

Wiltshire Cured or Tank Cured Bacon: A Historical Review

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Introduction

One of the most important British heritage bacon is Wiltshire bacon. Not only was the legendary curing operation of C & T Harris located in Calne, Wiltshire, but the curers from the county created legendary bacon for centuries.

Wiltshire Cured Ham, Wiltshire Cured Bacon, Wiltshire Cured Gammon is eligible for consideration as a traditional speciality guaranteed (TSG) product. The British Department for Environment, Food & Rural Affairs launched an application process to afford the terms special protection and to specify the manufacturing process of such products.

Considering the application, I did more research on the subject to pull various historical strands together and ask the question, what is Wiltshire Bacon/ Ham? My review is only restricted to the history of Wiltshire bacon and hams and tank curing.

My latest work and updates, like this chapter, forms part of [Bacon & the Art of Living](#). I reference several important chapters. Each chapter is coated in a story format where I write letters to my kids as I discover bacon curing and learn about life. I am sure this will frustrate many to no end, but when I conceived the idea, I wanted a book that people will read from beginning to end. I am convinced that I did not achieve this due to my lack of talent in writing narrative, and also because of both the complexity and volume of the subject matter. Still, the format stands and those who read it will have to excuse me. The research underpinning each chapter I reference is sound!

A. HISTORICAL BACKGROUND

Early Reference to Wiltshire Bacon

The bacon curers from Wiltshire have been known for their excellent quality of bacon and hams for an exceedingly long time. Below is a short selection of references to Wiltshire cured bacon in major international newspapers. The earliest I could find goes back to 1759.

“Fine Wiltshire Bacon” mentioned. ([The Public Advertiser, 1759](#))

A “Bacon Rack” is mentioned in Bath. ([The Bath Chronicle, 1764](#))

“Best town-made bacon” is mentioned in Bath. ([The Bath Chronicle, 1790](#))

Wiltshire cheese and bacon ([The Morning Chronicle, 1812](#))

Wiltshire bacon mentioned. ([The Morning Chronicle, 1814](#))

In a list of winter provisions, Wiltshire Smoked Bacon ([The Caledonian Mercury, 1818](#))

A reference to Wiltshire bacon for sale ([The Morning Chronicle, 1822](#))

The phrase, “The average price of Wiltshire Bacon?” appears in a poem. ([Pensacola Gazette, 1823](#))

“Real Wiltshire Bacon for breakfast,” advertised. ([The Morning Post, 1838](#))

The Handbook of Domestic Cookery, 1839 had a section entitled Wiltshire Bacon ([The Era, 1839](#))

There is a reference from a book by Daniel Defoe, *Tour Through the Whole Island of Great Britain*, published which goes back even further, to 1720 about a strong pork industry in Wiltshire on account of the abundance of whey from the local dairy industry. He makes mention of large quantities of bacon sent from among other, Wiltshire to London. He wrote, “The bacon is raised in such quantities here, by reason of the great dairies . . . the hogs being fed with the vast quantity of whey, and skim’d milk, which so many farmers have to spare, and which must otherwise be thrown away.” (Malcolmson, 1998)

C & T Harris: Located in Calne

The firm, C&T Harris (Calne), is, without doubt, one of the most famous Wiltshire curers. Their fame is such that it is easy to equate Wiltshire cure and Wiltshire cuts with Harris cures and Harris cuts. This, however, is not necessarily always the case despite Calne being in Wiltshire. I will therefore give special mention of them. The fact that the small town of Calne in Wiltshire played a key role in the history of curing in the region stems from both the strong dairy industry where pigs follow dairy on account of the abundance of whey and the import of Irish pigs through Bristol to London.

There was a strong supply of imported pigs from Ireland. Between 1770 and 1800 exports of Irish pork to England increased eight-fold. Over 60% of the Irish imports into England was done to London. (Cullen, 1968) The pigs arrived by ship in Bristol and were walked on the hoof all the way to London. Along the way, it was important to rest the animals and give them a chance to graze to ensure good meat quality when they arrive in London. The small town of Calne, in North Wiltshire, was a convenient stop-over on the long walk.

Not only were the pigs in abundance, but they came at decent prices and from a diversity of suppliers. Pork is a commodity, the price of which fluctuates on a daily or weekly basis. The price is an indication of its availability and some level of price stability for quality pigs are an important requirement for a successful curing operation. It was important back then as it is important today.

