

become sensibly affected by the too near proximity of a hog-yard, or a cesspool, or other cause of stench, so that I know, positively, that odors of a foul atmosphere are quite readily taken up by cheese even when well matured.

No cheese maker need fancy his cheese secure from the effects of foul air in a make-room, though he himself, from being constantly in it, may not be annoyed by its presence. It will, most assuredly, be taken up by the milk while it stands in the room, and by the curd while it is maturing, and afterward by the cheese if it is within reach. When once taken into a cheese it is there to stay. Time and exposure to pure air will, it is true, gradually reduce the intensity of the effect, but it is never wholly obliterated.

Evidence of the tenacity with which foreign odors hang to cheese when once imbibed, was well developed at Philadelphia, during the Centennial. While examining cheese upon that occasion, we found several exhibits which had brought with them foreign odors taken in during manufacture and curing, so strong as to injure them materially, and they were marked down several degrees in consequence. In an otherwise very fine exhibit from New York—one of the very best from that state—honors were lost which might have been carried off, but for a strong and offensive smell of sour and putrifying whey which it had taken in and brought along with it from a nasty make-room. In every such case, whether the odor came from a near-by pig-pen, or from a carrion, or from an unusually sour and filthy factory, the decision of the judges was verified by the personal knowledge of the superintendents who had charge of the respective exhibits.

Thus it is clear that cheese is materially modified by the condition of the atmosphere of the factory in which it is made, and hence it behooves those who would secure fine and clear flavored cheese to see to it that the air of their factories is pure and sweet.

There is no source of atmospheric contamination so common as defective floors in the make-rooms. Portions of them rot away quickly, or become so soft and spongy as to soak full of whey which soon decomposes and befouls the air. Often they are, in the first place, made of wood so porous and opened grained as to become whey-soaked while they are sound. The floors of make-rooms should be made of hard or close-grained wood. Maple makes one of the best floors. Spruce and the heart of pine are also good. But whatever the wood, it should be straight-grained, so that there shall be no cross-grained spots to rough up by scrubbing and become receptacles for holding whey.

The trouble with the floors of make-rooms is often aggravated by their being laid on a dead level. They ought to be inclined from two opposite sides toward a line near the end of the vats at which the whey is drawn off, so that whatever liquid falls upon the floor will centre toward that line. Under this line of lowest depression, and beneath the floor, should be a tight gutter to receive the waste through holes in the floor along the line. The part of the floor covering the gutter should be movable, so as to be easily taken up to make the gutter accessible for scrubbing and scalding. Otherwise it will be liable to become foul and offensive. With a floor thus arranged and made of good material, and perfectly tight and well set up from the ground, so that air can circulate freely under it to keep everything about it dry and sweet, the whey being conducted to a receptacle at a safe distance—30 or 40 rods—from the factory, there need be no difficulty in keeping the make-room in a good and wholesome condition. If this could be accomplished in every factory, it

would wipe out some of the most serious obstacles in the way of improving factory cheese. It was long ago written that cleanliness is next to godliness. It is now becoming very apparent that pure air is an essential element in the means of preservation for cheese makers.

How Oleo-Margarine Affected Prices.

There has been much discussion of late in dairy circles regarding the effect of oleo-margarine upon the prices of butter, and we have had the curiosity to look up the New York wholesale prices for best butter in January and July, for five years prior to the war and for the five years last past. They compare as follows:

	1857.	1858.	1859.	1860.	1861.
January	25	21	25	20	21
July	22	19	18	18	15
Average	23½	20	21½	19	18
Average for 5 years,	20 2-5 cents.				

	1877.	1878.	1879.	1880.	1881.
January	31	30	20	30	28
July	20	17	14	22	24
Average	25½	23½	17	26	

Average for 5 years, 23 3-5 cents, or about 16 per cent. higher during the five years in which oleo-margarine has been known.

These figures would seem to indicate that the alarm manifested by some dairymen at the growth of the oleo-margarine industry is not well founded, and while it may interfere somewhat with the sale of poor butter, it is probable that this, in the end, will benefit dairy interests by inducing dairymen to give more attention to the cleanliness and quality of their produce.

That there is need of this is shown by the large proportion of poor butter that is still made, most of which, by the way, is now thought by the consumer to be oleo-margarine. There never has been, and, in our opinion, never will be, too much good butter made, because the consumption per capita will rapidly increase when the average consumer can have a good instead of a bad article placed before him.

The experience of our dairymen will probably be about the same as those of Europe, who, when the new produce made its appearance, were alarmed lest it should prove a formidable competitor, but in the light of experience it has not proven to be so. There, as here, it is sold for what it is at wholesale, but in the hands of the retail trade much of it is marketed as butter, and this seems a difficult problem to deal with on account of its chemical and other similarity to genuine butter.

