

Editor's note

Points of interest:

- Coastal salt in the UK
- William Brownrigg
- La Rochelle meeting

The forgotten salt

Salt has many stories. Some like certain roads and routes have a continuity that comes from antiquity to the present day, others were lost and only scattered fragments of them remain, which like the old routes we have difficulty in reconstructing.

Although the production of salt of a non-mineral origin (from seawater or salt water sources) was regularly practiced in northern latitudes up to the end of the nineteenth century, much of its history remains unknown or poorly understood, either with regard to the areas where it was practiced or in relation to the techniques used. Documentary sources are scarce and sometimes archaeology, toponymy, landscape and the remains of old buildings are the best evidence for its rediscovery.

But it is also a compelling story that can be partially understood in the context of the major conflicts that besieged Europe for centuries, with their blockades and other constraints arising from wars and alliances, meaning that salt would be produced through absolute necessity even with production conditions that now would be considered totally adverse. And it also reflects climate – even the slight changes of the Medieval and later periods made some methods impossible, and stimulated new methods such as coal-fuelled boiling. It is therefore also a story of ingenuity and tenacity

The United Kingdom's participation in ECOSAL ATLANTIS brings to the project the story of this forgotten salt and the work to be done locally will certainly bring more knowledge - and greater visibility – to the old salt-producing places of the United Kingdom. Hopefully this new light on the subject will also bring ECOSAL ATLANTIS other forgotten places in the Atlantic Region, such as archaeological sites which, due to their own peculiar local conditions and traditions, are a little outside of the archaeology circuits of the other countries or regions.

The integration of places with these characteristics in the salt network is extremely enriching for the future route of the Atlantic salt pans, for it will certainly afford us some surprising insights into many fields, for instance geography because significant changes have been occurred to the coastline and in estuary zones, and also into flora, since one can find more or less isolated halophyte communities in some places both now and in the past, as there are some technological processes that limit the presence of certain plant communities.

So thanks to ECOSAL ATLANTIS these places need no longer be forgotten sites of salt and will instead become known as unlikely sites of salt production.

Renato Neves
National coordinator of ECOSAL ATLANTIS in Portugal

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Sun, silt, and coal: Coastal salt in the UK

Saltmaking in Britain has always been different from our Continental partners, since we are too far north for reliable large-scale solar evaporation. However we do have major resources of peat and coal (both often close to the coast), so British saltmaking has always tended to rely on fuel rather



Figure 1 – UK showing project area

than on the sun, or on a combination of the two. In this respect, Britain forms a 'hinge' between southern European solar and northern European thermal saltmaking. It is therefore not surprising that a number of different processes have been carried out – what may be less obvious is that these processes need very different environmental settings, leave very different field traces and archaeological evidence, and are often not clearly distinguished in historical books and documents. As a result there is a lot of confusion in the literature about coastal saltmaking, and the ECOSAL project has a lot of work to do to establish what techniques were really used, where, and when.

As we see it at present, the main processes were:

1. **Solar.** As on the Continent, seawater was run into a set of very shallow ponds to concentrate by evaporation to a strong brine. This was then run into smaller ponds where the salt crystallised out.

2. **Partial solar.** Seawater was concentrated by evaporation, but the brine was then lifted or pumped into panhouses, where it was boiled to crystallise the salt (Figure 2).

3. **Sleeching.** The salt-encrusted surface of saltmarsh silts was scraped off, the salt content leached out, and the resulting strong brine boiled in a 'saltcote' (a small building normally containing lead pans fuelled with peat or wood (Figure 3).

4. **The panhouse process.** Seawater was boiled in panhouses consisting of large iron pans built into a brick or masonry structure with built-in flues, and almost always fuelled with coal. The process could be controlled to produce different types of salt – rapid boiling produced fine-grained salt suitable for buttermaking, whereas slow simmering produced large crystals for fish curing (Figure 4).

5. **Salt refining.** Impure salt (most often rocksalt) was dissolved in seawater to form a strong brine, the impurities settled out, then boiled in a panhouse to produce clean white salt.

Other methods known in northern Europe may also have been used. For example, in the Low Countries, Roman and Medieval saltmaking was by 'selnering' (burning salt-impregnated peat, leaching the salt from the ashes, and boiling the strong brine), and in both Denmark and Holland eelgrass (*Zostera* species) was burnt, salt leached from the ashes to make a strong brine, and then boiled.