Another reason for the existence of a strong curing industry is the abundant availability of saltpetre in Calne. "The geology around Calne was excellent for saltpetre. The Calne Guild Stewards' Book has an entry for 1654 listing payment for the removal of saltpetre tubs. It is mentioned in relation to glassmaking in the 17th Century. A token was found for use at the glasshouse in Calne, suggesting there was glass manufacture going on in the town, although no record has been found of it. Saltpetre is essential for making glass. The antiquarian John Aubrey in his book 'Topographical Collections' 1659-70, says concerning Calne that the 'Sand on the hills here about is very fit for glass making.' He described it as being very white and having the largest grains he had ever seen. He also mentions on page 94, 'The deep lane from Bowden to Raybridge is very full of nitre, as a warm day will indicate.' Bowden Hill and Raybridge are only a few miles from Calne." (SB)

The first Harris to come to Calne was the widow, Sarah Harris in 1770, who moved there with her son, John Harris. They were living in a small market town of Devizes, about ten miles from Calne. When they moved to Calne, Sarah set up in a small property in Butchers Row. John must have been around 10 years old. (SB) This means that when they arrived, Wiltshire bacon was already famed for its quality.

When John died in 1791 the business was carried on by his wife but on a small scale. (SB) She 'thought it a good week if she had killed five or six pigs and sold clear out on a Saturday night'. Two of her sons helped her in the butchery, John and Henry. (british-history) When she passed away, she left in her will £60 to each of her three sons, John, Henry and James. Henry and James were twins, but James had no interest in butchery and became a civil servant. (SB) As John and Henry's own bacon interests grew over the years, this must have been a story that she told them many times and it must have been a favourite family tale.

"Her one son, John, married Mary Perkins in 1808, who, in 1805/1806, opened a butcher's shop and bacon curing business of his own in Calne, High Street. His younger brother, Henry Harris, married Sophia Perkins in 1813. He managed the Perkins Family Grocery and Butchers in Butcher's Row (later Church Street). He took the business over when his father-in-law passed away."

“John and Mary had twelve children. Disaster struck the young family when John passed away at a young age in 1837. “His wife, Mary, continued to run the business until eventually handing it over to one of their sons, Thomas. Henry and Sophia were childless and looked after four of John’s children. He left the Church Street business to his nephew George. Charles later joined George as a partner in Church Street. John’s son Thomas took over the High Street business when his father died. George died in 1861, leaving Charles running the Church Street factory. Charles and Thomas amalgamated their businesses in 1888. It is interesting to note that one of Thomas Harris’ sons struck out on his own and founded the Bowyers Bacon factory in Trowbridge.” (SB)

C & T Harris: Sweet Cured Bacon

The first progression of curing technology came in the 1840s when the Harris brothers invented Sweet Cured bacon. What this cure exactly was is a question that I have wrestled with over the years. The most complete treatment of the subject is given in [Bacon & the Art of Living](#) under [Sweet Cured Harris Bacon](#), with support for the main conclusion related to the smoking of bacon found in [Robert Henderson and the Invention of the Smokehouse](#) and related to the injection of meat, found in [Dublin and the Injection of Meat](#). The thoughts on the development of tank curing are taken further in [Harris Bacon – From Pale Dried to Tank Curing!](#)

There is a record showing that C & T Harris (Calne) used injection with their bacon from 1843 (SB). After it was dry-cured, the meat was smoked at a temperature of not higher than 38 deg C (100 deg F) in order to prevent nitrate burn which presents itself as green spots that appear on the meat. In the report, mention is also made that care should be taken if these products are stored to prevent damage from insects such as cheese skippers, mites, red-legged ham beetles, and larder beetles. (Hui, 2012) The result was sweet cured bacon!

After careful considerations of all the available evidence in [Sweet Cured Harris Bacon](#), I conclude that sweet cured bacon ***was cured with less salt and saltpetre, with or without the addition of sugar and smoked immediately after curing in a built-for-purpose smokehouse which resulted in less moisture loss (and therefore tasted less salty); liquid brine was injected with a single needle injector into the meat which further allowed for reduced salt levels and cover brine may or may not have been used.***

Wiltshire Cure 1843

If Harris changed to Sweet Cured Bacon, it is interesting to look at another reference to Wiltshire curing in 1843. An article from the **Yorkshire Herald and the York Herald (1840)** reports on the following method of curing used in Hants, Wilts, and Somerset.

“Somersetshire and Wiltshire bacon which is the best in England is cured as follows:- The sides of the hogs are laid in large wooden troughs sprinkled with bay salt and left unturned for 24 hours, to drain off the blood and juices. Then they are taken out and wiped quite dry, and some bay salt previously heated in an iron frying pan is rubbed into the flesh till enough of it is absorbed. This is continued for four consecutive days during which the flitches are turned every second day. With large hogs, the flitches must be kept in the brine for three weeks and must be turned every other day, after which they are dried as usual. In these methods, the skin or hide is left on but in some counties, there is a different practice, which has been recommended abroad as preferable because it affords an opportunity of converting the skin into leather, while the meat takes the salt and is cured as well as in the former mode. The hides of swine have long been made into shoes in China. Where the consumption of bacon is very rapid, the last-mentioned practice may be adopted but it is certain that bacon will in a short time become rusty and consequent loss be incurred if it be not cured with the rind and kept in a dry room.” (**The Sydney Morning Herald, 1843**)

