B A. I.—D. 15.

U. S. DEPARTMENT OF AGRICULTURE.

FARMERS' BULLETIN No. 57.

BUTTER MAKING ON THE FARM.

BY

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UNDER SUPERVISION OF THE DAIRY DIVISION,
BUREAU OF ANIMAL INDUSTRY.

[May, 1897.]

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1897.

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BUTTER MAKING ON THE FARM.

INTRODUCTION.

As a matter of course, everyone who keeps cows for the purpose of making butter is desirous of making an article that will bring the best price possible, and of making the greatest amount of butter possible out of the milk produced. When the milk is delivered to a creamery it is usually manufactured by those who have been well instructed in the art of butter making, and the result is that, as a rule, a fairly good article is made. Besides this, the creamery is equipped with appliances which enable its butter maker to obtain very nearly all the butter contained in the milk; and by his knowledge of what the general butter market demands, he is able to produce an article which is readily sold.

But the case is different with those who make butter on farms, where by far the greater part of the butter in this country is made. While on some farms excellent work is done and a choice article is made, which brings a fancy price, yet through ignorance of correct methods of manufacture and of the demands of the market and, in many instances, through careless and slovenly habits, the great bulk of farm-made butter fails to bring the price it should, entailing a loss on the farmers of the country which is enormous in the aggregate. It is for the benefit of the latter class that this article is written, with the hope that some suggestions may be given, and some ideas advanced, which will serve to improve the methods of the dairyman and increase his profits.

GOOD MILK.

To make good butter one must have good milk, and this comes only from healthy cows, fed on good, sweet pasture or on good, sweet grain and other forage, and which have pure water to drink and pure air to breathe. Certain obnoxious weeds—leeks, wild onions, rag-weed, and others—give the milk and the butter made from it a decidedly bad flavor; so also does damaged, rotten silage, moldy corn fodder or hay, and musty, damaged grain. Impure water has its effect, both on the health of the animals and on the quality of the milk. In many pastures are seen small pools in which the cows stand during the heat of

the day to rid themselves of flies. The water in these becomes filthy and is kept stirred up by the movements of the cattle, and where, as is often the case, it is the only water obtainable, the cows are compelled to drink it. This can usually be avoided by fencing the pond and keeping the cattle out. If this water is needed for the cattle it can be drawn out by a pipe laid on the lower side into a trough from which the cows can drink.

In a close, crowded, and illy ventilated stable, where there is too little air space for each animal, the air becomes foul from the exhalations, and this affects the milk as well as the health of the animals. The remedy in this case is to provide more room for the stock and better ventilation.

The stable should be kept as clean as possible and the cows well bedded and clean. The utmost cleanliness should be observed in milking. All dirt should be brushed from the cow before beginning to milk, and it is best to dampen the udder and flank of the cow, so as to prevent the dust and fine dirt from falling into the milk. The milk should be strained immediately after milking and not allowed to stand in the cow stable any longer than is absolutely necessary.

A good strainer is indispensable, and one of cloth is much better than one of wire gauze. Milk pails should always be made of tin, and the seams should be soldered smooth, so that there will be no places for the dirt to lodge where it will be difficult to remove. They, as well as all other dairy utensils, should be thoroughly cleaned every time after using. Tin articles should be washed first in cool then in hot water, and after that thoroughly scalded with boiling water or steam. They should then be dried in fresh air and, if possible, in the sunlight. They will not need wiping after the scalding, as the heat from the boiling water will cause them to dry quickly. In washing them, if hot water is used first, it will cook the milk onto the tin and make it difficult to remove.

In cleaning the butter-bowl, ladle, worker, churn, and any other wooden utensil, they should be first washed with hot water, then scalded with boiling water or steam. They should be aired, but it will not do to have them much exposed to the sun, as that will cause warping and cracking.

CREAMING THE MILK.

