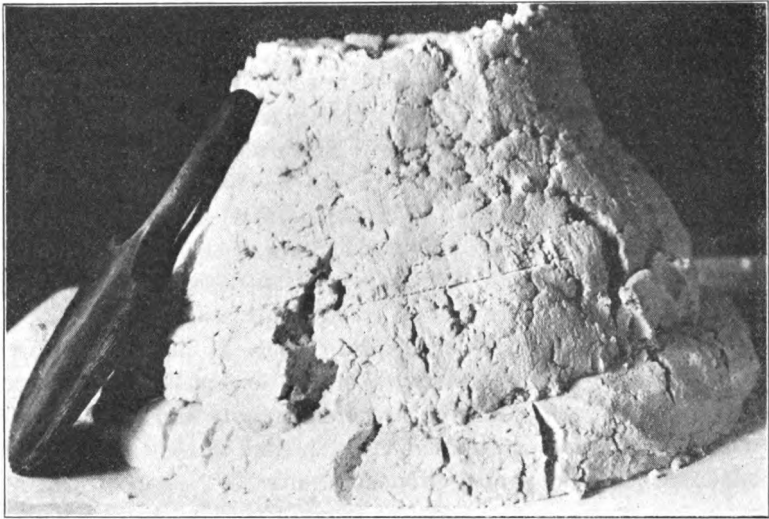


Figure 4.—Properly drained buttermilk cheese has a fairly firm consistency so that when turned out of a tub, it will retain its form for a time.

drain through more rapidly. The cloth should be raised at the other end of the rack also, and the curd rolled into a pile at the middle, as in Figure 3 at 5.

As long as the curd is so moist that it will flow like a thick mush when the corner of the cloth is raised, it is too moist to suit the taste of most people. A well drained curd can be taken out of the draining rack in large flat cakes, which retain their shape. If too moist, the curd flows like wet mortar, and if too dry, it crumbles apart when lifted. It should always be drained dry enough before packing, so that there is no danger of whey separating from the curd in the package, or danger of the product leaking out, when the container, such as a covered butter tub, for example, is inverted. When properly drained, the mass of curd can be taken out of the draining rack and moulded with paddles into a tall form without losing its shape, as shown in Figure 4. A curd would much better be drained longer than necessary, rather than not long enough, because if too dry the consumer or maker can at any time easily restore the desired

consistency by stirring in a little clean water, milk or cream. On account of the smooth texture and fine buttermilk flavor of this product, it is not customary for the maker to add any cream to it, as it is necessary to do with skimmilk cottage cheese. The drier the curd the harder it is to stir in salt.

#### SALTING THE CURD.

As soon as the curd is properly drained, it is salted and packed immediately. The weight of salt needed is calculated either from the estimated weight of the buttermilk used, or from the weight of the curd itself, which can be determined by lifting the curd altogether in the draining cloth, and setting it on the platform scales. Use  $1\frac{1}{4}$  to  $1\frac{1}{2}$  pounds of salt for 100 pounds of curd obtained, or for 800 pounds of buttermilk used. Weigh the salt carefully. Break up any lumps, and sprinkle about half of the salt over the curd on the cloth, in the rack. Stir it in well. Roll all of the curd over by raising the cloth at one side of the rack. Add the rest of the salt, and stir in thoroughly. It is important that every pound of curd sold to consumers contain its proper proportion of salt.

#### PACKING THE CHEESE.

Curd can be packed in lined or paraffined butter tubs for shipment, or placed in a milk can in the refrigerator, for local trade. When delivered in tubs or tin pails to retailers, the main portion should be kept in a refrigerator, but a one to five pound sample should be put in transparent covered glass vessel, such as a pickle jar, on the counter where customers can see and sample it. It should be plainly labeled "Buttermilk Cheese." For delivery to consumer in one or two pound lots, it may be weighed into paper pails such as are used everywhere for oysters or ice cream, or into the neat paraffined paper, single service containers as shown on front cover, which are now obtainable, and which do not absorb moisture. It can be packed in cartons like butter prints.

#### STORAGE OF BUTTERMILK CHEESE.

Like other perishable food products, made without the addition of preservatives, buttermilk cheese must be kept at a low temperature, if it is to be stored longer than a few days. Where



retailers get a fresh supply two or three times a week, it can safely be kept on the counter in a covered container without cold storage. In the refrigerator at 50–60 degrees F., it will keep for a week or ten days. If required to be kept for a longer time, this can probably be done safely by storing at 32 degrees or lower, as is done with cottage cheese.