That both a liquid brine as well as dry salt is used is stated plainly. The bacon is either “salted in brine or with dry salt and then either kept moist as pickled pork or merely dried; white bacon or cured, dried and smoked bacon;” (**The Sydney Morning Herald, 1843**)

“Other interesting processing techniques are described from across England. “In Hampshire, and some adjoining counties after the hog is killed, they first swale him or singe off the hairs, by kindling a fire around him which is far preferable than scraping off the bristles with warm water, as the latter mode softens the rind, and injures the firmness of the flesh.” Old postcards from Harris in Calne shows that this was practised in Wiltshire also.



Michael Caswell sent me the postcard. He grew up in Calne and his personal recollections include the Harris Bacon factory and the pigs on hoof en route to London from Bristol. He writes about the postcard, “this historic postcard shows what most local people did with their backyard pigs shortly after slaughter. The pigs were laid on a bed of straw and then the straw was set alight to burn off all the hair! Pretty simple really.”

The description of Hampshire curing continues. “He is then cut into flitches, which is well rubbed with common salt and saltpetre mixed and are laid in a through, where they continue for three weeks or a month, according to the size and are often turned. They are then taken out, suspended in a chimney or over a wood or turf fire or in regular curing-houses till they are quite dry.

In Kent, they are dried before a slack fire, which requires a similar method and time to that employed in salting. They are hung up or deposited on racks for use.” ([The Sydney Morning Herald, 1843](#))

What is interesting is that there is no reference to the re-use of old brines, the injection of liquid brine into meat or the use of built-for-purpose smokehouses. It would appear that our conclusions about the nature of the invention of sweet cured bacon are on solid ground.

What set different bacon’s apart?

The fact that matters such as singeing vs scalding was features that set different curing traditions apart is clear. A case was brought before a count in Northern Ireland under the Merchandise Markets Act related to the designation of a product as Wiltshire Bacon. The matter of what sets one kind of bacon apart from the other is set out in the court case. “He understood that there was in the trade a very well-known distinction between “Cumberland cut bacon” and “Cumberland bacon” and “Wiltshire bacon” and “Wiltshire Cut Bacon;” in fact, there was a particular method of dealing with the curing of bacon that was described and known in the trade, and used by the wholesale houses in the trade under the phrase. It applied partly to the singeing of the bacon – in one it is singed and in one it is scraped off. . .” ([Belfast News-Letter, 1892](#))

C & T Harris: The invention of Ice Cured Bacon

In the mid-1800s, catastrophic events unfolded in Ireland that precipitated George's travel plans. A devastating potato famine occurred between 1845 and 1852. When it was all over, more than a million people died and another million immigrated to flee the devastating conditions in Ireland.

The mass migration of people from Ireland to places like the USA happened on an unprecedented scale. It was reported in England that the emigration of 1847 would probably end up being as high as between 200,000 or 300,000 people from Ireland alone. An international effort followed and government agents from Europe prepared for the influx of people as the number of Irish heading to the port cities of the continent dramatically increased. Vessels were being hired to ship people to such cities at an ever-increasing rate, and Captains were forced to carry full compliments of passengers on every voyage, sometimes even exceeding the legal limits. (theshipslister)

The disaster in Ireland had a severe impact on the Harris brothers, as it did on food production around the world. The pigs stopped arriving in Bristol, threatening the existence of the butchers of Calne. George Harris and his mom, Mary, hatched a plan to rescue the situation.

The plan was ingenious. George would leave for America to set up a pork business with an American farmer. They would slaughter the animals and figure out a way to carry the meat across the Atlantic, packed in boxes, well-salted to prevent spoilage. The plan was that the meat would cure in transit into ham. (Smithsonianmag) The plan was not novel. By 1847, barrel pork had been exported from America to England for years. On Saturday, 4 November 1843, a circular appeared in Boon's Lick Times (Fayette, Missouri) by George K. Budd, where advice is given to American pork producers on what they can do to ensure that the barrel pork reaches England in an excellent condition to fetch the best possible price.

The plan seems to have been for the 23-year-old George to procure the pigs directly from farmers as opposed to buying it from American packing plants. If George could procure the pigs directly from the farmers, pack the pork in America and export it, the Harris brothers would cut out the middlemen and would again regain not only their supply of foreign pork but also affect the imports at the best possible price. The supply of cured meat for bacon from America to England was, however, the poor quality barrel pork. Besides buying the pork directly from the farmers and packing it himself in the USA for export to England, George planned to do it by using their well-known dry cure process. George was the innovator and

the driving force behind the Harris brothers. His brothers said about him, "Of all us brothers, George was a long way ahead; he was the smartest businessman of any of us. He was the means of lifting us out of the old rut and laid the foundation of the new system and its prosperous future." (SB)

"For a year he travelled about America visiting many bacon-curers and sending home bacon, lard, cheese, and other provisions. After a brief visit home in the summer of 1848, he again returned to America and opened a bacon curing establishment in Schenectady (New York State). The venture was not successful, however, and the American branch was closed." (british-history) If George travelled around in America for a year it would set the date for his trip to America to around 1846 which is after "sweet cure" was introduced by them. He could therefore not have gotten the idea from America as is cited in several sources.