All of these processes can be grouped into three main types:

- Solar; evaporation with no use of fuel;
- Direct boiling; boiling of seawater without any prior concentration;
- Pre-concentration; removal of water or addition of salt to convert seawater to a concentrated brine, before boiling.



Figure 2: Lymington – brick-built panhouse and salt store to the rear, with dock in front.

Chronologically, Prehistoric and Roman saltmaking normally used a process involving fired-clay furnaces and pans, producing large amounts of waste ('briquetage'). Some of these sites almost certainly worked by direct boiling, others may have used some form of pre-concentration.

The main medieval process was almost certainly sleeching, though there is some evidence for partial solar, and some selnering and/or use of *Zostera* is quite possible. The panhouse process was almost certainly a British development, and may have been the first coal-fuelled industry anywhere in Europe (in the sense of being designed for coal fuel and requiring an understanding of how to use coal efficiently as a fuel – coal was certainly used occasionally in other processes as a substitute for wood or charcoal). It also required a plentiful and affordable supply of sheet iron for the pans. The use of coal fuel for saltmaking is first documented near Whitehaven (Cumbria, England) in the 13th century, but the fully-fledged panhouse process may have been developed in Scotland in the 15th century.

From the 16th century onwards, panhouse saltmaking was increasingly dominant, based mainly in Scotland and northern England (where coalfields occur on the coast). Partial solar sites became important in the 17th century (if not before) along the south coast of England, using cheap coal shipped from the northern coalfields; salt refining became important after the discovery of Cheshire rocksalt in the late 17th century, especially on the Irish Sea coasts with easy shipping from Cheshire. Sleeching and other small-scale coastal methods steadily declined.

In 1748 William Brownrigg's *The Art of Making Common Salt* could still describe sleeching on Morecambe Bay and the Solway, as well as panhouse saltmaking (Figure 5). But as first canals and then railways allowed the cheap transport of salt made from Cheshire and other inland brine and rocksalt sources, the British coastal industry collapsed. Within the ECOSAL project area, coastal saltmaking had probably finished by the 1860s, until some very recent revivals.

Mark Brisbane, David Cranstone, Roger Herbert (Bournemouth University)



Figure 3: Alnmouth, Northumberland. The wide flat mound (near edge behind the cows, other edges shown up by the lines of undergrowth) is the sleeching mound from a 12th century monastic saltworks.



Figure 4: Port Eynon, Gower, Wales. A 16th century panhouse saltworks – seawater was pumped into the stone-walled reservoirs (left of centre, with modern concrete sea defence to their left) into a coal-fuelled panhouse at the upper level

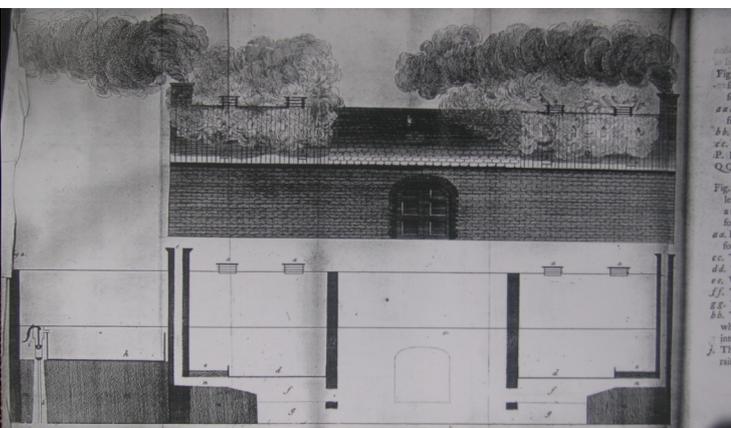


Figure 5: William Brownrigg's illustration of a panhouse in 1748, perhaps based on Saltom Pit saltworks at Whitehaven. Seawater was pumped into a reservoir on the left, then fed into iron pans at each end of the roofed building ('d'), heated by coal fires on firegrates ('f'); the ashpits below ('g') and chimneys at each end ('c') provided the draught needed for coal fires.

Character

William Brownrigg - Salt of the Enlightenment



There are men whose life and work fit perfectly into the spirit of a certain age – such is the case of William Brownrigg (1711 - 1800) and the English Enlightenment.