#### PRICE OF BUTTERMILK CHEESE.

Buttermilk cheese, packed in tubs, F. O. B. at factory should sell at least for 3 cents a pound, or  $3\frac{1}{2}$  cents delivered. This leaves a good margin of profit for the retailer, who should get 7 to  $12\frac{1}{2}$  cents a pound; or 10 cents a package, if put up in neat half pound packages, using paraffined paper containers.

Sold at 3 cents a pound, the 12 pounds of cheese obtained from 100 pounds of buttermilk, add 36 cents to the income of the creamery, with an expense of less than 2 cents for steam, salt, etc., used in making. The time of the buttermaker is not included here, because less than an hour per day is needed when the cheese is made daily, either in large or small lots, and also because the work requires only five or ten minutes at a time at convenient intervals during the day.

At a creamery making 500 pounds of butter and 1000 pounds of buttermilk, 120 pounds of buttermilk cheese can be made, which, packed into two 60-pound tubs, costing 25 or 30 cents a piece, will yield a net income of \$3.00 a day which will go far toward paying the running expenses.

#### COLORING BUTTERMILK CHEESE.

Some kinds of butter color impart a faint color to the buttermilk and also to the cheese made therefrom. If a deeper color is desired in the cheese, this may be obtained by adding cheese color, such as used by Cheddar cheesemakers, to the buttermilk before it is heated to 80 degrees. One-half ounce of cheese color or more per 1,000 pounds of buttermilk may be used.

#### CONSTRUCTION OF THE DRAINING RACK.

The draining rack should have about one square foot of draining surface for each 100 pounds of buttermilk handled or for each 12 pounds of curd to be drained at a time. The area of the bottom may be made about half as large as the bottom of

the cheese vat used for buttermilk, and the sides of the rack should be about half as high as the vat is deep. To make a draining rack with as little work as possible, take a wooden dry-goods box about one foot in depth, remove the top and the bottom, leaving the sides joined together. In place of the bottom, fasten on with staples a piece of half inch mesh galvanized iron wire netting. This rack is set on blocks or short legs to raise it a few inches above the floor, but low enough so that it will pass under the gate of the vat in which the cheese is made. A movable cover is made from the remaining boards.

A more substantial draining rack for use in a large creamery is shown in Figure 5 and can be made in the following manner. Make a square frame with mortised joints of 2 by 4 inch dressed

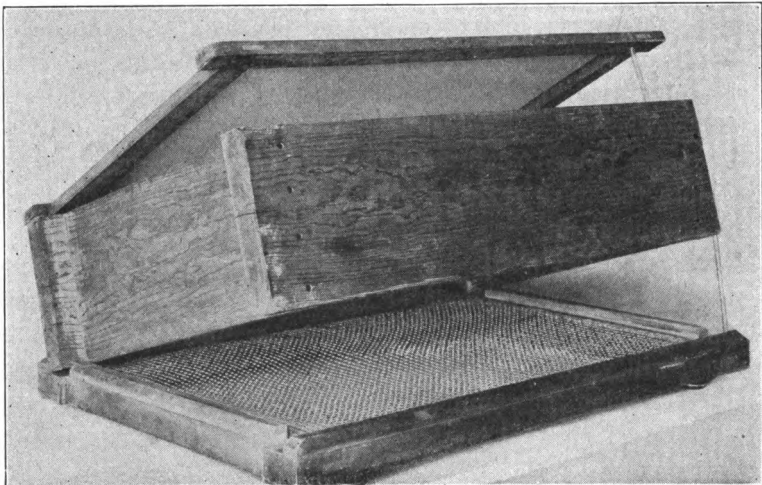


Figure 5.—A draining rack suitable for a large creamery. It is shown with the front side raised to show the ordinary three essential parts.

lumber and fasten the wire netting on top with staples. This is the bottom of the draining rack. A little strip of moulding is put around the outside of this frame on top to prevent the upper half from slipping out of place. The upper half is made of 2 by 12 inch dressed lumber, mortised and spiked at the corners. A light wooden frame made out of 1 by 2 inch lumber with muslin or duck tacked on, forms the lid for the draining rack. The wooden parts should be given 2 to 3 coats of linseed oil before being used, to prevent the absorption of water,

A piece of good quality cheese cloth is used to cover the sides and bottom of the rack and to hold the curd while draining. If it is necessary to sew two widths of cloth together, lap the edges about one inch and sew two seams about half an inch apart along the lap.

