GREAT FIRE IN LONDON

A fire, which rapidly developed into a conflagration of great dimensions, burst out between ten and eleven o'clock on Saturday night at a seed and grain warehouse at Hanbury's Wharf, Bankside, the nearest of the wharves west of Blackfriars' Bridge. Within a short time a large force of engines had reached the scene, and several steam floats played vigorously from the river. Owing to the inflammable contents of the buildings, the flames leaped forth in all directions, and very high into the air. The spectacle, as viewed by thousands of people on the bridges and Embankment, was most impressive. The estimated damage is £200,000.

During the fire a remarkable sight was witnessed by the vast crowds who had assembled on the Thames Embankment. A black mass was seen floating towards the Middlesex shore, and after a time it was found to consist of some thousands of rats, who, having found their quarters on the Surrey side attacked by fire, had taken to the water, and were attempting to swim across the Thames. The swiftly-running tide carried them a considerable distance out of their course. Some hundreds were drowned during the journey, but a number, computed at nine or ten thousand, of the rodents crossed from the Blackfriars to the other shore. Being unable to land owing to the wall of the Embankment, and exhausted by their swim, nearly the whole of the rats were drowned.

REPORT OF MM. G. A GIGAULT AND J. D. LECLAIR.

Bacteriologists have of late succeeded in sterilising milk, and have produced a pure culture of lactic ferments, which is employed in some dairies.

Last year, the question was agitated of learning what ferments are the best for use, and how to obtain them; for the fact is more and more recognized, that the maturation of the cream is the essential and decisive point as regards the quality of the butter; so it is most important to start with a good ferment if we wish to obtain a perfect ripening.

The ferments generally employed are: 1, the buttermilk of one's own creamery; 2, a freshly-made ferment; 3, buttermilk from a neighbouring creamery.

1. There are instances of creameries working very well for many years with buttermilk as the ferment; still, we must not form our opinion from such instances, since it has been proved that the defects in the ripening, when buttermilk has been employed may be transferred from one tub of cream to another; it has even been proved, and very naturally, that the defects keep on increasing until another system of ripening has been adopted.

The ripening of cream with buttermilk from one's own creamery may be recommended so long as no faults in the ripening are detected. Instead of buttermilk may be employed sour cream, preserved for the purpose, this offers the same advantage, as well as the same risk, that is offered by the use of buttermilk, and is only to be preferred when, in churning or in cooling, there is a chance that the cream will absorb certain injurious micro-organisms or some other impurities. Whether buttermilk, sour cream, or any other ferment be employed, when ready it must be kept cool lest it be spoiled.

2. These new ferments have only been in use during a few years. At first they were generally composed of a mixture of water and new milk; now they are a mixture of cream and new or partly skimmed milk; certain precautions are adopted to prevent the introduction of any impurities. When this ferment is freed from all foreign matter, some of it is warmed up and kept at such a temperature as is judged to be propitious to the development of those bacteria that produce the aroma of butter; on the success of this operation depend the more or less efficacious results of its employment.

The end held in view, when making a new ferment to take the place of buttermilk was to improve the process of the ripening of cream; it should, therefore, be made ot strict rule, when not sure of the efficiency of a new ferment, to examine its appearance carefully, to smell it, taste it, and above all to compare it with the buttermilk it is intented to replace; if it looks good, if the flavour, odour ect., are better it may be used. But if the buttermilk seems better than the ferment, it should be used and the other put aside

The only difference between cream and milk is that cream contains a greater proportion of fatty matters, and as these matters are inimical to the production of bacteria, there is no reason why cream should be prefered to milk. The great quantity of fat in cream, and perhaps the presence of other impurities, hinder us in trying to appreciate the taste of the ferment. Thus, for instance, sour milk, after having been stirred and cool, will appear to be turned, fermented, etc., while rich cream seems allways to be uniform, even when it appears to produce effects unfavourable to proper ripening.

It is not everywhere that a good maker of a new ferment is to be found; local circumstances, more or less attention to cleanliness, etc., etc, are causes why in some places there are few proper bacteria, and why they are sometimes absolutely detrimental, injurious to the production of butter. Experience also shows that the milk of some cows, of cows, that is, whose period of lactation has been prolonged, is far from being so favourable to the production of a good ferment as the milk of other cows.

The taking of the first milk at hand to make a new ferment is by no means a matter of indifference; on the contrary, the maker must exercise great care in his selection. It is equally wrong to take the cream as it leaves the separator, without knowing whether it comes from bitter, salt or otherwise impure milk, which is good for nothing.

When preparing a new ferment, the maker should make experiments with the milk of the cows of different patrons, and try thus to find out that which suits his purpose best. He should then make arrangements with the patron that sends in the best milk, and engage that patron to send him the milk of fresh cows, in good health, well fed, and to take care that the milk arrive at the creamery while still warm, or that it be cooled at the farm. When arrived at the creamery, the milk is to be put into cans of a long conical form, after they have been cleaned with soda, scalded, or steamed; after which, and as soon as possible, they are to be plunged into iced water. In the afternoon, there will already be, on the surface of the milk, some cream with the richest part of the milk, which is to be removed by skimming; the remainder, half-skimmed milk, is exactly what is needed for the production of a new ferment.

