

CHAPTER IX

PURE MILK IN THE LARGE TOWNS

Busck Milk Supply Company of Copenhagen—Testing and Preparation of Milk—Decrease in Infant Mortality—Distribution—Comparison with English Methods and Prices—A Suggestion to Municipalities—Pasteurisation—Comparison of Food Values of Milk and Beer—Rapid Cooling and the Hygienic Milk-pail.

NEARLY every large town in Denmark possesses a company or corporation, partly philanthropic in its aims, which exists to supply the populace with pure milk and cream at the cheapest possible rates. The most remarkable of these concerns is the celebrated Busck Milk Supply Company of Copenhagen, which has a capital of about £25,000. It never distributes more than 5 per cent. in dividends, although there is little doubt that, were it run as a business concern, it could easily earn 20 per cent. profit or more. The excess over and above the 5 per cent., however, is devoted to improvements and additions to machinery, equipment, and buildings, and to free distribution of milk to the poor.

The company provides cream in four different grades: whole milk, half-skimmed milk, children's milk in sterilised bottles, and infants' milk

specially prepared under the most stringent precautions. No cows are kept, the original supplies of milk being obtained from selected farms in the Copenhagen district.

The milk, on arriving at the company's depôt, is tested and emptied into small vats, which are standing near a larger vat, containing a mixture compounded of one part of salt water to two parts of ice. This mixture is slowly pumped into lofty coolers, and the milk is then passed over the coolers and run into a tank, whence it is driven through a special sterilised filter made up of gravel and cloth sheets. From the filter it passes into a large clean tank, when it is ready for distribution.

The cream, which has been separated by steam-driven Alfa separators, flows over cylinders filled with ice to an ingenious machine which has six long pipes, through which it passes into sterilised bottles. Nothing—milk, cream, butter or cheese—is ever touched by the hand, and the extreme care with which the infants' milk is prepared has undoubtedly resulted in the saving of thousands of young lives, and contributed to the notable decrease in the figures of infant mortality for Copenhagen and the surrounding districts during the past thirty years.

A very efficient system of distribution has been devised by the company, and this attracted the special notice of Sir H. Rider Haggard during his inspection in 1910. He writes: "All being prepared, the milk is distributed in the following

fashion. Two hundred cans, each containing 100 lbs. Danish, are sent to the hospitals. Some goes to three shops the company possesses, while the rest is hawked by means of forty-four vans, which deliver it from door to door.

“ These vans, which I saw, are extraordinarily well contrived and adapted for this purpose. The cans of whole and skimmed milk are placed on either side of the front portion of the vehicle, and locked up in such a position that the milk can be drawn through taps which are specially protected from dust. It cannot be otherwise got at even by those in charge of the van. Over the taps are written the quality and price of the milk. In the rear compartment of the van are trays which exactly fit the cases that hold the bottles of cream and of children’s and buttermilk, the prices of which are inscribed over the door. These trays in summer are covered with a layer of ice.

“ To draw its vans the company keeps a stud of eighty horses, which I saw lying or standing, on moss litter, in beautiful stables. Not far from these stables are the ice-houses, where is stored the specially collected ice, 3,000 tons of which are used every year.

“ Much might be written about this company, but perhaps enough has been said to convey some idea of its remarkable character and the perfection of its management. It was the first society for the distribution of pure milk in the world, and I

believe that even now, although some others exist in different countries, it remains the most important. If there is anything on the same scale and organised in quite the same way even in the vast city of London, the fame of it has not reached me. I suggest that here there is an opportunity for enterprising and philanthropic vendors of milk in all the great towns of our country. Only could milk and cream thus collected and treated be sold at similar cheap rates in England? The charges made to the householder in London and other English cities do not seem to suggest that this would be the case.

“ The London price for new milk is a little under double the price for the same article in Copenhagen, whereas the difference in the cost of cream is enormous. The Copenhagen company charges 1s. $2\frac{1}{2}d.$ per litre for its *best* cream, or, let us say, 1s. $6d.$ (an outside figure) per quart, as against 4s. charged by the London dairies. Surely this is a matter that the corporations of cities might consider in the interests of the health of the population, and especially of young children. If a corporation may supply water or electricity why should it not supply milk ?

