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✓ FARM DAIRY CHEESE

By R. M. Washburn, Division of Dairy Husbandry

The use of more milk and cheese on the farm is the object sought in the distribution of this bulletin. Farmers' Library Bulletin 63, "Milk: A Cheap Food," by Flora Rose, a reprint of a Cornell bulletin, sets forth the value of milk as a food. It shows quite clearly, by comparing food values and costs, that in its class milk is one of the cheapest foods available at current prices. Furthermore, by making it into cheese, milk, which is a very perishable product, can be converted into a food supply for future use, to be drawn upon as occasion may demand. The methods and equipment necessary for making the two kinds of cheese described in this bulletin are so simple as to make it practicable for many housewives to effect an important saving of food, and thus do their bit in the general movement to conserve foods as a war-time measure.

GOUDA CHEESE

Gouda cheese is made from sweet whole milk and is as nourishing as the American factory-made cheese.

A gallon of milk will make about eighty-five hundredths of a pound of cheese, or 100 pounds of milk will make about ten pounds of finished cheese. At 35 cents a pound for butterfat and 40 cents a hundred pounds for skim-milk, about 15 cents' worth of milk would be required to make 1 pound of cheese. On a fat basis, each pound of cheese made on the farm would prevent the sale of about 13 cents' worth of butterfat.

Of the one hundred or more varieties of cheese on the American market, the Gouda is best adapted to farm-home manufacture. It can be made in about an hour with the apparatus to be found in any well-regulated farm home.

The Tools

An ordinary wash boiler serves very satisfactorily as a vat. The curd may be heated by putting it on the edge of the kitchen stove or over a reservoir. The curd is best cut with many-bladed knives, called curd knives,

made for the purpose, one with vertical and one with horizontal blades; but the cutting may be done with a common wire bread toaster or even with a coil of hay wire.

The wooden mold should be made like a strong box, about 10x8x8 inches, inside measurement. The top and bottom should be loose and small enough to fall down through the mold; or, in other words, to follow down when the cheese is pressed.

The press is made of a cleat nailed against the wall, a box in front, and a 2x4 or pole 10 or 12 feet long for a lever. A pail of stones makes an excellent weight.

An accurate thermometer is needed for uniform work. The floating dairy kind is most convenient, but an ordinary weather thermometer may be used.

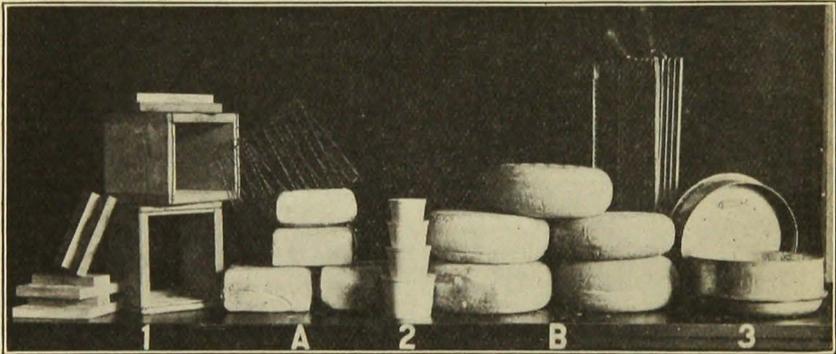


Fig. 1. Home-made Cheese and Tools

A and B are the same except in form, A having been made in a home-made form, 1, and B in the pressed tin form, 3. Paraffin paper cups in which cottage cheese may be sold are shown at 2, and the curd knives and bread toaster in the background.

### The Milk

The best cheese is made from clean, fresh, morning's milk, before it is four hours old. If night's milk is used, it should either be made up at once or be very thoroly cooled soon after milking. Milk that is even slightly turned will make a quick-acting, hard, dry cheese. If the milk is not clean or is too old the cheese is likely to become gassy and ill-flavored.