George persuaded his brother Charles, who owned the Grocer and Butchers shop on Butchers Row with Thomas and some of his staff, to go back to America with him and look at the process. "As a result, both he and Charles set up ice houses in their separate factories." (SB) The first ice-house was constructed at the High Street factory in 1856.

After a great deal of experimentation, it was found that charcoal was the best insulating material for use in the walls around the ice chamber. This fascinated me because it was the exact way that the "cooler" on my grandparents' farm was built. Laid out with bricks on the outside and filled with charcoal on the inside. Water was trickled down the sides from the roof and the result was cooling inside to, oh, if I must think back and try and gauge the temperature, probably at around 15 deg C.

Thatching is extremely popular in Calne, and the Harris ice houses have thatched roofs. A steel-plated ceiling was installed to pack the ice on with drainage outlets. They measured the rate of melting and could estimate the stock of ice that was in the ceiling at any point in time. They used the unemployed and people from the workhouse to collect ice from streams and ponds but in warmer winters it was imported from Norway and transported by Canal. The ice preservation process was patented by Thomas Harris in 1864. (SB)

Two important conclusions follow from this. The first is that sweet cure had nothing to do with refrigeration. Sweet cure was introduced in the '40s and refrigeration only arrived in Calne in the '50s. The patent on the icehouse was taken out only in '64!

The second is that Harris not only brought refrigeration to the bacon trade in England but would re-invent its curing system to incorporate it. So was born, Ice Cured Bacon!

The Harris's Ice Cured Bacon

When refrigeration was introduced, the Harris brothers invented a famous cure called the "Ice Cure." ([The Gazette, 1904](#)) Ice-cured pork was being marketed as being superior to dry, highly salted cured pork. ([Richmond Dispatch, 1871](#)) In 1873 Ice cured bacon is advertised in the USA. ([The Norfolk Virginian, 1873](#))

In 1876, 1877 and 1878 American ice cured bacon is being sold in England. ([The Leeds Mercury, 1878, Sat](#)) ([The Leeds Mercury, 1877](#)) ([The Leeds Mercury, 1876](#)) An 1869 reference from the Pittsburgh Gazette where ice cured meat is advertised is the oldest reference I have in the USA.

In 1885 ice cured pork is listed on the Liverpool Provisions Market. ([The Gazette, 1885](#)) An 1871 American article celebrates the virtues of ice cured pork and states that ice cured operations are rapidly increasing. ([The Weekly Intelligencer, 1871](#))

In 1883 an advertisement appeared in the Maidenhead Cookham and Bray, Thames, Angling Association. Diprose, Bateman & Co. London. It references Harris's Patented Ice Cured Bacon.

**H. WILDER & SON,
IVY COTTAGE, BRIDGE ROAD,
MAIDENHEAD,**

*At which address all Letters and Telegrams will be
punctually attended to.*

Pleasure Boats and Punts

To be Let on Hire by the Day, Week, Month or Season.

BOATMEN & EXPERIENCED FISHERMEN

Always in attendance at H. W.'s Raft below the "Thames Hotel."

*N.B.—H. WILDER is the Senior Water Bailiff of the
Maidenhead, Cookham and Bray Thames Angling Association.*

THE CELEBRATED HOUSE FOR TEAS.

**W. M. PLUM,
Family Grocer & Provision Dealer,**

106, HIGH STREET, MAIDENHEAD,
(Two Doors from the Post Office.)

HARRIS'S PATENT ICE CURED BACON.

Families waited upon for Orders.

The Development of Technology in Calne and the birth of C & T Harris.

“Most of the important bacon-curers throughout the country took advantage of the chance to improve their output by constructing such ice-houses under license.” The volume of trade from the two Harris operations continued to increase throughout this time and in 1863 the Harris family joined with other local interests to finance a branch railway line between Calne and Chippenham. Meanwhile, the income from the ice-house patent together with their own expansion enabled the two Calne businesses to increase their rate of mechanization. “At the High Street premises a new ice-house, furnace, and pigsties were built in 1869; and ten years later it was said that at the Church Street factory the pigs were moved almost entirely by machinery after they had been killed.” (british-history) “The first mechanical refrigeration was introduced in 1885. One 6 ton and one 4 ton Pontifex and wood absorption machines” (SB) “There was always close co-operation between the two firms and in July 1888 they were amalgamated as Charles & Thomas Harris & Co. Ltd.” (british-history) The legend of C & T Harris was born!

