Preparing a Fermentation Starter.

The object of pasteurizing the milk which is intended for the preparation of a fermentation starter for cream is to render it practically "neutral," bacteriologically speaking, and, as such, a medium for the development of certain desirable flavors by introducing into it a small quantity of a flavor-producing substance, generally knownas a "culture," either in dry or liquid form. If conditions, temperature, etc., be right, we may be pretty sure of having in this starter, when properly prepared, an exact reproduction of the original flavor of the "culture."

Without using this "culture" we have no assurance of obtaining the right quality of a starter made from pasteurized milk; it having, as before said, been neutralized. We must for our "culture" depend largely on the micro-organism floating in the surrounding atmosphere. "Hence the quality of a starter made from pasteurized milk, without the use of a 'culture' of some kind, will depend largely on the condition of the atmosphere to which it may be exposed."

If we have to make a fermentation starter without a "culture" we should select a sample of pure flavored, clean milk from healthy cows not more than two or three months in milk; aerate it thoroughly and put into a pail or vessel thoroughly cleansed and scalded, cover the vessel with three or four thicknesses of cheese cloth previously scalded in boiling water. The milk should be kept at a temperature of 75° to 80° until it becomes sour and thick; then one inch of the surface should be skimmed off and thrown away; *i. e.*, not mixed with the rest of the milk.

When the starter is thus prepared it should be cooled to about 45° Fahr., so as to check any further development of acid. C. MARKER, Supt.
Government Creameries, Alberta.

Causes of Mottled Butter.

BY J. W. MITCHELL, DAIRY SUPT., O. A. C., GUELPH.

"What are the causes of mottled butter?" is a question that is occasionally asked and discussed in our dairy papers.

In unsalted butter there are no mottles. Salt has the effect of deepening and "bringing out" the color of butter. Hence, if from any cause there is an incomplete dissolution, and uneven distribution of the salt, by the time that the working of the butter is completed the butter will be mottled, the parts containing the least salt being lightest in color and showing as mottles or streaks when the butter is cut or bored.

If the butter be brought on to the worker in the right condition as to *temperature* and *moisture* and given a reasonable amount of working there will be little or no danger of its being mottled, even if the salting and working of the butter be done all at once.

The temperature and moisture of butter are intimately associated with each other. The amount of moisture retained in butter is regulated largely by the size of the granules and its temperature when salted and worked. The smaller the granules the greater is the amount, and the larger the granules the less the amount of moisture retained, other conditions being the same. They should be about the size of wheat grains. The working of butter at too low a temperature expels the moisture so rapidly that not a sufficient amount is retained to properly dissolve the salt. Furthermore, if butter be at too low a temperature it will be found necessary to work it excessively—thereby sacrificing its grain—to insure an even distribution of the salt.

Butter should be washed with water at such a temperature that when it is given 22 to 24 turns on the Mason worker it will be in a decidedly waxy condition—neither crumbly nor to any extent salvy or greasy. Such butter will be found to retain sufficient moisture to dissolve the salt and yet not an excess of moisture. When in the waxy condition mentioned, after working, we may rest assured that its grain is not injured.

The temperature of the butter must be regulated to suit the temperature of the room, which is accomplished by washing with water at a suitable temperature. From 52 to 54 degrees in summer, when the room is warm, and from 54 to 56 degrees in winter, when the room is cooler, will be found very suitable temperatures at which to have the butter when brought on to the worker. No one temperature can be given, but the good judgment of the buttermaker must be exercised. By the time that the butter has received a reasonable amount of working it should have the waxy consistency already described, and this is probably the best guide as to temperature. It might be stated at this point that having butter at too high a temperature when working it gives an open butter with excessive moisture and a poor grain. The butter must be uniform in temperature when worked, else the soft portions will receive much more working and incorporate more salt than will the firmer portions.

Remembering that mottled butter is due to an uneven distribution of the salt, and to its not being completely dissolved when through working, we can proceed the more intelligently to enumerate the causes of mottles, which are as follows:

1. Having the butter at too low a temperature when working. This point has been dwelt upon already.

2. Not enough moisture in the butter to dissolve the salt. The effects upon the moisture, of temperature, and the size of the granules have already been noticed.

3. Insufficient working of the butter. Under favorable conditions, about 24 turns of the Mason worker will be found sufficient, but more will be found necessary if the butter be worked at a low temperature.