### The Rennet

The most practical rennet for farm use is that in tablet form, and may be obtained from any creamery supply company. Dry rennet will retain its strength for several years, while liquid rennet will lose its strength in a few months. When fresh, one No. 2 tablet will thicken 12 gallons, or 100 pounds, of milk. When the tablets are old, more must be used. Just before using, the tablets should be dissolved at the rate of 1 tablet in 1 pint of cold water. Hot water will kill the rennet. Rennet is improved by an ounce of

salt to a pint of water, especially if it must be held for several minutes after being dissolved.

### The Process

**1. Heating.**—The milk in the boiler or vat is heated to about 88 degrees, Fahrenheit, not under 86 or over 90 degrees. Coloring matter, if any is used, is then stirred in.

**2. Setting.**—The rennet solution is added and thoroly stirred for about two minutes. The surface should be stirred for another two minutes to prevent the cream from separating from the milk, and being lost.

**3. Holding.**—The mixture is then covered and allowed to stand perfectly quiet until the curd has become thick. This should require not less than 12 or more than 18 minutes.

**4. Cutting.**—The curd is ready to cut when it has coagulated enough to cause it to break clean over the forefinger when the finger is inserted into the curd at an angle of 45 degrees, lifted upward, and touched on top with the thumb. The curd is cut into small cubes to allow the whey to escape more quickly and perfectly. Therefore the curd lumps or cubes should be cut in uniform size and about one-third of an inch across.

**5. Stirring.**—Stirring is necessary to obtain a uniform removal of the whey, as the curd continually settles and mats into large masses unless broken up by hand or by a small rake. The curd should be stirred gently at intervals until it is sufficiently "cooked."

**6. Heating.**—After the cutting and the first thoro stirring, the curd should be slowly heated to about 100 degrees, F. This may be done by edging the boiler back on the stove or by pouring clean hot water directly into the boiler or vat. The whey may be dipped off and more hot water added until the desired temperature is reached.

**7. Dipping or draining.**—When the curd has become so firm that a handful, firmly squeezed, will fall apart when released, it is ready to be removed from the whey and put to press.

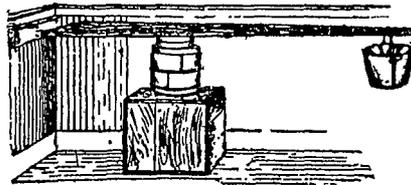


Fig. 2. Lever Cheese Press

**8. Pressing.**—When the whey and water have been drained off, the granules of curd are firmly pressed into the mold or form. If the wooden form is used, a clean piece of cheesecloth should be first laid over and pressed down into the box and then the curd firmly pressed into all corners. When the form is filled, the cloth should be folded over it, the follower-head inserted, and the whole put to press, first with little pressure and later with more. If the metal form is used, the curd is first pressed in without the

cloth to permit the water to escape promptly; but upon being dressed it is covered with thick, firmly woven cotton bandages.

**9. Dressing.**—After the cheese has been pressed for an hour or two it should be taken out and turned over in the form, all wrinkles in the bandage being smoothed out. It should then be returned to the press and should remain under heavy pressure for half a day or even until the next morning, when it should be taken out and put into salt.

**10. Salting.**—Salting is best done by floating the young cheese in brine made as strong as possible. Dry salt is sprinkled on the top of the cheese, and every 12 hours the cheese is turned over in the water and re-salted. This is continued for from 30 to 40 hours. It is then wiped dry and stored in a cool place.

**11. Paraffining.**—By the old system the cheese was greased to keep the moisture in and rubbed firmly by hand every day to keep off mold, but a better way is to allow the cheese to become slightly dry and then to dip it into hot paraffin. A kettle filled with water, with half an inch of paraffin on the water, brought to a boil, makes an excellent paraffining tank. If the paraffin is too hot, it will draw the fat out of the cheese and will not cling well. If the cheese is too moist the paraffin will not cling well.

**12. Curing.**—A cellar or other fairly cool place is best for curing. If too warm, the cheese will ripen too fast and may develop an off flavor while if too cold it will work too slowly. A temperature of about 60 degrees is very good.