#### THE CONSTRUCTION AND USE OF THE FLOATING STRAINER AND SIPHON.

The siphon is used only in case the curd is found to have settled to the bottom of the vat after heating to 130 degrees, as shown in Figure 2, right. The siphon consists of a U shaped tube, made with one arm longer than the other. The long arm and top is made of three-fourths an inch or smaller galvanized iron pipe, and the short arm is made of rubber tube, so as to be flexible. If the rubber end of the siphon should be placed in the vat, it would quickly go to the bottom and stir up the curd, and, when the siphon was started to draw out the whey, a large amount of curd would be drawn out also, and wasted. To prevent this waste, a floating strainer is first put into the vat where it floats about two inches below the surface, as shown in Figure 6.

The rubber end of the siphon is laid on the perforated bottom of this floating strainer, and the siphon is started. The clear whey passes through the strainer bottom and out through the siphon without disturbing the curd. As the level of the whey in the vat falls, the strainer also goes down until finally the clear whey is all out and the strainer is resting on the curd at the bottom. When the siphon stops, the buttermaker, noticing that the siphon is no longer running, returns to the vat, lifts out the strainer and siphon and opens the gate to let the thick mush of curd, with a little remaining whey, run on to the draining cloth.

The construction of the floating strainer is shown in Figure 7. It has a perforated metal bottom, with holes about one-twenty-fifth of an inch in diameter, and with air tight chambers in the four corners. These air chambers keep it floating, so that the strainer bottom is about 2 inches below the surface of the whey.

The strainer shown is large enough for use with a siphon made of three-fourths of an inch pipe, which is satisfactory for use in a large vat. A smaller, round, floating strainer with a

three-eighths inch siphon was found to be suitable for removing whey from a large sized starter can, in which cheese was made a number of times.

#### HOW TO START THE SIPHON.

The simplest way to start a siphon is to suck the air out of it with the mouth, through a stopcock at the top, shown in Figure 7. Place the rubber end of the siphon on the bottom of the

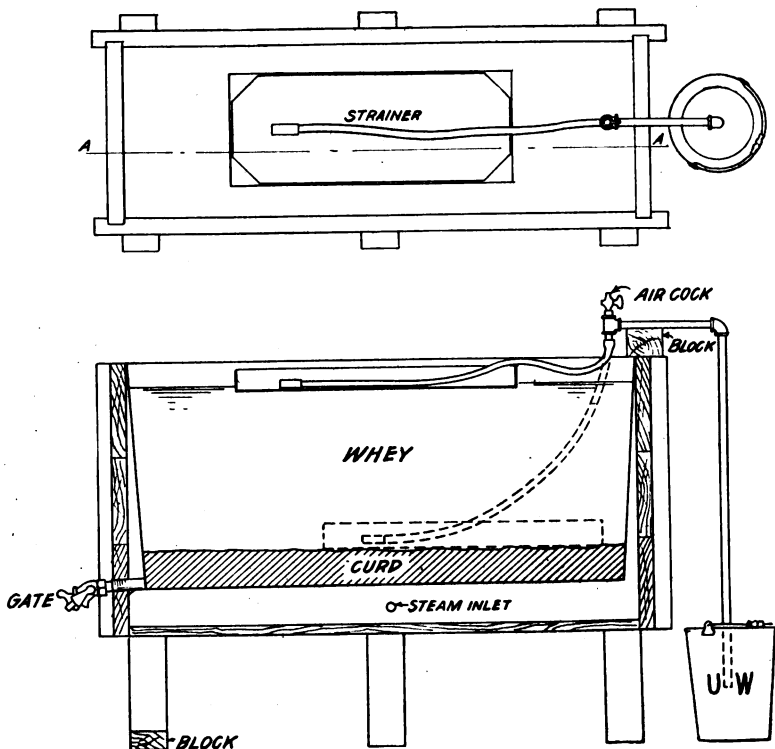


Figure 6.—Top view of the vat (above) showing the position of floating strainer and syphon to remove whey when curd settles to the bottom of the vat. The sectional view (below) through vat at A-A, shows the position of the strainer before and after the whey is drawn. The strainer and syphon are used only in case the curd settles below the whey.

floating strainer and under the tin loop which holds it securely, and place the outer end of the siphon in a bucket of water standing on the floor. Open the air valve at the top and apply suction with the mouth. The air in the rubber tube is drawn out first.

As soon as whey reaches the mouth, bend the rubber tube or pinch it between the fingers to stop the flow of whey, and continue drawing air out of the long arm until the water from the pail reaches the mouth. The air cock is closed before the mouth is removed, to avoid admitting air to the siphon. After a little practice such a siphon can be started in less than a minute.