When good, clean milk has been secured, the next operation is to separate the cream from the body of the milk. The old way, practiced by our mothers and our grandmothers, was to set the milk in shallow pans with the milk not more than 2 or 3 inches deep. The writer of this has been through all the successive stages of dairy methods. First, we used to set our milk in common 10-quart tin pans on shelves; then we had it arranged so that in hot weather cold water flowed around the pans to keep the milk cool. After that, large shallow pans were used, each one large enough to hold a single milking of the entire herd of 25 or 30 cows. Under these pans were water channels, through which in

warm weather cold water was run, and in cold weather warm water, to regulate the temperature of the milk. Then the deep cold-setting was used in both "shot-gun" cans and Cooley cans, and finally, for the past five years, the farm separator has been used.

It is undoubtedly true that by the old method of shallow setting as good a quality of butter was made and can yet be made as is produced by any other method, but it has its drawbacks. Uniformly good results can not be obtained, for the reason that the milk, being spread out in a thin sheet, is exposed to the air, so that it is readily affected by atmospheric changes. Whatever may be the reason, very bad effects often follow an electric storm or thunder shower. The shallow pans make more work than other methods; the creaming is not so thorough as with the separator, and, therefore, the quantity of butter is less.

As there are many persons who think they are so situated as to make any other method impracticable, or who have such a deep-seated prejudice in favor of the old way that they can not be induced to change, it is thought advisable to give directions as to the best manner of proceeding, as determined by the result of long years of practical experience, although the method itself is not recommended.

Milk should be set as soon as possible after being drawn from the cow, whether shallow or deep setting is used. With open setting it must be in a room where the air is pure. A pantry with a door opening into the kitchen is a bad place. The odor from cooking vegetables and meat will surely injure the butter. Many make butter in a cellar because it is cool, but it is apt to impart a musty, moldy smell to the butter. A cellar may be good and cool, and yet be so ventilated as to have pure air; then it is all right for butter making. To get the best results with shallow setting, the temperature of the milk should not go much above 60° F. At that temperature it can usually stand about thirty-six hours. The time to skim is when the milk has soured just enough to be a little thick at the bottom of the pans and to thicken the cream. The cream can not be skimmed off when it is thin and sweet without loss. No milk should be taken with the cream. Cream with milk in it sours much more rapidly than cream with no milk in it. This cream will be very rich and thick, and, although partially ripened when taken off, if kept at a temperature of 60° or below, it will be all right if held two or three days before churning. Whenever a new skimming is put into the cream jar or can, the whole should be thoroughly stirred and mixed.

In the winter effective creaming may be had when the room in which the milk is set is very cool, even down near the freezing point. This is accomplished by heating the milk to above 100° F. before setting. The cream will rise very rapidly while the temperature is falling. The warming can be repeated after twelve hours, if the milk is in small pans, by setting over a kettle of boiling water. If large pans are used, such as have been described, the heating is done by running hot water

through the water channels beneath the milk. This practice of repeated heating and cooling makes very effective creaming, leaving but little butter-fat in the skim-milk, and the cream is rich and thick.

DEEP COLD-SETTING.

With this method, the milk is set in cans about 20 inches deep by 8 inches in diameter. It should be set in a tank of ice water as soon as possible after milking while the milk is yet warm. The most effective creaming is done when the temperature of the water is maintained at about 40° F., though fairly good work is done when the water is even up to 50° F., if it is allowed to get no higher. When there is a fountain or flowing well or running stream of water continually flowing into and out of the tank, so that the water is constantly being changed around the cans, the warm milk will be more rapidly cooled and the cream will rise more rapidly than if the water is at rest. For this reason cool springs, spring pools, and spring houses are very satisfactory, even if the water is up to 53° or 54° F.; and deep stone jars or milk crocks may be used as well as deep tin cans. It is claimed that with this mode of setting all the cream that can be obtained will be up in ten or twelve hours. This may be so, though it is doubtful. It is better to let it stand twenty-four hours, for the reason that the cream will be thicker and richer at the end of that time, though it may not measure any more, or even as much, in depth as it would when set only twelve hours.