4. When the butter is gathered too much. This has the effect of making the butter drier. Also when such butter has to be reduced in temperature, when washing it, the lumps will usually be harder on the outside than within and will not work so evenly, the softer portions of the butter being worked the most and taking up more than a proportional share of the salt.

5. Lack, from any cause, of uniformity of temperature in the butter.

6. The use of too coarse salt. It takes more working and a longer time to dissolve such salt and incorporate it properly.

When butter is salted in the churn and allowed to stand two to four hours (either in the churn or in trays in a room at the right temperature) before working, or when the butter is twice worked, less working is required to insure an even color in it, and thus the grain is well preserved. When worked twice the butter should be worked the first time just enough to incorporate the salt, be allowed to stand two to four hours in a room whose temperature is between 52 and 55 degrees, and worked sufficiently the second time to make the color even. Either of these methods of salting and working butter entails more work than salting and working the butter all at once, and though both are excellent methods, yet it is quite safe, and more speedy, to adopt the method of salting on the worker and completing the working of the butter at the same time, if proper conditions as to temperature, etc., are observed. However, I would advise the adoption of either the method of salting in the churn or the twice-working method if troubled with mottled butter or if you cannot control the temperature of the room in warm weather. They are especially safe methods for beginners.

Practice daily, examining a sample of the butter of the previous day as to color, etc. Do not mistake curdy specks in the butter for mottles. They will not dissolve with the heat if placed between the fingers, and are caused by the cream being overripe and not strained into the churn.

Canadian Butter in English Markets.

Carter, Wilkinson & Co., Provision Merchants, Liverpool, write us:—"Speaking generally, Canadian creamery butter has been considerably improved during the past season, many factories, especially in Eastern Canada, turning out a very fine article. Some of the western creameries do not yet make sufficiently pale, silky butter. About two and a half to three per cent. of salt is generally preferred, especially in summer. Shipments coming through in refrigerator *both* by *rail* and *steamer* arrive in first-class condition, and those creamery proprietors who have had pluck enough to send forward *weekly* shipments have already succeeded in building up a good reputation and steady regular demand for their butter on this side."

POULTRY.

Keep the Chickens Growing.

Too often chickens are neglected after being weaned from the mother hen. They get irregular feeds or short rations, or are left in filthy coops. The matter of cleanliness is of grave importance. It is a great mistake to leave chickens in coops where night after night the droppings are left to accumulate. Chickens sleeping in such quarters are poisoned by the effluvium of the droppings, which enters the blood through the lungs, and the whole system is lowered in tone. Coops without floors are preferable where the land is reasonably dry. Such a coop is quickly cleaned by moving it forward or backward the width of itself on to clean sod. This should be done three times a week. If coops have floors they should be scraped and sanded every day. It is important that chickens have shade; an orchard, therefore, with patches of sunlight and patches of shade, with free circulation of air, is a very desirable place for the birds. Where one has not an orchard or other trees, shade-boards may be substituted to keep off the direct rays, or even sunflowers or corn could be used if planted in time.

Feeding is a very important item, as when chickens are either to be sold or kept as layers for next winter they cannot be matured too rapidly. True, they will eat considerable of worms, insects, and grass, which should not be forgotten in winter when summer quantities of eggs are desired. Regular feeds of grain they should have to induce steady growth. When five or six weeks old four feeds a day will suffice. The morning feed may well consist of mixed meals stirred into a mash mixed with milk or water. Corn meal, shorts, ground oats and meat meal in equal quantities by measure suits well, but bran may be quite liberally used if so desired and may be made a good bowel regulator. If the bowels are inclined to be loose, increase the middlings; but if constipated, increase the proportion of bran. Cracked corn or small wheat may be used for the evening feed, and table scraps do well for the third meal of the day.

Clear grit is an essential that is frequently overlooked when chickens are running outside, but old sod that has been picked over and over for a dozen or more years may be quite bereft of grit. A pan of sharp grit is just as necessary as a dish of water, and should be always within reach.

