The Story of Cheese
THE STORY OF CHEESE

A Short Treatise on the Manufacture of Various Kinds of Domestic and Foreign Cheese, Cheddar, Swiss, Italian, Sweet Curd Cottage Cheese, Etc.

BY

J. D. FREDRIKSEN

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The Story of Cheese.

CHEESE of a thousand different kinds is made, varying in properties and appearance from the solid, yet mellow and agreeable Cheddar Cheese, to the semi-soft, malodorous Limburger the delicious, soft Neufchatel and Cream Cheese, or the sweet Myseost of Norway. In India cheese was made centuries ago; today it is produced the world over, in the caves of the Swiss Alps and in the most modern and scientific American cheese factories and laboratories. Of these myriad types we can here describe only a few.

CHEDDAR CHEESE. For a hundred years or more this famous cheese has been made and marketed at the village of Cheddar near Bristol, England.

In the middle of the nineteenth century a farmer in that neighborhood, Joseph Harding of Marksbury Vale, systematized the manufacture and it was his method that became the model for cheesemaking in America.

The factory system by which cheese was made from milk brought together from several farms, originated near Rome, N. Y., and soon cheesemaking became an important industry throughout Central and Northern New York whence it spread into Pennsylvania, Ohio and the West, as well as to Canada. Today Wisconsin makes more cheese than all the other states together and Canada largely supplies England with Cheddar cheese of excellent quality.

Making Cheddar Cheese on the Farm.

It takes quite a little experience to make a good Cheddar Cheese and, unless one has the time and opportunity to study it and make it an every-day practice, it is not as a rule advisable to attempt making Cheddar Cheese in the home from the milk of one or a few cows.
The amateur will usually find it easier to make Neufchatel or Cream or Cottage Cheese for home use or for the home market.

If Cheddar Cheese is to be made regularly it is best to get an outfit consisting of a small boiler and a jacketed vat, although cheese may be made in a plain wooden tub or any other convenient vessel. The double bottomed vat generally used in America as well as in Danish dairies facilitates both the heating of the milk before setting and the "cooking" of the curd in the whey after cutting. Either low pressure steam, or—better—water heated by steam, is introduced in the space between the outer, wooden bottom and the inner, tinned steel or copper bottom. If it is cool the milk should be warmed to 86° F. In the summer it may be warm enough as it comes in, fresh from the cow. If not, heat it by steam or by setting it in a "shot-gun" can in another vessel of hot water, stirring frequently, until the thermometer shows 86°. It may be well to add a little buttermilk or sour whey from the preceding day, or 1% or 2% of a pure culture starter made with Buttermilk Tablets.

If it is desired to make colored cheese add a teaspoonful of liquid cheese color, or ½ cheese color tablet dissolved in warm water, to 100 pounds of milk, more or less according to the season and the shade of color desired in the cheese.

Next add the rennet*. Where cheese is made from less than 500 lbs. of milk Rennet Tablets are handy, one tablet to 80 or 100 lbs. For less than 50 lbs. of milk, Junket Tablets may be

*Rennet is prepared from the third division of the stomach of the suckling or milk-fed calf. Fifty years ago cheesemakers used to make their own rennet by soaking salted calves' stomachs in sour whey, and our grandmothers used a piece of dry, salted stomach to make Junket or "Curds and Whey." About 1868, Christian Hansen, of Copenhagen, Denmark, began the preparation of Commercial Rennet Extract which soon supplanted the home-made rennet wherever cheese was made. Nowadays rennet in liquid or powder or tablet form for cheesemaking, and Junket Tablets for milk puddings, are prepared pure and of known strength in laboratories and handled by druggists and dealers in dairy supplies.
American outfit for farm cheese making

used, one to a gallon. Dissolve the tablet or tablets, or fraction of a tablet, as the case may be, in cold water and stir the solution well into the milk, making sure of thorough mixing. Let stand covered for half an hour until a firm curd is formed. Cut or break the curd very carefully with a big knife or spoon or home-made fork with wires across the prongs, imitating as far as possible the operation with curd knives in the factory.