Cheese made in this way should be ready to eat in from three to eight weeks.

### General Rule

More rennet, less salt, and higher curing-room temperature make for a quick curing, and short-lived cheese; while with less rennet, more salt, and a cooler curing-room two months will be required for curing and the cheese will keep for six months. With care, cheese may be made in May and October to last the family throughout the year.

### COTTAGE CHEESE

Cottage cheese, schmierkase, or pot cheese, is a non-rennet cheese usually made from skimmilk. It furnishes a very acceptable way of using milk which has become sour. When made from skimmilk, the solid matter of cottage cheese is almost pure casein, which is a protein, or muscle-building nutrient. It is therefore in the class with lean meats, and as commonly made, from 1 pound to 1½ pounds of cottage cheese are equivalent to 1 pound of meat.

### The Cost

If skimmilk is worth 40 cents per hundred pounds, cottage cheese costs about three and a half cents a pound; or if made from whole milk, with butterfat at 35 cents a pound, about 12 cents a pound.

### The Tools

Any common jar or tin pan is a suitable vessel in which to sour the milk, but it is not advisable that the acid of the milk stand long in contact with raw iron. The milk is usually heated by putting the pan on the stove for a short time. A thermometer is desirable but not necessary. The press consists preferably of a cheesecloth or thin muslin sack suspended where it can drain.

### The Milk

For a cheese of good flavor, the milk must be clean and not too old. If milk is kept in ice water at 35 or 40 degrees, F., it will remain sweet a week or two, but will develop an old flavor, making it undesirable for making any kind of cheese.

### The Process

**Souring.**—The milk is soured best by warming the clean, fresh skim-milk to a temperature of about 70 or 80 degrees, or, in summer, letting it stand about the kitchen until it becomes so thick that it will break and spatter if poured. If it does not sour quickly enough, the process may be hastened by adding sour milk or fresh buttermilk.

**Cutting.**—The curd may be cut into small cubes with an ordinary case knife to hasten the removal of the whey. In making considerable quantities for market, it is well to use regular curd knives, one with vertical and one with horizontal blades. The curd, after being cut, should be allowed to stand undisturbed for several minutes or until the whey has been fairly well forced out.

**Heating.**—Heating is the next step. The curd should be heated slowly, preferably by putting the pan on the stove and stirring gently until a temperature of from 93 to 98 degrees, F., is reached. At this point the curd should be allowed to stand until it has become fairly firm to the touch. Then it should be drained. The curd may be heated by pouring hot water directly into it, but this removes the flavor and usually is not desirable.

**Draining.**—The whole mass should then be poured into a loosely woven bag, or a piece of cheesecloth folded to form a bag, hung up, and allowed to drain as long as it will of its own weight, an hour or two.

**Finishing.**—After the whey has been drained out, add salt to taste. Cream may be added if desired and also white pepper. These are worked in with a large spoon or, better, a silver fork, so as not to mash the curds and make the cheese pasty. When thoroly mixed the cheese may be left in a mass or made up into balls or even pressed into butter molds, and wrapped in paraffin or parchment paper. Paraffin paper cups are good, and easiest to use, but rather expensive.

**Keeping.**—Cottage cheese is short-lived. It should be eaten the day it is made. If held, it should be put in a cold refrigerator to prevent it from becoming too sour, and then it should not be expected to hold its quality longer than from four to eight days.

### General Caution

If the milk is heated to a high temperature before it is sour enough the curd will be tough and rubbery, and if heated too much or too long after it has become sour, the curd will be hard and dry. High acid and comparatively low temperature in cooking produce best results.

Farmers' wives should make more use of cottage cheese on their home tables. If made from skimmilk, they could make nice pin money by putting a tasty cheese on the local market, at 10 cents a pound.

