The Dairy.

Cheddar Cheese-Making in Factories.

(Concluded from last month.)

I am well aware that it is not possible to break the curd as finely with the American rake, as with the Cheddar breaker, the former leaving it in large lumps from which the most careful scalding fails to separate the whey, and, as we all know, unless this is effected in the vat, it never will be in the press. Each lump of the coarser curd will retain moisture in its centre; while that which is more finely broken does not, and receives the full benefit of the scalding. The retention of the whey in the former case is evidently the reason why the American system produces a greater weight of curd per gallon of milk than the Cheddar.

But to return, the breaker is removed after sweeping the curd as much as possible to the upper end of the vat, and the mass left for a half-hour, at the end of which time the vat is tipped, the whey drawn off with a syphon, the curd collected with hand shovels to the upper end of the vat, and laid in two large piles, with draining-spaces between each other and the sides of the vat. It is at this stage necessary, in the earlier and later parts of the season, to cover it by some means, to hasten the development of the acidity. And now judgment comes in and rules fail, nobody having yet invented the instrument so much needed and so often wished for, which will register the amount of acid present. During the developing process it is cut into three or four large blocks, turned and piled, due care being taken to arrange it so that the whey may easily drain away from it. When the acid is sufficiently developed, it is again cut into similar blocks and laid apart throughout the vat, to drain yet more, when it will soon become brown and slightly crusty. At this stage it should tear into flakes, and present to a certain extent a spongy appearance, though it should be neither too flaky, nor too porous. When sufficiently dry, it is ground in the curd mill, salted at the rate of 2 lbs of salt to 112 of curd and put into press. The following morning it is taken out, the original press cloths removed, the bandage substituted, and the cheese returned to press, until the next morning, when it is taken out, ironed, and carried to the curing room, having been under pressure about 45 hours.

Having disposed of the cheese, we will now turn our attention to the whey butter manufacture. After lying in the vats during the night, the whey is skimmed. The cream should be thin on the surface and of a fine, clear color. I have frequently found it so thin that it had not formed a skin, but would, if you put your finger quietly into it, break away over the surrounding surface for several inches and test the skimming abilities of the butter maker to the utmost. I have filled a galactometer with whey from the vat, and after allowing it to stand 24 hours there has been only a film around the edge of the tube, and not sufficient in the centre to more shan slightly dim the surface. Now out of this fine cream is made the butter of which I spoke in my last, and it is really astonishing what a quantity can be produced from it. And here let me protest against the fancy some have, that the whey should lie two days or more, to throw up as much cream as possible. It is a great mistake, very little more bulk of cream is gained, and the quality is entirely lost. While it may be advisable to allow milk to lie for more than one day, it certainly is erroneous to suppose that the same is the case with whey.

Immediately after skimming, it is scalded in tin pails placed in water, which is kept boiling by steam, which should be turned on gently, as violent ebullition is unnecessary. Though judgment has much to do with deciding the correct temperature to which the cream should be raised, yet I may say that when it has reached from 130° to 180° it is sufficiently warm. I give much scope, but the great secret here is thorough scalding, 20 minutes at 130° being vastly better than 10 minutes at 180°. A small quantity of salt is stirred into the cream while scalding, after the completion of which operation it should be poured into large tin pails, provided with taps, until they are half full, the remaining space being filled with cold water. Next morning the whey will be found to have collected with the water at the bottom of the pail, and must be drawn off through the taps in a small stream, that no cream may accompany it. The cream can then be poured into the "standing" pails to await the operation of churning. It will be found, as a rule, that the cream under this management will be at a correct temperature when going into churn, and no artificial heating or cooling will be necessary. It shoud be churned until the butter separates and assumes the shape and size of bullets, when the buttermilk should be drawn off, and a quantity of cold water poured in, in which it should again be churned until the lumps are fewer and larger, the buttermilk again drawn off, more water poured in, and the operation completed by a few more turns. By this means most of the buttermilk is separated from the butter, which, placed on a sloping table, soon drains itself of all that remains, and is easily made up. The salting of course is a matter of judgment, on which you are as well informed as myself.