“Cook” the curd as in factory cheesemaking. If steam is not available, allow the curd to settle and dip off some of the whey which is then heated and poured back on the curd so as to raise the temperature of the whole mass about 2 degrees. Repeat this several times, gradually raising the temperature to 100°, a few degrees at a time.

Keep the curd gently stirred up and floating in the whey and do not allow it to lie on the bottom of the vat long enough to pack
firmly together, stirring once in a while until by smell and taste (if not also by acid or hot iron tests) it appears to be sufficiently fermented for the whey to be drawn, a condition that can only be learned by experience. This will be about two or three hours from the time the rennet is added.

Draw the whey and press more out of the curd with the hands. Let the curd mat and break it up alternately several times; finally crumble and pulverize it and keep it stirred by the hands, adding salt at the rate of three to four ounces to the curd from 100 lbs. of milk and continuing the stirring until the curd is cooled down to below 80°, when it should be packed into the hoop and put to press. This salting and cooling may take another hour. The hoop may be made of wood or heavy tin of any size desired, with a loose follower of wood. The sides and bottom should be perforated to allow the whey to escape. Or it may be a cylinder without top or bottom, placed on a corrugated piece of board. Line the hoop with cheese cloth before putting in the curd.

For pressing, a home-made lever-press, as outlined in the diagram, may be made of a plank or bar, one end of which (C), is
stuck under a piece of board nailed on the wall while at the other end a weight (K) is applied which may be moved in and out to regulate the pressure. The hoop is placed under the plank at the fulcrum (K₁) near the wall. If a compound lever-press or a screw-press is available it is better. It is important that the pressure is applied straight so as to make the cheese even and not one side lower than the other. Begin with light pressure and increase it gradually every hour until at night the full pressure is applied. After an hour take the cheese out and turn it in the hoop, then return it to the press and at night apply full pressure. The next morning take it out and weigh it and place it on the shelf to cure in a room of moderate temperature, turning it every day. After a couple of weeks it may be removed to a cool cellar and rubbed with grease. In two or three months it should be sufficiently matured for consumption.

SWISS CHEESE. Swiss Cheese is characterized by its form and size, being large, round and flat, weighing 100 to 140 lbs., or more, and by the large holes which are wanted in Swiss, but not tolerated in American Cheddar Cheese. Besides the usual large round form, American Swiss or "Switzer" is also made in blocks weighing 25 to 30 lbs.
The cheese is made in a round copper kettle which is jacketed and heated with steam. The milk is set at a temperature of 90 degrees F., in summer and 95 degrees in winter, sufficient rennet being used to make a firm curd in thirty to forty minutes.

Swiss Cheese curd is cut with a vertical knife but no horizontal knife is used. A few minutes after the vertical cutting the curd is further broken by the "scoop", a wooden spoon about eight inches long and thirteen inches wide. With this scoop the curd is cut into square pieces. It is further broken up by constant stirring.

After breaking up the curd to the size of peas or beans, the stirring is discontinued for about ten minutes, when it is begun again and the steam applied, to cook the curd to 140 degrees under constant stirring which is continued for 45 to 60 minutes after this temperature has been reached. The condition of the curd is judged by squeezing a handful and noticing its elasticity and consistency.

The cooking and agitation having been finished, the mass, which now consists of grains the size of wheat, is once more stirred up with such force to make it form a funnel at the center and it is then left to rest for five to ten minutes.

The curd, forming a rather solid cake at the bottom of the kettle, is now gathered in a cloth and lifted out without being broken. It is placed in a flexible hoop on the press table and pressed.

The salting is done by rubbing and brushing dry salt and salt brine into the cheese—altogether 4 or 5 lbs. of salt to 100 lbs. of cheese. Every day it is rubbed with a dry rag and the cheese is turned and salted on the other side until the salt is thoroughly incorporated.

Curing occupies from six to twelve months before the cheese is ready for the consumer.

**PARMESAN CHEESE** is an Italian cheese made mostly in the Valley of the River Po and named from the City of Parma. It is produced from partly-skimmed milk and is allowed to become hard and dry, being used grated with macaroni.