What was meant by the term “Wiltshire Bacon”?

Despite the huge influence that the Harris operation had in Wiltshire, Harris bacon and Wiltshire bacon has not always been the same as we can see from the many progressions of Harris bacon. I am sure that many of the innovations filtered through to the rest of the curers in Wiltshire and some did not, notably those protected under Harris patents.

The following advertisement makes it clear that C&T Harris, in their marketing drew a distinction between Wiltshire bacon produced by C&T Harris and those produced by other Wiltshire curers.

**There's Wiltshire Bacon
and Wiltshire Bacons**

But the genuine imported Wiltshire bacon comes to “The Bay” direct from Chas. and T. Harris, the famous packers of Calne, Wiltshire, England. This is the original, with a flavor unexcelled and to be had in Calgary only at “The Bay.”

Remember, then, that there are other so-called Wiltshire Bacons, but only one genuine, C. & T. Harris Wiltshire Bacon. “Get It at The Bay.”

Prime Cuts, lb. 40c	Fore-ends, lb. 25c
Choice Cuts, lb. 35c	(Grocery Phone 6131)

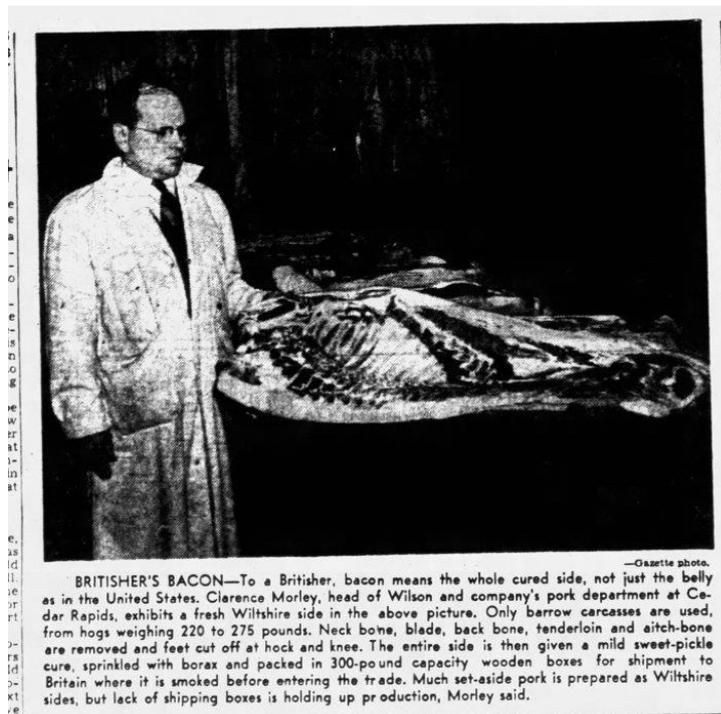
Calgary Herald (Calgary, Alberta, Canada), 02 Dec 1912, Mon

What exactly the definition is of Wiltshire bacon is something that was asked from early on. Under the Merchandise Markets Act, another case was heard in 1893 related to this question. John Harris from the firm C & T Harris, Calne was called as a witness. In his view, Wiltshire Bacon does not necessarily mean that the hogs came from Wiltshire. He is referenced as saying that “hogs came to Wiltshire from various parts of Great Britain and if cured there he would call it Wiltshire bacon.” Two views emerged. On the one hand, it seemed that the act “meant bacon that was brought up, fed, and cured in Wiltshire, whereas the evidence of Mr Harris was to the effect that swine were brought from various parts of the country into Wiltshire and sold afterwards as Wiltshire bacon.

Wiltshire Cut bacon

A distinction was made, albeit being of a technical nature, between Wiltshire-cured-bacon or hams, and Wiltshire-cut-bacon. One chapter in [Bacon & the Art of Living](#) is dedicated to the subject of this paragraph, [The Wiltshire Cut](#)

In England, bacon is made from a typical Wiltshire cut or from the whole side of the pig and not just the belly as in the USA. In the photo below a fresh Wiltshire side is shown. The neck bone, blade, backbone, tenderloins, and aitchbones are removed. The feet are cut off at the hock or knee. The entire side is then given a mild sweet pickle, sprinkled with borax, and packed in 300 lb. capacity wooden boxes for shipment to Britain where it is smoked before its sold.



The Gazette, CEDAR RAPIDS, IOWA, Tuesday, April 2, 1946

From Sweet-, Ice- and Pale Dried Curing to Tank Curing

The Harris family progressed bacon curing as often as the opportunity presented itself to remain competitive. At some point, they transitioned to tank curing.

