

# Salt Making in New South Wales from 1788 to 1900.

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## Overview.

Manufacture of salt from sea water was a more common activity in Australia between 1798 and 1900 than is usually noted by economic historians. While salt making is often listed amongst the minor and miscellaneous industries in various periods, there has been little attempt to examine the industry systematically in the same way as has been done with activities such as flour milling, brewing or tanning. That saltmaking has been little studied reflects the fact that the operations were frequently of such small scale that they went almost unnoticed by both the keepers of official records and by the writers of descriptive works in the colony.

Because NSW had no rock salt deposits, salt manufacture was necessarily based either on evaporation of sea water, or, in a few minor instances, on the collection of salt from deposits in dry lake beds. The primary dependence on sea water, of course, required that the industry was almost exclusively coastal or estuarine.

The task of producing salt was not simple. As sea water contains an average 2.5 - 2.7% sodium chloride (not all of which is recoverable) the production of 1 ton of salt required the evaporation or removal of some 49 tons of water. In addition, sea water is a complex solution of many salts, and there is a good deal of suspended matter in the water too. In the case of the additional salts, their differing solubilities, and their very weak concentrations means that these are either precipitated out before salt reaches saturation point and begins to crystallise (gypsum) or they do not reach saturation point until most of the salt has been

recovered. The suspended matter usually was removed by bringing the brine to the boil and adding a substance such as beaten egg white, animal blood, or a grease such as butter: this formed a frothy scum, which held the solid impurities, and which was skimmed off.

The process is much the same wherever salt is made by boiling sea water (or other brines), but as noted elsewhere, there are variations on the way in which the brine is brought to near saturation level, as salt makers often sought to reduce fuel costs by partly evaporating the brine by solar or other means.

The making of salt began early in the history of the colony of NSW, operations being reported as early as 1790. There were intermittent attempts to establish viable operations throughout the nineteenth century, but by the end of that century the industry was all but extinct with not even much in the way of physical remains to mark its existence. For convenience the progress of the industry can be outlined within a framework of five overlapping phases.

### **Salt for Survival (1788-c1810).**

In the infant colony salt was essential for preserving meat, both locally produced, and pigs purchased and killed in the Pacific Islands. We take salt for granted, but in the infant colony it was so valuable that Commissary Officers had to save the salt used to cap barrels of salt brought from England; as late as 1804 \$100 reward was offered for cakes of salt stolen from the American schooner **Independence**. Local salt sold as much as 6d/lb; imported salt was sold by the Commissary for 2d - 2½d per lb, but often resold for as much as 1/6 - 2/- per lb.

To provide salt, boiling operations were established on Bennelong Point by 1890, and re-established there in 1895. Almost certainly this utilised large iron pots heated over more or less open wood fires. In 1804 Governor King had two salt pans brought from England. One was installed near the coal pits, at Newcastle - this produced about 43 tons of salt between 1805 and 1808 when operations ceased: the second pan was established at Rose Bay, and operated to about 1890. Of course the high price of salt meant that anyone who could afford a few large pots could set up at a waterside location - and quite a few people did this; they either carried out operation themselves, hired labour to do the boiling, or perhaps worked on a profit sharing basis.



Early in the nineteenth century, interest in salt making increased: emancipist Andrew Thompson set up an oil-fired salt pan on Scotland Island (Pittwater) to produce 200 lb of salt per week. In about 1808, the Blaxland brothers began operation of a salt works at their Newington estate (near junction of Haslem's Creek and Parramatta River). This apparently relied on solar evaporation, and occupied some 8 acres of swamp land on the estate. This enterprise was to become the most durable salt-making operation in NSW, as it continued into the 1880s.