#### RICHNESS OF CREAM AFFECTS QUALITY OF CURD.

It is a fact not hitherto published, so far as the writer knows, that the smaller the proportion of milk serum left in the cream, the less flocculent and the finer grained will be the curd obtained

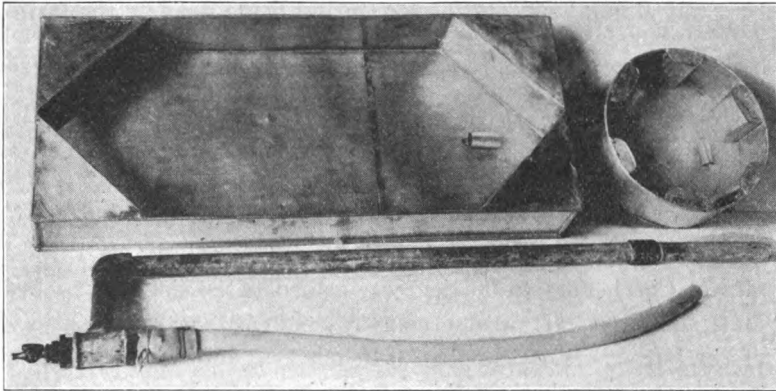


Figure 7.—The strainer is made of tin with air-tight compartments to make it float. The bottom is made of perforated tin or wire strainer cloth. The small strainer at the right is suitable for use in a round can. The loop on the bottom holds the end of the rubber syphon tube.

by heating the buttermilk after churning.<sup>2</sup> Thus, if we draw a 50 or 60 per cent cream from the separator, ripen and churn it, and then coagulate the buttermilk by heat, as directed above, the curd obtained is a very fine powder, not at all flocculent, which can not be collected by filtration on cheese cloth, as it all runs through. If the cream contains only 20 to 40 per cent butter-fat, the curd from the buttermilk is always somewhat flocculent, and is easily collected on cheese cloth, with little or no loss, by the method described above. The kind of curd obtained depends on the richness of cream drawn from the separator, and is not affected by subsequent dilution of the cream or but-

<sup>2</sup> The cause of this is being studied.

termilk with water. The only way to get a curd, filterable on cheese cloth, from a 50 per cent or richer cream is to add some skimmilk to it. However, it rarely happens at a creamery that any large proportion of the cream received contains more than 35 per cent fat.

It has long been known that buttermilk cannot be made up into cheese by the same methods used in making skimmilk cottage cheese, and the utilization of pure buttermilk for cheese-making was for many years regarded as impossible. Mixtures of skimmilk and buttermilk have hitherto been found easier to handle than pure buttermilk, but the practical objection to the use of such a mixture is that every year fewer creameries have any skimmilk at all, the separating being done on the farms.

#### RIPENING THE CREAM FOR BUTTERMILK CHEESE.

Cream is commonly ripened to 0.30 or 0.80 per cent acidity before churning. If the acidity of the buttermilk is as high as 0.50 per cent or higher, when drawn from the churn, it will curdle properly after heating to 80 degrees, as directed below. If the buttermilk shows only 0.40 per cent acidity, it will require to be heated to 90 degrees instead of 80 degrees, to produce curdling. If sweet cream was churned, or if the acidity of the buttermilk is less than 0.40 per cent it will not curdle at 90 degrees, and the best thing to do is to let the vat stand and ripen at this temperature until it does curdle, after which, proceed as usual.

#### PASTEURIZATION OF CREAM.

Cream arrives at creameries in all stages of ripeness and in some creameries it is pasteurized as soon as received and then ripened further after addition of a starter. It has been observed during the past year that a high degree of ripeness of the cream at the time of pasteurization affects the texture of the curd obtained from the buttermilk. If the cream is fairly sweet, so that it does not curdle when pasteurized at 180 degrees, the buttermilk curd is easily collected on cheese cloth, and is the same in appearance, or sometimes a little smoother than that obtained from unpasteurized material. When the cream is quite ripe, having an acidity of 0.40 per cent or higher when pasteurized, it curdles in very fine grains in the pasteurizer

and the buttermilk curd is fine grained, and not at all flocculent. It will run entirely through the cheese cloth, when put on the draining rack, and thus be lost. This loss may be avoided by adding to the sour pasteurized cream some sweet pasteurized cream or raw cream or skimmilk before churning, or by adding skimmilk to the buttermilk, or by pasteurizing cream in a sweeter condition.

To aid in understanding how pasteurization of ripe cream may produce a fine grained, unfilterable curd, one should remember that, in general, curd particles show more tendency to coalesce, mat, or flocculate, when first formed, and while quite moist, than they do later, after they have become "firm," and "dry," i. e., partially free of water. This fact is well known to all makers of either cottage cheese or any kind of rennet cheese, in which the curd is cut and firmed in the whey. In making cheddar cheese, for example, the curd needs almost continuous stirring, immediately after cutting, to prevent the particles from coalescing to form lumps, but later, when the curd is partially dry, only occasional stirring is required. Ripe cream curdles when pasteurized at 180 degrees and the curd grains become thoroughly firm without gathering in lumps.