Setting the cans in cold air will not prove nearly as effective in raising the cream as setting them in cold water, even though the temperature of the surrounding air is near the freezing point.

With the jars, crocks, and the common "shot-gun" cans, as they are called, the skimming is done by dipping the cream from the top, but with the Cooley cans and many other creamers it is done by drawing the milk off from the bottom and leaving the cream. There is a strip of glass inserted in the side of most of these cans, so that the depth of the cream can be seen. With deep cold-setting the cream is always sweet and thin, and where the skimming is done from the top it requires a great deal of skill to dip the cream off without getting some of it mixed with the milk and lost. Much more cream and, consequently, butter, is lost in this way than is even dreamed of by those who practice it. A conical or pointed dipper is the best kind of skimmer for this work. In using it insert the point of the skimmer in the middle of the can and press it down very gently till the cream slowly runs over into it. When it is filled carefully lift it out and empty it; then put it into the can in the same place it was before—that is, in the middle—and repeat the operation till the cream is all off. This work should be done very carefully, so as not to create any commotion in the milk; and even with the best of care some of the cream will get mixed with the milk and lost. Much the best way is to skim by means of a faucet,

drawing off the milk rather slowly at the bottom, so as not to create currents in the milk, and leave about one-half an inch of milk under the cream.

THE FARM SEPARATOR.

By the use of the cream separator a much more perfect separation of the cream from the milk may be had than by any system of setting milk. This is shown by the increased amount of butter made when the separator is used, and also by the amount of butter-fat left in the milk after skimming, as shown by the Babcock milk test. It has been found that by no system of gravity creaming can all the butter-fat be recovered; and usually, under ordinary conditions, a large per cent is lost; while with the separator very nearly all is recovered.

The writer has been engaged in the Farmers' Institute work in the State of Wisconsin, during each winter, for several years. At each meeting milk was tested with a Babcock tester which was carried along for the purpose. Farmers were invited to bring in samples of milk to be tested in order to show them the variation in value of different milks, and for the purpose of illustrating and explaining the working of the machine. They were especially urged to bring in samples of skim-milk—that which they thought had been thoroughly creamed—so that the audience might see what the loss was. For two years the writer preserved the report of these tests and the average of all was eight-tenths of 1 per cent for the skim-milk creamed by any gravity method. It varied from one-fourth of 1 per cent to $1\frac{6}{10}$ per cent. This was in the winter, when there was no difficulty in having the milk cold enough. There is no doubt that in summer, during hot weather, the average loss is still greater. If the separating is done on the farm immediately after the milking, the skim-milk from the separator seldom tests more than one-tenth of 1 per cent, and frequently less than that.

From the result of these tests it seems impossible to escape the conclusion that the average loss, where the milk is set in pans, cans, and crocks, is three-fourths of a pound of butter more to each 100 pounds of milk than where the separator is used. This means, with milk of average richness (3.5 per cent butter-fat), a loss of about 20 per cent of the total product of butter. A herd of cows ought to average, per cow, 5,000 pounds of milk per year, and would do so if made up of good animals and well managed; but even if they only averaged 3,000, the loss on one cow would be $22\frac{1}{2}$ pounds of butter, and on ten cows 225 pounds, which, at 20 cents a pound, would be $45 a year. It will be seen by this that the loss to the farmers, who cream their own milk by a gravity process, is enormous in the aggregate. How can any business man succeed and suffer such a percentage of loss? What would be thought of the man who would go on from year to year with a hole in his pocket through which 20 cents would drop out and be lost every time he put a dollar into his pocket. Some men try to console themselves by saying, "It is not all lost; the calves and pigs get the butter." But

this is poor consolation, for butter is dear feed, even when the price is the lowest. One cent's worth of oil-meal will do the calves and pigs as much good as a pound of butter. Besides this, the skim-milk from the separator, when it is run through and fed to them immediately after milking, while it is warm and new and sweet, is better feed for calves than skim-milk that is old and partially sour, even though it does contain one-quarter of the butter-fat originally in it. This can be attested by hundreds who are using farm separators.