### **The Merchant-Saltmakers (c1805-1830).**

The advent of the Bass Strait sealing trade added new impetus for salt-making in NSW; the commodity brought from England was both scarce and expensive, and the salting of skins could be done with salt of inferior quality. The Sydney merchants were considerably involved in the sealing trade, and many set up salt-making operations to meet their own needs. Amongst these were Garnham Blaxcell, who had pans at Cockle Bay, and Matthew Bacon at Middle Harbour. A number of others indicate that they were conducting operations, but give no location. Almost certainly these operations were of small, low investment type based on portable iron try-pots. A new departure in this period was refining salt gathered from salt lakes on Kangaroo Island.

### **Long-term Investment (c1826-1850).**

From 1826 there began a series of attempts to establish salt-making on a long-term basis, all of these establishments being at Newcastle where the attraction was cheap fuel (coal). In contrast to earlier operations those established in this period involved large inputs of fixed capital. The Blaxland's Newington works was a forerunner of this scale of operations, and indeed it was Gregory Blaxland who established the first plant at Newcastle. He reckoned his investment in plant at £1,500. The site was one acre on the sea front at Newcastle. The operation was short-lived because Blaxland was not allowed to work coal on his land, and had to pay high prices for coal from Government pits. The plant ceased operation early in 1828, and the equipment sold.

Next into the lists was the Australian Agricultural Company, which planned salt-making operations to make use of small coal it believed to be unsaleable. The first investigation of the project began in

1830, and a decision was taken to send out 8 pans and 2 salt makers, but no doubt influenced by capital problems, the company's directors sent out 2 pans (and no salt makers). The pans arrived in 1834 but no salt was made until 1837. The problem was that the project lost momentum when it was found that the small coal, rather than being unsaleable, was in demand at 9/- per ton. The next problem was that the operation was not very efficient. A report indicates the first trial yielded  $\frac{1}{2}$  ton salt from 40 tons sea water, nine men being required for the process. Little was done until 1835 when another trial was made, and it was proposed to lease the plant, but this came to nothing and the structure was taken for use as a store. It seems that expectation of profit was countered by the change in the value of small coal, and by the fact that water drawn from the Hunter estuary had a low salt content.

Across the estuary at Stockton A W Scott had established an industrial estate on his 50 acre holding. A woolen mill and iron foundry were built there and plans laid for a sugar refinery and soap factory. On this estate Scott built a salt works, which was producing by 1839, and the salt was judged to be of high quality. The heavy investment included a large brick boiling house and brick chimney, and a novel innovation for concentrating brine before boiling. This latter structure known as a graduation house consisted of a 40 ft wall of bundles of brushwood over which the salt water was sprayed, greatly increasing surface area, and accelerating evaporation. This works continued operation until about 1848, which suggested that it was profitable, but was not rebuilt after it was seriously damaged by a storm in 1848.

### **Years of Neglect (c1848-1892).**

In this period Blaxland's works at Newington had the field almost entirely to itself. In 1869-70 there seems to have been some small-scale attempt to harvest salt from lake beds near Wentworth, and official statistics reveal two other operations in the Sydney region during 1870-72, but no additional information is available. The only noteworthy attempt to move into the industry was at Wollongong where two local men undertook the establishment of a plant to integrate coke-making, fire-bricks production and salt boiling. It was intended to use waste heat from coke and bricks to evaporate sea water, on a site adjacent to Wollongong Harbour. Three large salt pans were purchased



and a number of coke ovens built. The plant produced excellent coke, but there is no evidence that salt was actually produced before the firm was liquidated in 1879. No reason is ascribed for the failure of the operation, but almost certainly being too eager to invest in more and more fixed plant too quickly. Following the collapse of this operation the only event of significance in respect of the salt industry until 1892 was the closure of the Newington works in the mid-1880s.

### **Resurgence and Extinction (c1892-199).**

The final chapter in the sorry story of salt making in NSW focuses on the Illawarra region where in the space of five years three separate operations were established and wound up. Although differing in the nature of their ownership and extent of capitalisation, these operations have a common element of technology in the form of the graduation house previously mentioned in connection with Scott's Stockton works.