Soon after chickens become feathered out the pullets and cockerels should be separated. The constant nagging and mischief of the vigorous cockerels is a great hindrance to the growth of the pullets. A writer in *Farm Poultry* is responsible for the statement that experiments have proved that the pullets will not only grow better but they will reach maturity from one to three months earlier if the cockerels are kept separate from them. Now, as pullets are to be the money-makers of next winter, and in proportion to their development, they should be allowed their liberty, with comfortable coops to sleep in. The male birds to be retained as breeders should have a roomy yard—in fact, as large as possible—and supplied with plenty of green food as well as meat and mixed grain. The cull cockerels may be shut up in a fattening pen and rushed along to four or five pounds live weight, when they will sell well, and usually at greater profit than if kept longer.

GARDEN AND ORCHARD.

Effective and Economical Mode of Procuring Forest Trees for Planting in Great Numbers.

[A LETTER FROM SIR HENRI JOLY.]

To the Editor FARMER'S ADVOCATE:

SIR,—I gladly comply with your request. It is not easy to procure young forest trees worth planting. The trees raised in the nurseries can generally be relied upon, and they are sold at moderate prices, but, owing to distance, want of easy communication, delays in forwarding and delivering (which are often the causes that the trees when received are unfit for planting), and to the cost, however moderate, it is very seldom that farmers have recourse to the nurseryman for the *forest trees* they intend planting (I do not allude here to *fruit trees*).

They generally go to the woods for them, often a distance of several miles. Those who have tried it know how hard it is to find such trees as they want, how much time and trouble it takes to dig them up, and how impossible it is, even with the greatest care, to avoid wounding and tearing off the roots. They know, too, how little satisfaction they have generally derived from all that work. Trees taken out of the forest and transplanted on the open are placed at a great disadvantage. They fail so often that people get discouraged and may give up tree planting as too difficult an undertaking, and to those who think life too short to grow forest trees let them try for themselves and they will be surprised at the rapidity of their growth.

Nothing is easier; in the proper season, with soil fit to grow the kind of tree you wish to plant, if the tree is *in good order*, with a little care you ought to succeed. But the trees you dig out of the woods are seldom in *good order*, and they cost you a high price in time if not in money. If you wish for good trees in great numbers, safe to grow, without trouble nor expense, procure them from a nursery, *but let that nursery be your own.*

Any farmer can start in the corner of his garden a nursery of forest trees by sowing the seeds of the trees he wishes to plant. With a little observation it is easy to find out when the seed is ripe. For instance, towards the end of June, beginning of July, the seed of the *elm* and of the *soft maple* (acer rubrum) is ripe. By sowing it at once it will sprout and the little trees grow nearly one foot in height this summer.

The maple, oak, ash, birch, butternut, etc., ripen their seed in autumn; better sow it at once than winter it in the house. Sow in straight rows with a garden line, leaving a picket at each end to guide you when weeding. Sow say half an inch deep for the maple seed and for other kinds in proportion to the size of the seed; two or three inches deep for butternut and walnut. Thin after the first year if needed and transplant further on the little trees removed in thining. After three or four years, more or less (the time will depend on the rate of growth of each tree), plant your young trees where they are destined to stay. Choose a cloudy or rainy day in the spring, and without leaving home, with no trouble, without breaking any roots, you will take up and plant at once, without allowing the roots time to dry, one hundred young trees, certain to grow, in less time than it would take you to go to the woods and dig up ten trees, with a poor chance of their taking root and living.

These young trees will cost you nothing, your children will soon learn how to weed them and take care of them, especially if you set them the example. Our own children when quite young took pleasure in sowing acorns and watching the growth of the young oaks as they came up. By sowing you can procure, with no expense, any number of young trees, and re-wood, by degrees, all the land which is not fit for cultivation and ought to have been kept as woodland.

But do not forget to *fence* carefully your nursery and your plantation so as to keep out the cattle No use planting trees without fences, the cattle will destroy everything.

In many cases nature will spare you the trouble of sowing where the ground is favorable. In July and August, along the ditches, the roads, the fences, on the moss on barren patches, wherever there is a little dampness, in the neighborhood of the *elms* and *soft maples*, you will find hundreds of young elms and maples just sprung up from the seed fallen from those trees. Plant them in your nursery. *Try it this summer*. The seed of the elm is so minute and delicate that it is better to pick up those young seedlings than to attempt sowing the seed.

In the maple groves the ground is covered with a regular carpet of young maple seedlings. You can pull them up easily by hand in the fall or early spring when the ground