The cost of hand separators is from $65 to $125 each, according to size and capacity. They will skim from 160 to 400 pounds an hour. Larger sizes with greater capacity are used in large dairies and run with some kind of a power. It would seem that no dairyman, who manufactures his own milk into butter, having ten cows or more, could afford to be without a separator. One, if properly cared for, will last for years. If they are turned by hand, it is true that takes time, but not as much time as would be taken in setting and skimming the milk and warming it for calves. All except the smallest size hand separators are so constructed that they can be attached to a power. Some use a small gasoline engine, or some other kind. A light tread power run by a large dog or some other animal of like size is very economical. A goat has been found to do remarkably well.

On the farm of the writer a separator has been run for the past five years, making an average of nearly 9,000 pounds of butter a year. The cost of repairs in that time has been $3, and the separator, to all appearance, will last for several years to come. It has a capacity of 300 pounds of milk an hour. It is run by a 2-horse tread-power, which was purchased before the separator was and which is used for cutting feed, filling silo, etc. The power is run by a Jersey bull, and works very nicely. He needs the exercise; it keeps him docile and gentle, vigorous and healthy, and he seems to enjoy the walking and work. The separating is done while the milking is going on, and ten or fifteen minutes after the last cow is milked the calves and pigs have had the new, warm, sweet skim-milk. The saving by the use of the separator on this farm has been already a great many times more than the cost of the outfit.

RIPENING CREAM.

When shallow setting has been used the cream is already ripened, or partially so, when taken off. It has been kept cool, stirred up when each skimming was added, and is ready to churn at any time when brought to the proper temperature.

A correct dairy thermometer is indispensable in butter making. Temperature plays an important part all the way through. It is necessary to know the temperature of the dairy room, the water, the milk, the cream when ripening, and, above all, the temperature of the cream at time of churning. No person can guess at temperature correctly every time; therefore, no person can make a uniform quality of

butter without using a thermometer at almost every stage of the work. Yet a cheap, unreliable thermometer is worse than none.

Cream from deep cold-setting is cold and sweet when taken off. If it is kept in a room where the temperature is about 60° F. for twenty-four to thirty-six hours it will begin to sour. Each skimming when put in the cream can should be well mixed with what was in before. No fresh cream should be put in the can for twelve to sixteen hours before churning, for if this is done the fresh cream will not be ripened and the butter will not all churn out.

Cream from the separator is warm when it is separated right after milking and has the "animal heat" still in it. It must be aërated and cooled immediately. When the cream is run into "shot-gun" cans the aëration and partial cooling may be done by pouring several times in a small stream from one can to another. A better way is to have a cream cooler, made something like a large colander, placed high above the cream can. The bottom of this cooler has a great number of very small holes through which the cream runs in tiny streams into the cream can, and in that way is thoroughly aired and partially cooled. Setting in cold water will complete the cooling. Afterwards it can be handled the same as described for cold-setting cream, except that, being fresher, this cream needs about twelve hours more time to ripen.

The way just described is practiced by a great many with excellent results; but there is a better way if one has the facilities for doing it. Keep the cream by setting in small cans in cold water, or otherwise, at a temperature of 50° F. till twelve hours before the time of churning. Then mix it all together in a vat or can and warm it up to 70° F. Then put in a "starter" and keep it nearly, if not quite, up to 70° for twelve hours, and when it is afterwards cooled to the right temperature it will be ready for churning. The starter may be some good skim-milk which has been kept at a temperature of 85° or 90° F. till it is sour and thick, or it may be some cream already ripened, or some buttermilk from the last churning. Use of the starter an amount equal to about 2 per cent in bulk of the cream; in other words, one quart of the starter to 12 gallons of cream. Another form of home-made "starter" that has been highly recommended is made as follows: Take fresh milk, secured in a perfectly clean way, from a healthy, well-fed, fresh milch cow. Set this milk in ice-water and expose only to pure air for twelve hours, or pass it through a separator, and keep the skim-milk at a temperature of 85° F., long enough to lopper. Do not disturb the coagulum until ready for use. Then skim off the top, stir it carefully, and strain through a fine mesh into the cream, in the proportion already stated.