#### **Bulli Coke Company.**

Although not the first of the three salt works to be announced, this Company was the first to establish its operations. In 1893 it began to establish an **experimental** salt making plant to utilise waste heat from the coke ovens, and also embodying a graduation works to pre-concentrate the brine. In Europe, graduation works would be 9-15 metres high, and extend over 2 km in length: that of the Bulli Coke Co, built on the headland behind the jetty, was a mere 6m high and 45m long. For this experiment the Company allocated £1,000.

The tests of efficiency of the graduation/waste heat process, and quality of salt, was showing promise, but before the final stages of the tests could be carried out the economic plight of the whole coal and coke industry forced the Bulli Coke Company into liquidation and in consequence this attempt at salt making never reached a commercial stage.

#### **Illawarra Salt Company.**

This firm was established by a group of petty capitalists, mainly mine managers and engineers, who had subscribed an initial capital fund of £500. Their works, established on a small site on the southern end of Austinmer beach, were intended to have an initial output of 200-300 tons annually, using cheap slack coal from nearby mines. There was originally

no provision for any pre-concentration of brine, a matter which caused the local press to castigate the proprietors. Following the collapse of the Bulli Coke Co the Illawarra Co purchased the graduation works at Bulli and removed it to their Austinmer site. Although announced late in 1892, the Company's plant was not operational until some two years later: the firm was beset by lack of capital funds, and by a series of mishaps. Eventually it began operation, and operated intermittently in late 1894 and 1895, before going into liquidation in 1896.

### **The Sydney Salt Company.**

Late in 1893 the formation of the Sydney Salt Company was announced, but it was not registered for another year. When finally registered it had the substantial capital of £2,500 which figure was later increased by a further £1,000. The company planned to build its works at Austinmer, on Hicks Point (Long Point) near the Austinmer jetty. The promoter of the Company, and its manager, was one A A Lycett, who had been involved in management of salt works in Cheshire. Lycett added a new dimension of expertise to the industry (all previous works being operated by inexperienced persons who had gleaned knowledge mainly from written sources, and none from experience).

The plant was extensive, including a large boiler and steam pumps, a graduation works 9m high x 45m long, two boiling pans, a large finishing pan, drying shed over furnace flues, and a 33 ft high stack. The company's plant, unlike the Illawarra Co, was protected from the weather by large sheds.

The Company began salt production late in 1895, the quality of the salt being very high. But no sooner had production commenced the graduation works was demolished by a storm. This was rebuilt, but it appears the shareholders were not happy with the way things were proceeding, for in December 1895 Lycett commenced to operate on lease rather than as a manager. He was energetic in promoting his salt, but could not sell enough to cover costs and his own assets were sold up to pay wages. The Sydney Salt Company sold up the plant soon after: the buildings and brickwork were demolished and the materials sold. With this liquidation ended both the Sydney Salt Co and the NSW Salt Industry.

Why did these Illawarra industries fail? The Bulli Coke Co's operation failed for reasons not connected with the salt production.



The Illawarra Co's failure was almost certainly the product of under-capitalisation which resulted in production difficulties and high costs together with difficulty of marketing. The Sydney Co's failure is more difficult to pinpoint. It was well capitalised, there was technical expertise available, and the product was good: NSW imported up to 20,000 tons of salt annually, a good deal from England, and there was an import duty of 20/- per ton. But these factors could not offset the prejudice against local manufacturers, nor could the firm compete with the low costs of a rapidly expanding salt industry in South Australia, where salt was produced from salt lake beds in the Yorke peninsula.

### Postscript

This is on the surface a story of failure. There is today not even any physical legacy of the industry which involved so many people and so much money and equipment. But the story does contribute to our understanding of the willingness of our pioneers to try to make the most of opportunities, and to their ability to adopt and improvise when isolated by space and time from the source of technology in Britain and Europe. It is this that makes the story worth telling.