– The re-use of old brine

We turn to the 1830 account of wet-curing where we identify important developments in brining technique. The farmer who wrote down the brining technique suggests that the brine mix must be boiled over a gentle fire for the impurities to rise to the top before these were skimmed off and the brine allowed to cool down. (The Complete Grazier, 1830)

When it is cooled down, the brine is poured over the meat so that the meat is completely submerged. Meat from small pigs is kept in the brine for three to four days and longer. An older pig may require one, two, or three days longer. (The Complete Grazier, 1830)

If the meat is intended for hams, it must be left in the brine for two days. At the end of the curing time, rub with pollard (a by-product from the milling of wheat, like bran) and cover with a paper bag to keep flies away. In warm weather, make sure that the blood is all drained from the meat and the meat is rubbed with fine salt before the brine is poured over. (The Complete Grazier, 1830)

Let us look carefully at the description given in the 1830 edition of The Complete Grazier of re-using old brine. The report says that wet cure is more expensive than dry cure unless the brine is re-used. First, the meat is well rubbed with fine salt. A liquor is then poured over the meat and “though the preparation of such brine may, at first sight, appear more expensive than that prepared in the common way, yet we think it deserves a preference, as it may be used a second time with advantage if it be boiled, and a proportionate addition be made of water, and the other ingredients above mentioned.” (The Complete Grazier, 1830)

The “other ingredients above mentioned” refers to the following. “First, let two ounces of saltpetre, one pound and a half of refined sugar, and four pounds of common salt be boiled in two gallons of pure spring water, over a gentle fire, and the impurities, that may rise to the surface, be carefully skimmed off. When this brine is cold, it should be poured over the meat, so as to cover every part.” (The Complete Grazier, 1830)

Three observations should be made here. The 1830 description indicates that this process is still in its infancy. Liquid brine, it says, may appear to be more expensive than if it is done “in the common way” which in the context should refer to dry curing or rubbing a mixture of dry ingredients onto the meat. Secondly, the edition of the Complete Grazier quoted is from the

5th edition which means that by this time, the description may already be 5 years old if it appeared in the 1st edition. The 3rd observation is that the brine can be used “a second time.”

This means that even though the practice of reusing old brine was already described in 1830, possibly as early as 1825, it is still very different from the complete system of tank curing that was later developed and the multiple (continues) re-use of old brines which is one of the cornerstones of the mother brine or live brine system of tank curing. It describes the start of the invention.

William Youatt who compiled the Complete Grazier repeats this process in his 1852 work, [Pigs: A Treatise on the Breeds, Management, Feeding and Medical Treatment of Swine; with directions for salting pork, and curing bacon and Hams](#). Here he writes, “in three weeks, jowls, &c, may be hung up. Taking out, of pickle, and preparation for hanging up to smoke, is thus performed: — Scrape off the undissolved salt (and if you had put on as much as directed, there will be a considerable quantity on all the pieces not immersed in the brine; this salt and the brine is all saved; the brine boiled down [for re use].” Notice that his 1852 description is far more “matter of fact” and he does not go into all the explanations and caveats he did in the 1830 description.

Youatt gives an important clue about the possible origin of the re-use of brine and it is not surprising that he points to Germany. The region of interest is Westphalia. In the above-mentioned publication, he writes, “*The annexed system is the one usually pursued in Westphalia : — ” Six pounds of rock salt, two pounds of powdered loaf sugar, three ounces of saltpetre, and three gallons of spring or pure water, are boiled together. This should be skimmed when boiling, and when quite cold poured over the meat, every part of which must be covered with this brine. Small pork will be sufficiently cured in four or five days; hams, intended for drying, will be cured in four or five weeks, unless they are very large. This pickle may be used again and again, if it is fresh boiled up each time with a small addition to the ingredients. Before, however, putting the meat into the brine, it must be washed in water, the blood pressed out, and the whole wiped clean.*”

Another interesting fact emerges from Youatt. In England, at this time, they had no idea of why the re-use of old brine worked so well is clear from the following comment he makes in the publication just mentioned. He writes under the heading, “*Poisonous Properties of Brine*” the following. “*It is a fact worthy of notice that the brine in which pork or bacon has been pickled is poisonous to pigs. Several cases are on record in which these animals have died in consequence of a small quantity of brine having been mingled with the wash, under*

the mistaken impression that it would answer the same purpose and be equally as beneficial as in the admixture of a small quantity of salt.”

Another interesting reference exists in literature related to the re-use of old brine. It was called the Empress of Russia's Brine. The ancient roots of boiling the brine take us to the country of Russia. It was prepared as follows.” Boil together over a gentle fire six pounds of common salt (that in most common use in Russia is rock salt), two pounds of powdered loaf sugar, three ounces of saltpetre, and three gallons of pure spring water. Skim it while boiling and when quite cold pour it over the meat, every part of which must be covered with the brine. This pickle may be used again and again if it be fresh boiled up with a small addition of ingredients. Before putting the meat in the brine, wash it in water, pour out the blood and wipe it clean.” ([Belfast News-Letter, 1841](#)). Make a mental note that this report came from Antrim in Northern Ireland and the year was 1841.