The milk must then be warmed; this is most easily done by putting the cans into hot water; during all the time the milk must be kept continually stirred by a proper tool—a plate or disc of metal at the end of a handle—which has been as carefully cleaned as the cans and skimmer.

It has been found that milk in different places, under the influence of local circumstances and varied seasons, must be heated up to from 77° to 86° F. for 18 or 20 hours, so as to become uniformly sour. In this respect, tests should be made from day to day, and from week to week. When the intended temperature has been exactly gained, the can is to be placed, without spilling anything, in a cask partly full of hay, in such a manner that it can be lowered or lifted through an opening; a cover is then put on it, on the top of which is laid a mattress of hay, and it is left untouched till next day.

The first thing to be done on the morrow is to examine the new ferment, and to watch for the moment when the exact and uniform degree of acidity is formed; the progress towards too great acidity is then to be arrested by immersing the can in cold water. It is best, in creameries, that the ferment be ready from 8 to 10 o'clock; the can is then removed from the barrel, the smell of the ferment is tried, the surface is skimmed off, for sometimes the air has a bad effect on the milk; after this, the ferment (*starter*) is stirred with the tool mentioned above, and is then put into cold water, where it remains until wanted for use.

On comparing the new ferment with buttermilk, it will be found that the former is not so acid as the latter; so a little more of it must be used.

A defect, that may be experienced in the use of the ferment, is that the ripening is not the same every day; consequently, the butter made on different days is not uniform, while uniformity in the quality of the butter is easily obtained by the use of buttermilk.

The making of the new ferment and its employment is recommended when the quality of the butter is found to be going off, or at least is not giving satisfaction; especially when the milk brought to the creamery is not fresh, clean or well flavoured; and when it is hoped to succeed in obtaining an average quality by using it by means of a new *starter* made from very fresh milk of perfectly good flavour. On the contrary, the new *starter* should never be employed when it is not so good as the buttermilk. When the quality of the butter is not satisfactory, and it is impossible, or almost impossible, for whatever reason, to make a good new ferment, it is better not to use it.

3. *Buttermilk* from a neighboring creamery. The butter, when buttermilk is needed, must be good and the ripening of the cream be conducted under the very best conditions. The practice of ripening cream with the buttermilk of another creamery is very old. It has been chiefly followed in places where churning was growing difficult, and when the cream, instead of becoming uniform, was growing bitter or taking on a bad smell.

It has been found that, when the maker got good buttermilk from another creamery, the ripening of the cream went on well, and that afterwards he obtained good results by using his own buttermilk; but, on the other hand, it seems that this is not always the case, and that, after a few days, difficulties in ripening the cream occur. This is easy to be understood, for the same causes that previously produced bad butter had not been obviated, and kept on preventing the ferment from producing its proper effect. In such a case, recourse is had to a sovereign remedy: a general clean up; the cream barrels, the churns, and all wooden utensils are scalded out, several days in succession, and the rooms, &c., are white-washed. This is considered necessary and effective, but is not enough; attention is drawn to another, to wit, the daily introduction into the cream of a first class ferment containing the best bacteria. This may be done by getting every day some good buttermilk from another creamery; but if the distance is too great, or the carriage difficult, buttermilk, in which good bacteria have been very carefully cultivated, may be used, and added to the cream in proper quantity.

That the buttermilk from another creamery should rapidly lose its force during the ripening of cream, is easily understood. The cream constitutes a medium less suitable to good bacteria, it even contains numbers of micro-organisms which hinder their development, and, consequently prevent them imparting to the cream the desired qualities.

Wherefore, it is advisable and necessary to make daily a new ferment with milk of the best quality, as described above. After having skimmed, pasteurised, heated it to 176° F., kept it at that temperature for half an hour, or, if possible boiled it, to kill or render harmless the injurious micro-organisms, and cooled it down again to from 77° to 86°, 5 to 10 p. c. or more of buttermilk from another creamery is added. By leaving this mixture covered in a warm place, a good ferment will be made which can be used the next day, and part of it can be kept as a starter to be added to pasteurised milk on the morrow, and so on. In many creameries, experience has shown that this process is a very successful one.

Pasteurisation of cream. — This has been practised in many Danish creameries for the purpose of obtaining a better ripening of the cream. Formerly, it was thought sufficient to practise great cleanliness, and cooling the cream so that it should keep set and cool until the moment of adding the starter arrived. Dr. Lund and Dr. Jensen were the first to make investigations and experiments in different creameries in Denmark, and these inquiries have shown that pasteurisation, done properly, neither injures nor diminishes the superior quality of the product, but is always advantageous; that it increases the keeping quality of the butter, while at the same time it carries off any bad smell or taste, and renders the churning and making up more easy. Still, pasteurisation causes a greater consumption of fuel, water, and ice, while the yield of butter is slightly decreased; partly, because a greater quantity of fat than usual remains in the buttermilk, partly, because the butter contains less water than usual; as to this last result of pasteurisation, it may in many cases be considered rather a benefit than a detriment.

In small creameries, pasteurisation may be practised by putting into boiling water each pail of cream as soon as it leaves the separator, and heating it to a temperature of from