

Canning (Martin Adams)



Wee Willie Harris, Britain's legendary wild man of rock 'n' roll from the 1950s, is not Bermondsey's only contribution to the long march of human progress, and, to be fair, probably not the most important. On a visit to Bermondsey, you may encounter the occasional Epicurean seeking out Manze's famous Eel and Pie shop in Tower Bridge Road, or possibly architecture enthusiasts viewing the art deco Alaska Factory, a former seal skin works now converted into expensive flats, but sadly the area is a less frequented part of the London tourist trail and its role in the history of applied microbiology is almost forgotten.



The Alaska Factory points to the long period Bermondsey spent as a centre of the tanning and leather trade. This alone might merit a mention in this column since tanning leather is a notable microbiological process, particularly in the 'bating' stage where microbial enzymes digest

A learner-centric microbiology education framework

proteins to help stabilise and soften the pelt. Nowadays the enzymes used are produced commercially by large scale microbial fermentation but in the past the same ends were achieved by a natural fermentation which was initiated by pounding dung or a solution of animal brains into the hides; an unpleasantly aromatic procedure that led to the industry being banished downriver and downwind from the sensitive noses of the more affluent classes upstream. However it is in the field of food preservation that Bermondsey has a unique claim in the annals of microbiology. Under the eaves of the caretaker's house of a school in Southwark Park Road is a plaque commemorating the fact that on this site Bryan Donkin FRS and John Gamble produced the first canned foods in 1812.

The principle of heat preservation of food in sealed containers had been established some time earlier by the Frenchman Nicolas Appert who used glass jars sealed with corks and heated in a water bath. Another Frenchman, Phillipe de Girard patented the use of more robust and lighter tinned iron containers through his English agent, Peter Durand, in 1810, and he then sold the rights to Donkin. Bryan Donkin was a Northumbrian engineer who had been an apprentice at the Dartford Iron Works owned by John Hall. He had an extremely varied and successful career. Having already developed a profitable papermaking machine before his foray into canned foods, he worked on numerous manufacturing and civil engineering projects eventually becoming vice-president of the Institution of Civil Engineers and a Fellow of the Royal Society in 1838.

Donkin's original cans were made from three pieces: the body, a single piece of tinplate rolled into a cylinder with a soldered seam, the base, and the lid. The empty can was filled with product and the flanged lid soldered on. The lid had a small hole through which topping up liquid could be added. The hole was then covered with a cap soldered on before processing. The cap had a small hole, known as a brog hole through which steam could escape during heating. When this was deemed complete the cap was cooled with a cold wet rag and the hole sealed with solder. The cans were originally heated in a boiling water bath for up to 6 hours, although later in the century water was replaced with calcium chloride solution which allowed much higher heating temperatures and reduced processing times.

The canning process was developed long before the work of Pasteur and for many years the belief persisted that it preserved the food by expelling air and creating a vacuum. There was no understanding of the role that heat played in killing microorganisms particularly the mesophilic sporeformers whose elimination is necessary to assure shelf stability and safety from botulism. The success of the process was determined simply by storing products for a month or more in a warm chamber (32-40°C) and discarding those that had swelled with gas production. Detailed study of the thermal death kinetics of bacterial spores and elaboration of the 'botulinum cook' standard for low acid canned foods took place more than a century after Donkin's factory started production.

Initially, the products were relatively expensive and had a more specialist market supplying the navy and finding particular favour on voyages and expeditions around the world. Celebrity endorsements were sought including a visit by Donkin and John Gamble (the factory manager) to Kensington Palace in 1813 where the Prince Regent, later George IV, tried and approved of samples of canned meat and milk. Support also came from notables such as Lord Wellesley, later the Duke of Wellington, and Sir Joseph Banks, President of the Royal Society.

The factory in Bermondsey was never solely concerned with food canning and this part of the operation was later taken over by Crosse and Blackwell and moved elsewhere. The residual engineering activities on the site moved north to Chesterfield in 1890 where a company still exists today bearing Donkin's name and manufacturing valves and fittings for the gas and water industries.

A learner-centric microbiology education framework

Times change, and although the school caretaker is now the 'facilities manager' the plaque to Donkin remains on his house. As far as I know, there is no comparable memorial to Wee Willie Harris, other than a brief mention in the Ian Drury song, 'Reasons to be cheerful (Part 3)'.