#### EFFECT OF VIGOROUS STIRRING DURING COAGULATION.

In buttermilk cheese making, the curd is naturally fine-grained but is somewhat sticky and flocculent immediately after coagulation. If left undisturbed for a time, at or near the temperature at which coagulation occurs (as directed above) it collects in larger particles which, after drying, are still large enough to be easily collected on cheese cloth. On the other hand, if the buttermilk be heated at once to 130 degrees, and stirred violently at the same time, as in pasteurization, the curd particles are kept in a finely divided condition, while being rapidly dried, after which they show little or no tendency to flocculate, and may be found to be unfilterable, when we attempt to make cheese out of the buttermilk.

The same effect can be observed to a lesser extent, if one stirs the buttermilk violently or for a long time, while curdling at 80 degrees, or heats buttermilk directly to 130 degrees at first, in the vat, instead of leaving the curd quiet at 80 degrees for a while, before heating to 130. While a curd prepared by initial

heating to 130 degrees, or with prolonged initial stirring, may sometimes be filterable, yet often it will not be so. The safe and satisfactory method of procedure consists in heating to 80 degrees at first, leaving quiet for an hour, and then heating to 130 degrees for a time, before filtering, and in each case, minimizing the stirring to the amount required to secure an even heating of all the material to the required temperature. This procedure utilizes to the fullest extent the small flocculating power which buttermilk curd possesses, and is a good practical method for the manufacture of buttermilk cheese.

#### TO MAKE VERY MOIST BUTTERMILK CHEESE.

If for any reason, it is desired to make a very moist cheese from buttermilk, this can be done by proceeding exactly as directed above, but draining the curd for a shorter time, until the desired consistency is reached and then salting and packing immediately.

#### MAKING BUTTERMILK CREAM.

For some time the buttermilk was made into buttermilk cream at this Station and offered for sale along side of the regular buttermilk cheese, and it was observed that the great majority of consumers chose the "cheese" rather the "cream." Consequently, the making of buttermilk cream was discontinued. Buttermilk cream has the consistency of ordinary thick cream and quite smooth and free from lumps or grains. It is made in the same general manner as described for buttermilk cheese, but with this difference, that at the second heating, the temperature is raised only to 100 degrees instead of 130 degrees. The curd is put to drain at this lower temperature and therefore drains more slowly. Too long heating or use of too high a temperature before draining makes the drained product dry and granular. Before packing for sale, the buttermilk cream taken from the draining cloth should be stirred up well to give it a uniformly smooth appearance.



## MAKING BUTTERMILK CHEESE ON A SMALL SCALE.

Where only a few pounds of buttermilk cheese are made at a time as on a farm or for home use, the buttermilk can be heated in a pail or in a clean new wash-boiler on the stove. After the second heating, i. e. to 130 degrees, if the curd has settled, the whey can be mostly poured off by tipping the pail, and the curd poured into a small cheese cloth bag to drain. If the curd is floating, it can be dipped off of the surface of the whey with a dipper or large spoon, and put in the bag to drain. A small wooden draining rack, a foot square, and 5 or 6 inches deep with the bottom made of one-fourth of an inch mesh galvanized or tinned iron wire netting and covered with cheese cloth is useful for draining small amounts of buttermilk cheese, and for many other purposes in the household.

## FACTS OF INTEREST TO THE CONSUMER.

Buttermilk Cheese has about the same food value, pound for pound, as lean beef steak, which sells at twice the price. Large numbers of city residents, to whom the prices of meat, eggs, etc., are objectionably high, find in buttermilk cheese a palatable and economical food.

In addition to ordinary cleanliness, it is entirely practicable to pasteurize the raw material used for making buttermilk cheese. Either the cream may be pasteurized before churning, or the buttermilk may be heated to a pasteurizing temperature, 140 degrees for an hour, during the cheesemaking process. Such pasteurization is sufficient to kill disease germs such as those producing tuberculosis, typhoid fever, dysentery, etc.

In the household, buttermilk cheese is eaten alone, like cottage cheese, seasoned with salt, pepper, paprika, mixed with chopped pickles, olives or nuts, or used in salads. On account of its smooth texture, it can be spread on bread like butter and thus used in sandwiches, either with or without butter. The use of paprika colors the cheese pink.

Bakers prefer buttermilk cheese, on account of its smooth texture, for making cheese-cake and other bakery goods, in which they formerly used cottage cheese.