The milk is set with rennet at a comparatively high temperature, about 95° F., and when it is firmly curdled it is broken up and
stirred rather vigorously, which makes the curd fine and dry. Color is now added—powdered *Saffron*—at the rate of 0.5 gram to 100 kg. milk. The curd is cooked slowly under constant stirring to a temperature up towards 100° when the whey should be perceptibly acid.

The curd is then allowed to settle in the round kettle and when fairly firm it is lifted up in a cloth, the same as in Swiss cheese-making. The mold is also much the same as the Swiss and the curd is but slightly pressed. In the course of the day the cheese is turned once or twice and put into fresh cloth. The next day it is put into the curing room and it is rubbed with salt. In a few months the cheese is cured and is then scraped and polished with linseed oil. Sometimes it is kept in storage two or three years in a dark room at a temperature of 63° F. The composition averages: 32% water, 21% fat, 41% nitrogenous matters and 6% ash.

**CACCIO CAVALLO** is made in Southern Italy of a form almost like a beetroot. The milk is set with rennet at about 95° F. and after the curd has been broken up the whey is dipped off and heated to the boiling point when it is poured back on the curd. The mass is then allowed to ferment eight to fourteen hours according to the temperature of the air. The quality of the cheese depends largely on this fermentation. The fermented curd is cut into pieces and submerged in boiling water and is then kneaded and formed into the desired shape.

After lying in cold water for two hours and in brine for thirty hours it is dried and smoked until it attains a fine golden color. It is made in various sizes, from 5 to 20 pounds, and the yield is said to vary from 10% to 16% of the milk. Caccio Cavallo is eaten on bread as well as with macaroni and is much relished by the Italians.

**SWEET CURD COTTAGE CHEESE.** Cottage Cheese is undoubtedly the best known of the many types of soft cheese made in this country. It is usually characterized by a sour or acid flavor and mushy appearance which is due to the presence of whey in the curd. By varying the ordinary method of manufacture it is possible to almost entirely eliminate this sour whey from the curd and produce a cottage cheese with a delicious sweet flavor and firm body.
Milk Used.—It is advisable to use only sweet, clean pasteurized skim milk. The most preferable method of pasteurizing is to hold the milk at 145° F. for thirty minutes, although it may be flash pasteurized at 160°.

Setting the Milk.—No exact temperature can be given at which it is best to set the milk. Ordinarily 68-70° F. gives good results. When the milk is adjusted to the correct setting temperature one-half of one per cent to one per cent lactic acid starter is added and thoroughly stirred and mixed with the milk.

After adding the starter add the rennet. One of Hansen’s Rennet Tablets is sufficient for approximately 2,000 lbs of milk. Junket Tablets (household rennet) are one-tenth as strong as Rennet Tablets, and one Junket Tablet contains the right amount of coagulant for about 200 lbs. of milk. Rennet and Junket Tablets dissolve readily in pure cold water—never use hot water. Use the solution immediately after the tablets are dissolved as it will not keep well if held over from day to day. Dilute this concentrated solution with fifteen to twenty times its own volume of pure clean water. Add the mixture of water and rennet to the milk and stir well to insure thorough mixing.

Since the appearance of any food product has considerable to do with its sale, it will be found desirable to add enough cheese color to give the finished cheese a rich, pleasing appearance.

Start by adding a few drops of color the first day, gradually increasing the amount each day until the desired shade of color is imparted to the cheese. Do not use too much color. Always dilute the cheese color with water just as is done with rennet. Never mix rennet and cheese color, but thoroughly stir the color into the vat of milk before any rennet is added. Cheese color tablets are the most concentrated form of cheese color made and they are very convenient.

Milk is allowed to curdle to what a cheesemaker terms a “clean break”. This is determined by inserting the finger in the curd obliquely and slowly raising it to break the curd. Curd should break fairly clean over the finger. The setting time required
to obtain this coagulation will probably be twelve to fourteen hours. It is well to set the milk at four or five o’clock in the afternoon and then the curd will be ready to cut first thing in the morning.