Brownrigg was a physician who studied at one of the major medical universities in Europe (Leiden - Netherlands), but he worked throughout his professional life at Whitehaven (Cumberland). Although still in the line of medical practice descended from Paracelsus, especially with regard to a somewhat fanciful pharmacopoeia, he had a very experimental vision and a wealth of innovative ideas on health and environmental conditions, relating these to the outbreak of epidemics that he followed, notably typhus. Another issue that interested him was the working conditions in coal mines, and the problem of the presence of explosive and suffocating gases (methane and oxygen-depleted air), which were causing many deaths and injuries to the miners. In this area William Brownrigg is a precursor of what would eventually become known as occupational medicine.

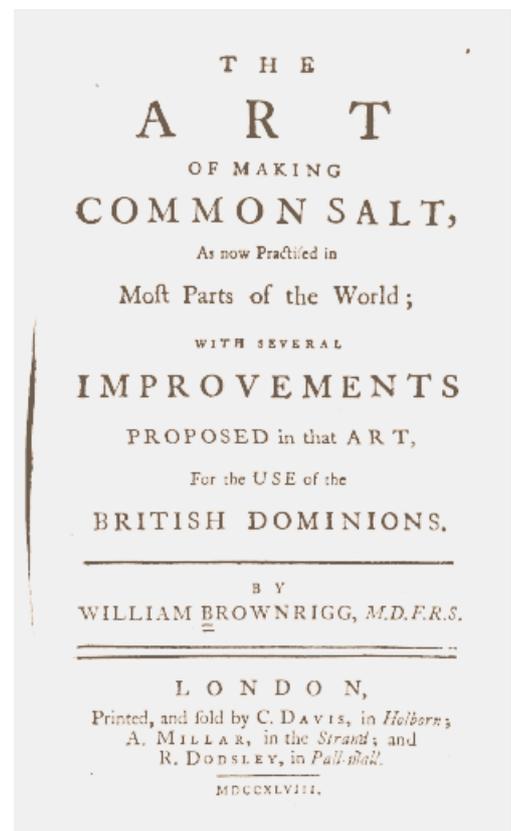
In his small laboratory he practiced not only chemistry and its applications to his pharmacopoeia, but he also worked in many other areas and was one of the first authors to describe the properties of platinum. He was a member of the Royal Society and published several articles and books under their imprint.

His interest in salt seems to derive not only from his experiments on evaporation and precipitation of salts, but mostly from a philanthropic concern to improve British production both with regard to quality and quantity. He realised that this would not only lessen external dependency, but also give impetus to the British fishing industry, particularly in Scotland where poverty had contributed to the 1745 'Jacobite' rebellion.

To this end he published a 300 page volume - *The Art of Making Common Salt, as Now Practiced in Most Parts of the World* - which addresses the problem comprehensively. For this task William Brownrigg must have consulted multiple sources, gathering a wealth of notes that appear on almost every page, citing other works and authors. It remains a major source for 18th century saltmaking, in Europe as well as in Britain.

Interestingly, another of his great interests was the landscape of the region where he lived and with which he was particularly fond. He was one of the mentors of the publication of the first tourist guide to the Lake District, probably one of the best known of Britain's National Parks.

In the various fields of research in which William Brownrigg worked there was always a strong inspiration of applicability, of the improvement of living conditions, of progress and rationalism, making him a man true to the spirit of the Age of Enlightenment.



Renato Neves
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Events

Partners' assembly (La Rochelle, France)

The first partners annual meeting of the project ECOSAL ATLANTIS was held in La Rochelle (France) between 16th and 18th of November.

In these two and a half days work, each partner presented the current status of the activities under its responsibility, allowing the other partners to know the state of progress of each action and of the project.

As it was planned in the meeting agenda, there were guided tours to the Ecomusée Port des Saline on Oléron Island and to the Ecomusée du Marais Salant on Isle de Ré.

The national project coordinators assembled on November 15th in Nantes for a global evaluation of the ECOSAL ATLANTIS Project.



University of Aveiro

Workshop “Salt, an enemy to kill or a product to know?”

On November 27 2010 a workshop was held on “SALT – an enemy or a product to know?” in the Crasto Canteen of Aveiro University.

This workshop was part of the action involving “Development Workshops” by Aveiro University. It was held in the presence of various experts from the areas of gastronomy, nutrition, health and food chemistry, who all shared their knowledge and experiences with invited members of the public interested in “Artisanal Sea Salt”.

It was also possible to have a meal tasting which used different types of salt (Traditional Sea Salt, Flower of Salt and Purified Salt) with the objective of clarifying the differences between types of salt and to sensitize the participants to the uses of “Artisanal Sea Salt”.



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