I have endeavoured, in describing the process of cheese and butter manufacture as pursued in our Cheddar factories, to explain them in the simplest manner, imparting all the information possible under the circumstances, but should there be any point on which it is desirable that greater light should be thrown, I shall be pleased to furnish the needed information, meanwhile wishing that the foregoing description may commend the system to the notice of the Canadian dairymen.

JOHN OLIVER.

Brailsford, near Derby, England.

Hardin's Method of Setting Milk.

The controversy in regard to setting milk—whether in deep or shallow vessels—has been quite animated of late. A late issue of the *Country Gentleman* states that "the dairymen of Eastern Pennsylvania are experimenting with the method of setting milk proposed by Mr. Hardin, with no little care, since his recent explanation of its merits before the Experimental Farmers' Club. Mr. Ezra Michener reports a trial of the system to the Bucks County *Intelligencer*, from which we summarize his conclusions as follows:—1. That the Hardin cans give the best butter. 2. That they will raise all the cream there is in the milk. 3. That they produce all the butter that can be made from the milk. 4. That the labor they require is "about half that of the pans, in everything except churning." 5. That as the bulk of cream they yield is increased, the labor of churning is greater. 6. That "a very fair statement would be a saving of one-third the labor by the Hardin method." 7. That the saving of fuel and attention necessary under the pan system is worth at least $1 a week, or for five months say $20.

"This is about as strong a statement for the Hardin system from an entirely impartial source as we remember to have seen. In fact, however, the yield of butter in Mr. Michener's trial was one pound from twenty-nine pounds with the Hardin jars, against thirty pounds of milk to a pound of butter from the shallow pans—but this difference he ascribes mainly to failure in maintaining an equable temperature for the latter. In summer, with the temperature of both kept as nearly as possible at the proper point, he doubts if there would be any perceptible difference in the yield under the two systems. He adds that in another trial with the Hardin cans, he made at the rate of one pound of butter from 27 3-25 pounds of milk."

Butter in France.

If our dairymen need a spur, an eye-opener, a lesson which speaks volumes in three words, here is one at the head of this article. Butter is actually brought from France and sold by the New York dealers. And this is thus because there is an actual scarcity in the market of good butter put up in an attractive shape for small consumers. When we know that one dairyman gets $1.15 a pound for his products, another $1, and another 75 cents the year round, at his dairy door, it is easily seen that it will pay to bring butter across the ocean from France, if it is only good and shapely enough to suit the fastidious purchasers who will have something nice, whatever it may cost. All this butter is made from choice cows, choicely fed on clean sweet food; the milking is done in the cleanest manner. The milk is handled as carefully as though it were nectar, the cream is churned with clock and thermometer, the butter is worked with skill, and is made up in shapely cakes, which do not require to be cut when brought to the table. Compare then, this cake—hard, golden yellow, sweet, fragrant and tempting to all the senses—with an unsightly chunk, which is cut out of a greasy keg, and smells of old age and rancidity, and is made from ill kept cream from cows filthily lodged and carelessly milked, and is churned anyhow, and the difference is amply accounted for.—*N. Y Tribune.*

Bitter Butter.

A lady correspondent of the Maine *Farmer* gives her views as follows upon this subject: Simply covering pure sound cream in a clean tin pail will not of itself cause bitterness nor fermentation in the cream it contains; on the contrary, keeping it from contact with the oxygen of the air, would have a tendency to retard changes, rather than hasten them. Cream is very seldom bitter in the summer, nor would it often be in winter if the milk were kept at a temperature as high as 65°, day and night. It is impossible to state just what causes bitterness in each specimen of butter or mess of cream. Sometimes it may be caused by weeds or poor feed eaten by the cows, but much oftener it is *indirectly* caused by a low temperature of the milk during the rising of the cream. Perhaps it would be more correct to say that a low temperature is the exciting or immediate cause, just as cold may be the exciting cause of a fit of sickness in the human patient.