This intriguing brine clearly shows that the re-use of the old brine was not only practised in Westphalia in Germany but in Russia also, dating from a time well before the 1840s.

– Tank Curing: Invented in Ireland

The concept of the re-use of old brine was in the air around the world from early on and was notably reported on from Antrim in Northern Ireland. The man credited for the invention of mild cured bacon which later became tank curing was a prolific chemist, William Oake from Ulster in Northern Ireland. The earliest mention of mild cured bacon, as it became known, came from Antrim, Northern Ireland as far back as 1837. The chapter in *Bacon & the Art of Living* dealing with this progression is [Mild Cured Bacon](#). His system is discussed in detail in that chapter and a blow-by-blow comparison is made with dry-cured bacon.

The biggest benefit to consumers of the new system was the improved taste. The benefits to the curing company would be on two levels. On the one hand, is the speed of curing which became increasingly important as industrialization took hold and the concept of the factory. The other was the fact that expensive brine in Oake's system was continually re-used. The question comes up if this was Oake's invention.

The cornerstone of mild-curing is the continual use of old brine! It is what reveals the genius of Oake the clearest! He discovered it during the process of evaluating the preservation properties of different aspects of the curing process. What is it that causes bacon and ham to last a long time? He evaluated salt and discovered that on its own it does not have much antiseptic power. The other ingredient regularly used is saltpetre and similarly, it is not very antiseptic if compared to things like boric acid. Even combining it does not offer good

preserving properties, but the re-use of old brine is a different matter. If the same brine is used repeatedly and never replaced, it continues to give exceptional preserving power. Oake's training as a chemist taught him that there had to be something from nature at work but even if he is unable to identify it. He chose to rather harness it than explain it. This meant that his observations were very similar to that of Polenski. Polenski understood it. Oake used it! (See the important work done by Ed Polenski and his seminal article about nitrite curing, [The Polenski Letter](#))

The concept of the mother brine harkens back to the mother dough concept from the sourdough industry. They keep a small piece of dough that they constantly feed and re-use. They call it the mother dough. In some households, there are doughs of which the age is measured in generations. The genius of Oake was not to boil the brine and so destroy the microorganisms responsible for converting the nitrate to nitrite and which contribute to the flavour profile of the hams and bacon thus cured. This allowed for the re-use of bacon or ham brine for many years.

– Tank Curing: Spread to Denmark

The year was 1880. Denmark is a tiny nation. To remain competitive, they realised years earlier that they have to learn as much as they can from other nations and peoples and adapt. For a fascinating insight on the extent to which the Danes took this, read from [Bacon & the Art of Living, The Danish Cooperative and Saltpeter](#).

Every industry in Denmark was constantly looking where new discoveries and how they can adapt. In 1880 there was a strike among butchers in the Irish town of Waterford. Some shrewd members of the Danish pork processing guild happened to be in Ireland at that time, in Waterford. They promised the striking workers lucrative employment in Denmark and persuaded a number to return with them to Denmark. In Denmark, they quickly arranged for them to train their butchers and the new system of mild cured bacon invented by William Oake.

Eight years later this investment in continual education paid off handsomely for the Danes. The Danes were large dairy farmers and a sizable pork industry developed from the by-products of dairy farming. Before 1888, Danish farmers relied on selling all their live pigs in Germany. The Germans, in turn, produced the finest Hamburg bacon and hams from it and it was mainly sold to England. Disaster struck the Danish pork industry when swine fever broke out in the autumn of 1887. This halted all export of live pigs. Exports to Germany fell from 230 000 in 1886 to only 16 000 in 1888.

One of the most insane industrial transformations followed. In a staggering display of practical efficiency, the Danes identified the problem, worked out the solution and dedicated every available nation resource to action it. The creation of large bacon curing cooperatives was born out of the need to switch from exporting live pigs to processed pork in the form of bacon and to sell it directly to the country where the Germans were selling the processed Danish pork namely England. The project was a stunning success. In 1887 the Danish bacon industry accounted for 230 000 live pigs and in 1895, the number of pigs converted to bacon in that one year was 1 250 000 pigs.

After breeding and pig farming, the next step in the process is slaughtering. On 14 July 1887, 500 farmers from the Horsens region created the first shared abattoir. On 22 December 1887, the first co-operative abattoir in the world, Horsens Andelssvineslagteri (Horsens's Share Abattoir), received their first live pigs for slaughter. In 1887 and over the next few years eight such cooperative abattoirs were set up and there is still no end in sight for the ongoing expansion. Each is in excellent running condition. As in the case of the dairy farmers, each member of the cooperative has one vote. The profit of the middleman and the volumes exported for butter and bacon are determined by the cooperative. The market price is fixed in Copenhagen on a daily basis by an impartial committee.