One of the most difficult things to determine is when the cream has the proper ripeness to be churned, so that uniform results can be obtained and one churning be like another. For aid in this respect acid tests have been invented for testing the acidity of cream during

ripening "to trace the progress of its souring and show whether the fermentation should be hastened or checked in order to have the cream in a certain acid condition and ready for churning at a given time." These acid tests require experience and skill for their successful use. A skillful and experienced butter-maker is able to judge closely as to the right condition of cream for churning by its appearance. But this is a matter which it is impossible to exactly describe in words.

THE CHURN.

The best churns are those with no inside fixtures and which revolve, like the barrel churn, square-box churn, rectangular churn, etc. These "bring" the butter by the concussion of the cream in falling from one side to the other as the churn is revolved. A quite common mistake is to get too small a churn. It should never be filled more than half full of cream. One-third full is better, because the cream has a better chance to fall. Before putting in the cream the churn should be scalded with hot water and then rinsed with cold water.

CHURNING.

The cream should be brought to the right temperature for churning before being put in the churn by having it surrounded by cold water if the temperature needs to be lowered, and hot water if it needs to be raised. The churning should be done at as low a temperature as possible and have the "butter come" in a reasonable time, say from thirty to sixty minutes. The colder it is churned the less butter-fat will be left in the buttermilk and the more perfect will be the granules of butter. It is impossible to lay down any exact rule as to the right temperature; that will have to be determined by trial, each butter-maker for himself. Ordinarily from 58° to 62° F. is right, but sometimes it needs to be much lower and sometimes, possibly, a little higher. At the dairy tests at the World's Fair, in 1893, where expert butter-makers made every effort possible to do exhaustive work, the Guernsey cream was churned at times as low as 43°, while the cream from the other herds was churned 8° to 10° F. higher. The temperature at which cream should be churned depends in some degree on the breed of cows, the individuality of certain cows or of certain families of cows, the period of lactation, the feed of the cows, and, more than anything else, the thickness or richness of the cream. The temperature of churning needs to be higher when cows are in an advanced stage of lactation; also when they have dry feed in winter, and when cotton-seed meal is being fed to any extent. When cream is rich in butter-fat, such as can and ought to be obtained with the separator, containing from 30 to 35 per cent of fat, the temperature of churning can be low, usually from 52° to 55° F. This is the way to get the most exhaustive churning; the amount of buttermilk and the per cent of butter-fat in it will be small at these low temperatures. With deep cold-setting the cream

will be much thinner, containing considerable milk, and therefore the per cent of butter-fat low, and it will be useless to try to churn at a low temperature. In such cases from 60° to 62° will be necessary.

Cream from shallow setting, if it is skimmed pretty clear of milk, can be churned at a somewhat lower temperature than that from deep setting. Sometimes the cream from shallow setting, especially if the process of heating and cooling has been resorted to in raising the cream, is so thick that it will not fall when the churn is revolved. In that case it must be diluted. Water is better than milk to dilute it with.

The churn should be revolved at a speed that will produce the best concussion. With a 40-gallon box or barrel churn this will be about 50 revolutions per minute; with a smaller churn somewhat more speed is required. One can soon learn to tell by the sound when the cream begins to break. Then close watching is needed, so as not to churn it too much. The churn should be stopped when the granules of butter are somewhat smaller than wheat kernels. To make the butter float well, so that the buttermilk can be drawn off, throw in some salt, say one pint to each 20 gallons in the churn. Then revolve the churn a few times. Draw off the buttermilk through a hair sieve, so as to catch the granules of butter that escape from the churn. Then wash the butter with pure water at a temperature of 50° or below. This will harden the granules so they will not so quickly mass together. Wash it twice, each time using ten or twelve quarts of water to every 20 pounds of butter, and revolve the churn a few times. Do not wash it more, nor let the water stay on a great while at a time, for this will be likely to wash out the flavor and aroma, for which fine butter is prized.