It must be remembered that milk is a compound substance, and that it is subject to constant changes from the moment it leaves the udder until it is digested in the stomach of man or animals, or until it is entirely decomposed by the usual process of decay. Milk contains not only fat, curd, sugar and water, but also several essential oils which may add to or take from its agreeable flavor, according to the conditions they may be in. It also often contains germs of fungi which, under certain conditions, may injure its flavor. These little vegetable growths are liable to increase with great rapidity, when the conditions are favorable, and thus to destroy or entirely change the character of the milk growth, and in the summer, souring tends to counteract the germ. As milk is often kept in warm rooms, the souring process begins so soon that the milk is protected from the effects of germ growth. Heating or freezing milk will also prevent germ growth for the time being. That change in milk which produces bitterness can go on under a much lower temperature than is required for producing sourness. So, without attempting to explain in detail all the different changes to which milk is subject while the cream is rising, we may perhaps make the subject a little clearer by comparing the two conditions of sourness and bitterness with a railroad track and its turn-outs. Temperature is to milk as a switch to a railroad track. If the temperature is low, but not low enough to prevent all action, which would be at or near the freezing point, the milk will go off on the track towards a condition of bitterness, just as sure as there are any fungoid germs in it, but if the temperature is high enough to send it towards a state of acidity, bitterness is escaped. We seldom hear any complaint of bitter milk, cream or butter in warm weather. It is when the days begin to be cool in the fall or early winter, and before the milk is removed to winter quarters, that the questions begin to come in, "Why don't the butter come?" and "What makes the cream bitter?" It is possible there may be milk so pure that a low temperature would not cause bitterness in forty-eight hours, but we believe such milk is very scarce. The only perfectly sure preventive we have practised is to heat the milk to 130° as soon as it comes in from the stables. People who do that seldom have any trouble of this kind.

An Extraordinary Cow.

The region about Oxford Depot, Orange county, N.Y., is undoubtedly the land of milk and honey. I believe the fact is generally conceded, but I wish to show the account of one small cow belonging to Samuel Marvin, a farmer of that section who keeps a dairy of thirty-five cows, all bought out of western droves. Said cow is called the "Brag Heifer." She calved Jan. 6, 1875, and from that time the total weight of her milk for one year was 6 tons, 882 lbs. During the winter months she was fed one scoopful of soaked wheat bran and 2½ quarts of meal, each morning and a scoopful of browers' grains and 2½ quarts of meal each evening, and all the hay she would eat, and when on grass she was fed two quarts of meal every day. She was dried up in February last, having taken the bull August 6th, 1875, and should calve about May 6th, and should no ill luck befall her, "she'll do it again." This statement is no guess work, but taken from Mr. M's farm book, and can be verified by affidavit, should any old fogy doubt it.—*Cor. Turf, Field and Farm.*

BEETS FOR COWS.—Last year I raised a lot of mangolds and carrots. The mangolds were gathered first and put in the cellar; afterward the carrots were gathered and corded up on top of them, so that when I began to feed them to my cow the carrots came first. The cow gave about her usual quantity of milk, excepting the usual shrinkage on the accession of cold weather and being put upon dry fodder. Fearing that the beets would not keep as well as the carrots, and also thinking that they possessed better milk-producing qualities, I was anxious to get at them. Accordingly I removed part of the carrots and commenced feeding beets, when, to my surprise, my cow began to fail of her milk, until the deficiency reached about one-third. Wishing to test the matter still further, I changed back again to carrots, when her milk increased to about the usual standard. The quantity fed was about the same in either case—about a half bushel basket three-quarters full. If there was any difference it was in favor of the beets.—*Cor. Rural New Yorker.*