William Oake's mild curing system or tank curing as it would become known became the way that Danish companies cured their pork.

– Tank Curing: Spread to Wiltshire

How exactly tank curing spread to Wiltshire is not known, but I have a very plausible hypothesis. I don't think that it came to Wiltshire from Denmark, but from Ireland and the man responsible for this was the son of William Oake, William Harwood Oake. At first, I believe that Oake distributed the mild cured bacon produced by his father in Ireland, in the Southwest of England. He set a curing operation up in Dorset, adjacent to Wiltshire. Here his firm, Oake – Woods, used his dad's basic concept of mild cured bacon along with the key re-use of the old brine and incorporated this in the American curing method of Rapid Curing, invented by Robert Davison. The result was a new system of curing called Auto Curing.

Auto curing turned out to be a highly patentable system and they became the British firm with the largest footprint internationally through the effective marketing of the auto cure system. For a detailed discussion on WH Oakes Auto Cured system, read [Oake Woods & Co., Ltd., Rapid – and Auto Cured Bacon](#), in [Bacon & the Art of Living](#).

It would have been natural, normal and to be expected that staff moved from Gillingham in Dorset to the Wiltshire curers. Slowly but surely, the fundamentals of the repeated use of old brines would have settled in among the Wiltshire curers. Still, the system of curing was at first not called the Irish method, but the Danish method. My guess is that the success of Tulip and the Danish marketing strategy of their bacon in the UK had much to do with this. Even if the Wiltshire curers learned the system from WH Oake in Gillingham, they could easily continue to refer to it as the Danish system due to its wholesale application in Denmark and the presence of a massive quantity of Danish bacon in England. Most certainly, Danish curers must have found employment in Wiltshire. It is a fascinating fact that this seems not to have happened in relation to the Harris operation and I suspect that Harris only acquired the technology either late in the 1800s or early in the 1900s.

– Tank Curing: The Harris Enigma

Clues to the date of the Danish adaption of the system and its subsequent transfer of technology to England come to us from newspaper reports about the only independent farmer-owned Pig Factory in Britain of that time, the St. Edmunds Bacon Factory Ltd. in Elmswell. The factory was set up in 1911. According to an article from the East Anglia Life, April 1964, they learned and practised what at first was known as the Danish method of curing bacon and later became known as tank-curing.

A person was sent from the UK to Denmark in 1910 to learn the new Danish Method. (elmwell-history.org.uk) The Danish method involved the Danish cooperative method of pork production founded by Peter Bojsen on 14 July 1887 in Horsens. (Horsensleksikon.dk. Horsens Andelssvineslagteri)

The East Anglia Life report from April 1964, talked about a “new Danish” method. The “new” aspect in 1910 and 1911 was undoubtedly the tank curing method. Another account from England puts the Danish invention of tank curing early in the 1900s. C. & T. Harris from Wiltshire, UK, switched from dry curing to the Danish method during this time. In a private communication between myself and the curator of the Calne Heritage Centre, Susan Boddington, about John Bromham who started working in the Harris factory in 1920 and became assistant to the chief engineer, she writes: “John Bromham wrote his account around 1986, but as he started in the factory in 1920 his memory went back to a time not long after Harris had switched over to this wet cure.” So, late in the 1800s or early in the 1900’s the Danes imported the Irish system and practised tank-curing which was brought to St. Edmunds around 1911. In the same way, it could have made its way to the Wiltshire curers.

It only stands to reason that the power of “old brine” must have been known from early after wet curing and needle injection of brine into meat was invented around the 1850s by Morgan. Before the bacterial mechanism behind the reduction was understood, butchers must have noted that the meat juices coming out of the meat during dry curing had special “curing power.” It was, however, the Irish who took this practical knowledge, undoubtedly combined it with the scientific knowledge of the time and created the commercial process of tank-curing which later became known as Wiltshire cure.

What we know for certain is that tank curing undoubtedly developed from the Oake Woods factory in Gillingham, Dorset and “diffused” into Wiltshire. It was probably independently incorporated into the Harris operation as was the case with the St. Edmunds Bacon Factory Ltd who both claim to have received the technology from Denmark.

So far with the historical consideration of Wiltshire cured hams and bacon!

Conclusion

The background of the legendary bacon, hams and gammons from Wiltshire is buried under mountains of information. It has been my pleasure unearthing these over the past 10 years and sharing them with the curing community. Combining the story, I uncovered with the application for special protection of the name in England is particularly rewarding!

I will transform this chapter into the story format of bacon & the Art of Living at a later stage, but for now, I retain it with its more “formal” character.

Please mail me with errors of any kind that I made or any additional information you wish to share. My SA number for whatsapp is +27 71 545 3029 or you can mail me at ebenvt@gmail.com.