

One of history's important food-related innovations

**Don Mercer
Associate Professor, Food Science
Kemptville Campus University of Guelph**

An interesting question was posed to a committee of Fellows of the Royal Society in the United Kingdom. This august scientific body, representing leaders in their respective fields, was challenged to identify the most meaningful innovations in culinary history. Decisions were based on criteria including the impact on human health. Not surprisingly, canning was ranked as one of the top three technologies, behind refrigeration and pasteurization.

One has only to look at historical developments in Europe during the last decade of the Eighteenth Century and first decade of the Nineteenth Century to see how canning originated.

In the midst of the French Revolution (1789 to 1799), the French military recognized the problems of supplying their broad-ranging armies which were struggling with inadequate rations that were often spoiled, unwholesome, or generally unpalatable. Similarly, sailors in the navy and on merchant ships were suffering the ill effects of poor diets, including scurvy. Napoleon Bonaparte, who was rising to power at the time, is widely credited as saying that an army marches on its stomach – although it would certainly have sounded much more eloquent and profound when spoken in French.

In 1804, a substantial prize of 12,000 francs was offered to anyone who could develop a suitable method of preserving food for military use. The prize captured the attention of Nicolas Appert, a 46 year old Parisian chef. Appert began testing ways of preserving foods by sealing them in glass jars which he placed in boiling water for various lengths of time. Successful demonstration of his process ultimately led to him claiming the prize in 1810. Thus began the age of food canning as we now know it.

Appert patented his process, dubbed “Appertisation” and set up a bottling facility in his home. Technically, this would have been the world's first food processing or bottling factory. Appert used only glass bottles with tight-fitting cork closures. However, his process was readily adapted to tin canisters a short time later by a British inventor, Peter Durand.

The original tin canisters, or “cans”, were quite sturdy - so sturdy, in fact, that a hammer and chisel were required to open them. Over forty years later, in 1855, relief finally came with the invention the can opener.

Early cans were soldered with lead. An abundance of such canned goods was originally suspected as contributing to lead poisoning among members of the ill-fated Franklin expedition which disappeared in the Canadian high Arctic in 1845. This theory

has been largely disproven in light of the discovery that the piping systems designed for obtaining fresh water on board both the HMS Erebus and HMS Terror were probably the main source of the lead.

Over the years, canning has gone through many refinements. Lead solder has been replaced by welded seams, while the tops and bottoms are attached by an ingenious rolled seam. Opening cans is also a snap with the electric can openers and pull top closures.

What may not be so evident is the variety of linings on the inside of cans. These linings prevent reactions between the contents of the can and the metal itself. Without such plastic linings, foods which are slightly acidic could create problems of corrosion as they react with the interior metal surface of the can. Not only would this reduce the storage life of the container, but it could seriously alter the flavour, quality, and overall safety of the food.

Several years ago, concerns were raised over the types of plastic used for food packaging, including linings in cans. Serious steps have been taken to reduce exposure to plastic linings such as Bisphenol A (also known as BPA). An article from the 2009 edition of Consumer Reports magazine indicated that the use of Bisphenol A for plastic bottles and can liners had been restricted in Canada, which is good news. According to their website on food and nutrition, Health Canada's Food Directorate has concluded that "the current dietary exposure to BPA through food packaging uses is not expected to pose a health risk to the general population, including newborns and infants".

While there may be nothing to compare with eating fresh fruit and vegetables, canning has definitely had a pronounced impact on delivering high quality safe food to the consumer.



A partial can of vegetables showing the can's white plastic lining