**Cutting the Curd.**—The curd is cut in exactly the same manner as an ordinary Cheddar Curd. Cut lengthwise of the vat with the horizontal knife and then lengthwise and crosswise with the vertical knife to form cubes of the curd. Always insert the knife so that it will cut its way into and not break up the curd. The size of the curd particle is a factor controlling the amount of cooking necessary to expel the whey and for this reason it is important that all of the particles of curd be the same size. In many communities the preference is for large particles of cheese. Knives which cut the curd into one-half to three-fourths inch cubes are about the right size.

**Cooking the Curd.**—The cooking process is started just as soon as the curd is cut. Live steam is *never* used to cook with, but a water jacketed vat is used, and one must be sure the water does not leak out and allow live steam to take its place. The curd is heated very slowly and stirred only occasionally. The stirring should be just sufficient to insure the heat being evenly distributed throughout the mass of curd particles. If the temperature is raised too rapidly a tough cooked film will surround each particle, making it impossible for the whey to escape from the center of the curd. No set rule can be given as to how fast to apply heat. Enough heat to raise the temperature of the curd at the rate of 10 degrees per hour will probably be found satisfactory. Stir the curd by hand or with a board which may be used as a scraper to lift the cheese from the bottom of the vat.

As the curd particles become warmer the whey will tend to be driven out more rapidly and a stage will finally be reached where stirring with a rake will not break up the curd. The heat can be applied more rapidly and stirring become more frequent.

**When is the Curd Sufficiently Cooked?**—No written rules can take the place of experience and observation, and good cheesemakers carefully observe and study each curd from day to day. No two curds are exactly alike. Sometimes 110° F. is high enough and then again a cooking temperature of 140° F. or even 150° F. may be required. One of the first indications of sufficient
cooking is that most of the curd which has been floating will sink to the bottom of the vat. This is because the whey is expelled and the curd is heavier than the whey it displaces. Press a particle of curd with the thumb. If dent tends to remain for a minute the indication is that the whey is out of the center of the curd. Break open a particle of the curd. It should, when finished, break clean leaving a glossy smooth surface at the breaking point.

Cool a handful of curd in a pail of cold water. Gather the cooled curd in the hand and press the particles gently. If the curd particles mash up like ordinary Cottage Cheese they are not done. On the other hand if, when released, they spring apart each particle retaining its original shape and identity, the cooking is probably finished. Curd should be cooked dry enough so a yield of thirteen to fifteen pounds from each hundred pounds of milk will be obtained.

Removing the Whey.—Push the curd to the back end of the vat, make a channel through the middle and drain exactly as in draining a Cheddar Cheese vat.

Washing the Curd.—Wash the curd two or three times to wash away all traces of whey. Use plenty of cold water. When the water that has been used to wash the curd becomes perfectly clear it indicates that the last traces of whey have been removed. No pressing or draining of any kind is required except to allow curd to drain about fifteen or twenty minutes in the bottom of the vat. Cool the curd to 30-40° F. as soon as it is convenient to do so.

Creaming and Salting.—The demand for the product will be increased if, after cooling, a small amount of sweet rich cream is added. Mix the cream and curd thoroughly. Enough cream to give a fat content of about two to four per cent in the finished product is desirable. When adding the cream also add salt at the rate of approximately one ounce to each ten pounds of curd.

Making Cottage Cheese in the Home. Junket Tablets make a convenient form of rennet to be used in making small amounts of Cottage Cheese. Following is a method used by U. S. Government teachers:

"Any small amount of skim milk may be used for Cottage Cheese, using a tablespoonful of good sour milk and one-eighth of a Junket Tablet. Same directions as follows:
"Take one gallon of sweet skim milk, add three-fourths of a cup of clean, sour milk and stir as it is put in. Raise the temperature in hot water to 75 degrees Fahrenheit,* using a dairy thermometer. Remove from heat and place where it is to remain until set. Add one-eighth of a Junket Tablet thoroughly dissolved in four tablespoonfuls of cold water; stir while adding. Cover with cloth and leave from 12 to 16 hours in even temperature, about 75 degrees Fahrenheit.** There should be a slight whey on the top and when poured out the curd should cleave sharply. Drain through cotton cloth, not cheese-cloth. When whey has been drained out, work in one or two teaspoonfuls of salt to the cheese, according to taste. 1 1/2 to 2 pounds of cheese should be obtained from a gallon of milk."—American Cookery.