The writer is well aware that this is contrary to the instructions given by many teachers on this subject. They advise washing more, saying that it should be washed till the water runs clear. But numerous experiments, where the butter has been submitted to the judgment of experts, seem to prove conclusively that the market yet demands some of the flavor that is found in butter which has not been excessively washed.

WHITE SPECKS IN BUTTER.

Mottles in butter and "white specks" are sometimes confounded, and by some are considered the same, but there is a difference. Mottled or streaky butter has been explained as being caused by an unequal distribution of the salt; but "white specks" have a different cause or causes. Sometimes, when the milk is set in shallow pans, they result from the cream drying on top, so there are small portions that are so hard they do not churn into butter. These particles do not take the color like the rest of the butter, and the "specks" are thus caused. This may be remedied by carefully straining the cream when it is put into the churn.

Another cause of "white specks" is this: When some milk is

skimmed off with the cream, as is usually done in the case of deep cold-setting, this milk settles to the bottom, gets overripe, and forms a curd, which will be so hard as not to break up in churning and will not run off with the buttermilk, but will remain with the butter as "white specks," or "flecks," as they are sometimes called. This can be remedied by not letting the cream stand so long before churning, or by frequent and thorough stirring of the cream during the process of ripening. These hard, white particles can also be taken out by straining the cream.

Mottled, streaked, or speckled butter will not sell well in market; therefore it is the part of wisdom to guard against such conditions.

COLORING BUTTER.

Butter should be colored to suit the person for whom it is intended. The general market demands that butter should have a color, the year round, about like that of grass butter in June. Doubtless any of the standard butter colors are good. The coloring matter should be put in the cream after it is all ready for the churn. When the butter would be nearly white if not colored, as is often the case in winter, about a teaspoonful of color is usually needed for 8 pounds of butter. In summer in times of drought and in the fall, when cows are partly on dry feed, some coloring may be needed, but very little. One will soon learn by experience how much to use. It is well to be cautious, as it is better to have too little color than too much.

SALTING AND WORKING BUTTER.

Good, fine dairy salt should be used, and never the common coarse barrel salt that is used by many. The salting may be done in the churn when the butter is in the granular form, if it is a box or barrel churn. The salt can be sifted on the butter by putting on a part, then revolving the churn halfway over, thus making the butter fall with the salted side down, then sifting on the rest of the salt. Then revolve the churn a few times, after which the butter can be taken out and worked on a butter worker. This is the way most commonly done, but it has its difficulties. The trouble is to have just the right amount of salt in the butter when it is finished, so as to have the product perfectly uniform as to saltness. The exact weight of the butter in the churn is not known, though this can be closely estimated, but it is impossible to tell how much water the butter contains, while in its granular state. This water must be all salted, and a portion of it will run off in the form of brine when the butter is worked. The finished butter should contain about three-fifths of an ounce of salt to the pound. To insure that amount, at least an ounce and a half of salt must be put in for each pound of butter in the churn, and yet, do the best we can, it will be found that two successive churnings are seldom salted just alike.

The writer has found that a better way to insure uniform salting is to

take the butter out of the churn, drain and press out a part of the water on the worker, then weigh the butter, and salt one ounce to the pound and work enough to get the salt evenly incorporated. Some more water or brine will run off in the working and leave the butter salted about right. In this way it will be found that one churning will be salted very nearly like every other churning.

There are several different kinds of butter-workers used by dairymen, but in the opinion of the writer none are better for home use than the common lever pattern.

SHALL BUTTER BE WORKED ONCE OR TWICE?