### WAYS TO USE COTTAGE CHEESE<sup>1</sup>

Cottage cheese is richer in protein than most meats and is very much cheaper. Every pound contains more than three ounces of protein, the source of nitrogen for body building. It is a valuable source of energy also, though not so high as foods with more fat. It follows that its value in this respect can be greatly increased by serving it with cream, as is so commonly done.

Cottage cheese alone is an appetizing and nutritious dish. It may also be served with sweet or sour cream, and some people add a little sugar, or chives, chopped onion, or caraway seed.

The following recipes, according to home economics specialists of the department, illustrate a number of ways in which cottage cheese may be served:

#### Cottage Cheese With Preserves and Jellies

Pour over cottage cheese any fruit preserves, such as strawberries, figs, or cherries. Serve with bread or crackers. If preferred, cottage cheese balls may be served separately and eaten with the preserves. A very attractive dish may be made by dropping a bit of jelly into a nest of the cottage cheese.

#### Cottage Cheese Salad

Mix thoroughly one pound of cheese, one and one-half tablespoonfuls of cream, one tablespoonful of chopped parsley, and salt to taste. First, fill a rectangular tin mold with cold water to chill and wet the surface; line the bottom with waxed paper, then pack in three layers of the cheese, putting two or three parallel strips of pimento, fresh or canned, between the layers. Cover with waxed paper and set in a cool place until ready to serve; then run a knife around the sides and invert the mold. Cut in slices and serve on lettuce leaves with French dressing and wafers or thin bread-and-butter sandwiches. Minced olives may be used instead of the parsley, and chopped nuts also may be added.

#### Cottage Cheese Rolls

(To be used like meat rolls)

A large variety of rolls, suitable for serving as the main dish at dinner, may be made by combining legumes (beans of various kinds, cowpeas, lentils, or peas) with cottage cheese, and adding bread crumbs to make the mixture thick enough to form into a roll. Beans are usually mashed, but peas or small Lima beans may be combined whole

<sup>1</sup> From leaflet issued by the Dairy Division, U. S. Dept. of Agr.

with bread crumbs and cottage cheese, and enough of the liquor in which the vegetables have been cooked should be added to get the right consistency; or, instead of beans or peas, chopped spinach, beet tops, or head lettuce may be added.

#### **Boston Roast**

1 pound can of kidney beans, or equivalent quantity of cooked beans.  
 ½ pound of cottage cheese.  
 Bread crumbs.  
 Salt.

Mash the beans or put them through a meat grinder. Add the cheese, and bread crumbs enough to make the mixture sufficiently stiff to be formed into a roll. Bake in a moderate oven, basting occasionally with butter or other fat, and water. Serve with tomato sauce. This dish may be flavored with chopped onions cooked until tender in butter or other fat and a very little water.

#### **Pimento and Cottage Cheese Roast**

2 cupfuls of cooked Lima beans.  
 ¼ pound of cottage cheese.  
 3 canned pimentos chopped.  
 Bread crumbs.  
 Salt.

Put the first three ingredients through a meat chopper. Mix thoroughly and add bread crumbs until it is stiff enough to form into a roll. Brown in the oven, basting occasionally with butter or other fat, and water.

#### **Cottage Cheese and Nut Roast**

1 cupful of cottage cheese.  
 1 cupful of chopped English walnuts.  
 1 cupful of bread crumbs.  
 2 tablespoonfuls of chopped onion.  
 1 tablespoonful of butter.  
 Juice of half a lemon.  
 Salt and pepper.

Cook the onion in the butter or other fat and a little water until tender. Mix the other ingredients and moisten with the water in which the onion has been cooked. Pour into a shallow baking dish and brown in the oven.

#### **Cheese Sauce**

(For use with eggs, milk toast, or other dishes)

One cupful of milk, 1 tablespoonful of cottage cheese, 2 tablespoonfuls of flour, salt and pepper to taste.

Thicken the milk with the flour and just before serving add the cheese, stirring until it is melted.

This sauce may be used in preparing creamed eggs or for ordinary milk toast. The quantity of cheese in the recipe may be increased, making a sauce suitable for using with macaroni or rice.