We hope to see the day when all articles will be sold for what they really are, but at present Germans imitate American tools, the Americans manufacture silks and sell them under French labels, Maracaibo coffee goes into consumption as Java, and lots of slop fed pork is represented as real corned. These wrongs ought to be righted as well as the selling of oleo-margarine for butter, and we hope all good citizens will keep on trying to do so, but in the meantime dairymen should remember that oleo-margarine is better than bad butter and that good butter is better than oleo-margarine. The surest way to meet competition is therefore to improve the quality of their product, and if American dairymen do this they will probably solve this problem as their European brethren have done.

Canadian Butter and the English Market.

The far-seeing economists of the United States are looking forward to the eventuality of the demand in English markets for foreign dairy products being wholly sent by her colonies, especially by Canada. Even now the Dominion is no mean competitor with the U. S. in supplying to foreign markets her superfluous agricultural wealth. Hon. X. A. Willard, whose name is familiar to our readers, writes as follows in a well considered article on "American Cheese and its export."

"But there is another feature in the trade, which, it is feared by some, may be inaugurated. It is a discrimination between the goods coming from the United States and those from Canada

and other colonies. Canada has become a formidable competitor with us in the export of dairy produce. Canada now makes goods of the finest quality, and cheese dairying are rapidly developing in the Dominion. At the present rate of increase she will be able, at no late date, to supply England with all the cheese needed, provided the dairy industry of Great Britain is kept up. Australia and New Zealand are also entering largely upon the business, and it has been suggested that some arrangement is likely to be made by England imposing duties upon cheese from the United States, and allowing it to come in free from Canada and the Colonies. The protective policy of our government toward Canada and England it is said strongly favors this movement."

English dairymen are making efforts to secure by greater attention to dairy industry and to retain their former ascendancy in their markets. The Secretary of the Royal Agricultural Society, Professor Sheldon, and other dairy writers in England, are urging upon British dairymen the necessity of introducing the manufacture of various kinds of cheese made on the continent of Europe. Let our Canadian dairy farmers not merely rest contented with the victories gained, but press forward. There is yet much to be done in improvement of our produce.

How Condensed Milk is Made.

A subscriber enquires how condensed milk is made. In reply we publish the article beneath from the Scientific Farmer. The condensing of milk is no doubt an industry of great interest to the dairyman and farmer, as well as to the consumer. By it milk—which is a perishable article—can be preserved for lengthened periods, retaining its freshness, and the cost of transport is reduced to a minimum.

"When the milk is brought into the factory it is carefully strained, placed in cans or pails, which are put into a tank of water kept hot by steam coils. When hot it is transferred to larger steam-heated open vessels, and quickly brought to a boil. This preliminary heating and boiling has for its objects the expulsion of the gasses of milk, which would cause it to foam in the vacuum pan, and, also, to add to the keeping quality of milk by destroying the mould germs. A second straining follows, after which the milk is transferred to a vacuum pan; where at a temperature below 160 degrees Fahr., it boils and is rapidly concentrated to any degree desired. The vacuum pan employed is a close vessel of copper, egg-shaped, about six feet in diameter. It is heated by steam coils within and by a steam jacket without, enclosing the lower portion. In one side of the dome is a small window through which the gas illuminates the interior, while on the opposite side is an eye-glass, through which the condition of the contents are observed. The pan is also provided with a vacuum gauge and test sticks.

"Much of the milk used in cities is simply concentrated, without any addition of sugar. The process of concentration is continued in the vacuum pan, until one gallon of the milk has been reduced to a little less than a quart—one volume of condensed milk corresponding to about four and three-tenths volumes of milk. Condensed milk intended to be preserved for any length of time, has an addition of pure cane sugar made to it during the boiling and is usually put up in sealed cans. This sugared or 'preserved' milk, when properly prepared, will keep for many years."

In the report of the Agricultural University of the State of New York occurs the following: "The following are some of the conclusions arrived at, viz: that gypsum is of little value to corn or grass in wet seasons, but of great value in dry; that superphosphates are of very unequal values, those of the best reputation proving of but little value on the soil of this farm when applied to moderately fertile and well-cultivated land; that failures in farming result not so much from poor soil, as from poor culture, imperfect preparation of the soil, and stagnant water in the subsoil; that clover and cattle are the cheapest renovators of worn out fields; that early sown crops require the least quantity of seed, and promise the best results; that heavy land should be plowed moderately deep in the fall, covered with manure in the winter, and re-plowed to half the depth in the spring."