The object of working butter is to get the salt evenly distributed and to expel a portion of the brine. When it is worked but once, the butter-maker thinks he has worked the butter enough and packs it immediately. There is, at that time, no way to tell whether the salt has been evenly distributed or not. A few hours afterwards he draws out some of the butter with a trier, or cuts it with a ladle, and finds it mottled, which will seriously affect the selling price. He knows the cause is unequal salting; that the portions which have salt have changed to a deeper yellow, and the unsalted portions have remained of a lighter color. With the next churning he is determined to remedy this and be sure to work enough. The chances are that this time it is worked too much, so that the grain is injured and the butter has a greasy appearance. But after much practice and the exercise of good judgment and care, these errors can be avoided to a great extent, and a fairly uniform and even product produced.

In the opinion of the writer it is better to work butter twice instead of only once. The first time it should be worked just enough to mix in the salt. Then for four or six hours it should be left on the worker, or in some other place, where the temperature is from 60° to 65° F., so that the butter will remain in the right condition as to hardness to work well. This will give time for the salt to dissolve and also time for it to change the color of the butter that it comes in contact with. Then it should be worked just enough to obliterate the streaks and mottles. This second working expels some more of the water, for the salt has had time to draw the moisture together in drops, and it is worked out, thus making a drier butter containing from 85 to 87 per cent of butter-fat. Such butter will be firmer and better and more satisfactory to the consumer than it usually is when worked but once. Immediately after the butter is worked, it should be packed in neat, clean packages, or put up in such form as is required by the market to which it is to be sent. If tubs are to be used, ash or spruce is to be preferred, and they should be well soaked before packing the butter. If other wooden packages are used they should be lined with parchment paper. This will prevent the butter tasting of the wood.

MAKE BUTTER TO SUIT THE CONSUMER.

One thing should always be borne in mind by the person who is making butter to sell. The butter is for somebody else to eat, and it is for your interest to make it to suit them, whether it just suits your taste or not. Habit has a great deal to do with our likes and dislikes. You may have been accustomed to sweet-cream butter; if so, you probably like that best. Or, you may have got used to eating butter made from very ripe cream, and the butter not washed to expel the buttermilk, causing it to have a very decided flavor and taste, and so you look upon fine, delicate-flavored butter as insipid. Or you may like little or no salting or high salting; light color or high color. But all this is of no consequence. It is no matter what you like. You want to make it to suit your customer, and you want your customers to be those who are able and willing to pay a good price for what suits them. If the customer wants sweet-cream butter, make it; if unsalted, make it so; if he desires it high salted, salt it high, and so on. Always make it the same for the same customers. They are getting tastes formed which you can make it profitable to gratify. It is not the province of the maker of dairy butter to try and educate the tastes of people who buy butter, but rather to cater to their tastes when he finds out what they are. If one is making butter to put on the general market, he wants to make what that market demands and will pay the best price for. The best way to learn the market demand is to have the butter inspected by an expert judge who is a dealer and knows what takes best in the market. Ask him to criticise it and tell you just what he thinks of it; and don't get angry at what he tells you, but try and profit by what he says. The object of this article is to help farmers to make such butter as the best paying customers in the general market demand.

FARMERS' BULLETINS.

These bulletins are sent free of charge to any address upon application to the Secretary of Agriculture, Washington, D. C. Only the following are available for distribution:

No. 16. Leguminous Plants for Green Manuring and for Feeding. Pp. 24.
No. 18. Forage Plants for the South. Pp. 30.
No. 19. Important Insecticides: Directions for Their Preparation and Use. Pp. 20.
No. 21. Barnyard Manure. Pp. 32.
No. 22. Feeding Farm Animals. Pp. 32.
No. 23. Foods: Nutritive Value and Cost. Pp. 32.
No. 24. Hog Cholera and Swine Plague. Pp. 16.
No. 25. Peanuts: Culture and Uses. Pp. 24.
No. 26. Sweet Potatoes: Culture and Uses. Pp. 30.
No. 27. Flax for Seed and Fiber. Pp. 16.
No. 28. Weeds; and How to Kill Them. Pp. 30.
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