**WHEY CHEESE.** In Switzerland the so-called Zeiger Cheese is made from sour whey, the albumin being coagulated by heat, and with whatever butterfat there may be left in the whey, skimmed off the top. In Norway Myseost ("Ost" is Norwegian for cheese) is made by boiling down whey almost to dryness. In order to prevent formation of the "gritty" sugar crystals it is necessary to add cream to the whey. Very often goats' milk is also added but is unnecessary. The whey is evaporated until the mixture becomes thick and brownish. It is then poured into molds. There is no ripening of the cheese. The molds are square blocks and the cheese may be cut in thin slices and used for sandwiches.

**LOAF OR PROCESSED CHEESE.** The procedure followed in manufacturing this cheese is to grind up Cheddar Cheese in a meat chopper, blending different grades to produce a desired flavor. The ground cheese is placed in a steam jacketed kettle equipped with a mechanical agitator. To this cheese is added enough water to bring the moisture content of the finished cheese to approximately 40%. In this added water is dissolved one-half of one per cent to three per cent of disodium phosphate to prevent the separation of the fat. The ground cheese is heated, with agitation, high enough so that it becomes smooth, creamy and homogeneous. The creamy mixture is then drawn into tinfoil lined boxes and allowed to harden. As soon as cooled it is ready for market.

**kitchen temperature**  
*barely lukewarm*
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**In Cheese Factories,** Hansen's Cheese Rennet is largely used; it is of the highest quality, purity and strength—always uniform and dependable. It is the best keeping Rennet on the market.

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The Junket Brand Buttermilk Tarlets, which are used in the household for making Cultured Milk out of sweet milk, as well as in the small dairy, contain the same ferment and will do the same work as the Lactic Ferment Culture on a smaller scale.

**In Cheese Making on the Farm,** Hansen's Rennet Tablets are indispensable. Their strength is astonishing, one little tablet being sufficient for curdling from 80 to 100 lbs of milk for Cheddar Cheese, and a small fraction of a tablet being enough for a similar amount of milk for Cottage Cheese.

Hansen's Cheese Color Tablets are especially handy in farm cheese making. Not only are they easy to use, but they give to the milk and cheese that beautiful orange or straw-yellow color which is natural in June milk and cream from Jersey and Guernsey cows.
Our celebrated JUNKET TABLETS, so well known for the highly nutritious forms of milk foods, desserts and ice cream that can be made with them, are also largely used in making Cottage Cheese and other home-made varieties of Cheese.

All of these tablets are handy to send by parcel post and can be mailed direct from our factory, or from our agents in case your local druggist or grocer does not keep them.

These preparations are put up as follows:

For Cheese Factories and Creameries:

HANSEN'S CHEESE RENNET, in one gallon bottles, packed 6 gallons in a case and in 1/2 barrels, and 10 and 5 gallon kegs.

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HANSEN'S DANISH BUTTER COLOR, in one gallon cans, packed 6 gallons in a case, and in 5 gallon drums.

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For the Farm and Home:

HANSEN'S RENNET TABLETS, in packages of 24 No. 2 Tablets. (2 vials of 12 tablets each); in packages of 200 No. 2 Tablets (8 vials of 25 tablets each).

HANSEN'S CHEESE COLOR TABLETS, in vials of 12 tablets.

JUNKET BRAND BUTTERMILK TABLETS, in packages of 15 tablets.

JUNKET TABLETS, in packages of 10 tablets; in packages of 100 tablets.

BUTTER COLOR, in 20 oz., 9 oz., 4 oz., and 1 oz. bottles. Literature is always available on making Starter, Buttermilk, Butter, various kinds of Cheese and Ice Cream. All the literature is free to our friends and customers. Just drop us a post card telling what type of literature you wish.

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