“ But the matter of municipal trading is one on which I do not wish to enter. Therefore I leave this somewhat thorny question with the remark that those who are alive five-and-twenty years hence will probably see in every large town

an institution labelled 'The Corporation Pure Milk Supply Depôt.' "

Mr. Busck's company, which started business in 1878 on hired premises, now owns 11,300 square metres of ground, of which 5,600 square metres are occupied by buildings and plant. Its daily sale of milk amounts to over 25,000 quarts, and it employs a staff of 130 men, 140 women, and 230 boys. In cases of illness all the employees, as well as members of their families, receive gratuitous medical treatment without any deduction of salary.

All the cows used by the company are examined by veterinary surgeons twice a month, while cows supplying infants' or children's milk are tested every half-year with tuberculin. The animals are kept on pasture as long as possible. Immediately after the milking operations have been concluded the milk is cooled down to 5° Celsius, but no pasteurisation is permitted, as this is now generally admitted to be an unnecessary proceeding and fraught, in some instances, with considerable risk to the public, as, although it effectively destroys the bacilli of disease, it, at the same time, reduces the nutritive properties of untreated milk.

In an article published in *MacClure's Magazine* for December, 1908, a contributor very succinctly stated that "the dairyman who pasteurises good milk is a fool, and the dairyman who pasteurises bad milk a rogue. The only excuse for pasteurisation is that it is the lesser of two evils, and the

Copenhagen Milk Supply Company has shown the world that it is unnecessary."

In the well-known American review *The Outlook*, Prof. J. E. Pope, commenting on his visit to Copenhagen in 1906, stated that in his judgment Copenhagen was the capital where milk is the best and cheapest. He noted particularly the importance placed upon the delivery of milk at a very low temperature in contrast to the common practice in America and England of delivering it warm, in which case it deteriorates rapidly.

During the past thirty years the consumption of milk in Copenhagen has increased by a much greater ratio than the proportionate increase in the population would lead one to suppose. At the present moment the average consumption equals almost exactly one pint per day per person. In London and Manchester the allowance is less than one quarter of this quantity. The abundance and the cheapness of good milk has undoubtedly contributed in no small measure to the extraordinarily rapid growth of the temperance and allied movements in Denmark, as it has been clearly pointed out in the press and the churches, and the schools, that even ordinary buttermilk contains from four to five times the food value per volume of beer. Bavarian beer, for example, contains only one half a pint food value of a quart of whole milk. A quart of Bavarian beer costs 27 öre (slightly more than $3\frac{1}{2}d.$), while a quart of whole

milk can be purchased in Copenhagen for 16 öre (about 2*d.*). From the point of view of cost, therefore, milk yields better value for money, while if the relative food values and nutritious properties are worked out it can be demonstrated that Bavarian beer, which costs 27 öre, should only be valued at 4 öre.

One of the most important of the appliances employed by the Copenhagen Pure Milk Supply Company is known as the hygienic milk-pail, the object of which is to collect and store the milk so efficiently cooled that it will keep long enough without pasteurising or other similar treatment. The apparatus consists of a cylindrical tinned steel pail, in the bottom of which is placed a pear-shaped copper receptacle, which is closed by means of a flat lid under the bottom of the pail. When the pail is in use the lid is unscrewed, the pail turned upside down, and the receptacle filled with a mixture of one part of common salt to three parts of crushed ice or snow. The cow is milked straight into this pail, and the milk thus loses its cow-heat. The micro-organisms are by this method immediately placed into an environment which precludes development, while the milk does not lose any of its nutritive properties.

This rapid cooling process has produced some very notable results. Dr. Müller, of Leipsic, instituted a series of valuable experiments with Mr. Busck's hygienic pail, of which we will quote

one only. A certain cow, which yielded 12 quarts of milk, was milked from the two right teats into Mr. Busck's pail and from the two left into an ordinary pail, the specimens being placed *side by side in bottles in a room at a temperature of 15° Centigrade*. The milk from the ordinary pail became sour and thick after 82 hours ; that from the hygienic pail did not become sour until after having been kept for 144 hours.

In connection with the rapid cooling process invented by Mr. Busck, it may be noted here that his company use upwards of 18,000 lbs. of ice daily, and that the whole of this enormous quantity is produced and crushed on the premises by a Danish Diesel oil-engine motor.