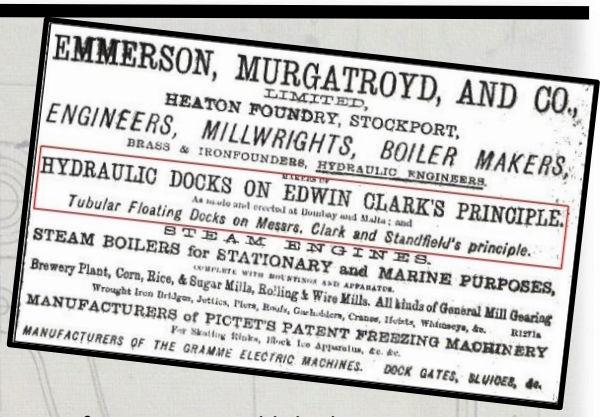
Company History @ Murgatroyd's



Hoffman Bearings

The UK's first ball bearing factory was established at New Street on Rectory Lane in Chelmsford 1898 by cousins Geoffrey and Charles Barnett and financed by American ball bearing machine manufacturer Ernst Gustav Hoffman from where the company took its name

The Hoffman Manufacturing company rapidly expanded and soon achieved worldwide fame for their precision bearings boasting accuracy better than 1/10,000 of an inch (2.5 micrometres) for all their products

Hoffman's bearings were later used in the first transatlantic flights and extensively on machinery during WWI. For many years it was Chelmsford's main employer with more employees than the Marconi Company

1892 – Hoffman patented a ball lathe

1897 – Barratt's persuaded Hoffman to relocate in the UK

Since the 1900's Hoffman supplied all major manufacturers including Rolls Royce, Bentley, Daimler, Austin Riley and many more. They were also involved in the aircraft industry. The company amalgamated with Ransome and Marles Bearing Co and Pollard Ball and Roller Bearing Co in 1969. The works finally closed on 23rd December 1989.

Mather and Platt

Mather and Platt were established in 1852, a partnership between Colin Mather and William Platt. Colin had leased part of the Salford Iron Works from John Platt, William's father, in 1845. Mather and Platt became famous for manufacturing centrifugal pumps. They also manufactured an innovative turbine pump designed by Osbourne Reynolds. Due to expansion they purchased a factory in Newton Heath, Manchester in 1900. The iron foundry was the last part of Salford Iron Works to be moved finally closing the factory in 1938. In 1978 the company was taken over by Wormald International. The company still survives today run by an Indian company, as a subsidiary of Wilo A G.

The Salford factory was made famous by L S Lowry's matchstick Industrial paintings.

Aeroflex

Parmiter, Hope and Sugden of fluvent electrical works in Longsight, Manchester.

1899 – Hope acquired Donnison, Parmiter & Barber trading as Parmiter and Hope, becoming Parmiter, Hope and Sugden in 1901. Vernon Hope (1877-1949) took out his first patents for the Fluvent fuse in 1913-14, following with the Aeroflex fuse in 1923, and many other patents. He was undoubtedly a pioneer in the enormous developments in the use of electricity. In 1967 the company changed to Fluvent Electric. Mr Hope was Macclesfield born, involved with the Town Council after WWI, Mayor in 1926 and Justice of the Peace in 1938.

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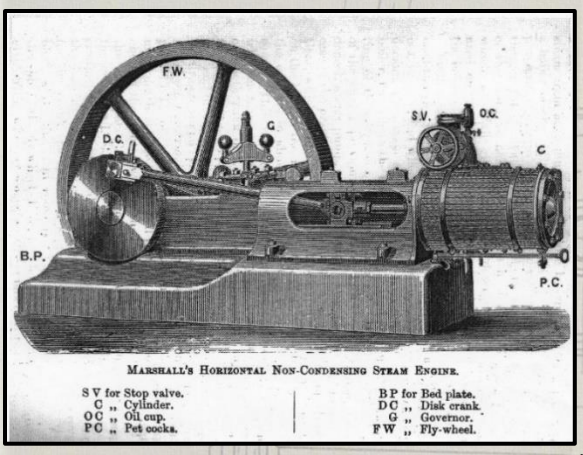
The Steam Pump and Thomas Matthews

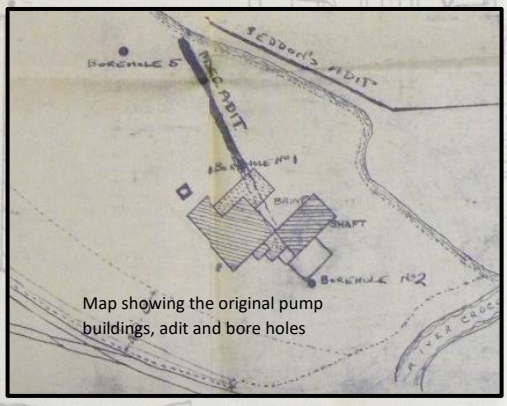
Beam type steam-operated pumps date back to the early 18th century with the introduction of the Newcomen Engine. This was used for the drainage of mines in Cornwall, Derbyshire & elsewhere. Steam for brine pumping was first used when the Boulton and Watt 1775 Patent engine was installed at the new Lawton Salt Works at Rode Heath.
Steam engines were widely used for brine pumping in the 19th century. Little is known of the steam pump of 1890, but the pump bucket and a pumping rod have survived. Ralph Oakes ordered the parts required for the original pumps from local firm Foden Sons & Co Ltd, based at Elworth in Sandbach. Various items ordered at the request of Ralph Oakes dated August 1889 included pipe work, working barrel, boring, and facing barrel, brass drop box and bucket etc., the total amount came to £27. 2s and 3d.



Steam engine design similar to Murgatroyd's as identified by Jack Ashley, pump man.

The new shaft had a Beam pump installed, driven by a Horizontal Steam Engine, thought to be by John Thom Ltd of Walkden, Manchester; the boiler could have been a Lancashire or Cornish type.
Unlike the pumps we see today, the steam pump did not have a balance beam but had a longer and wider single piece beam, about 15 ft long and 12 inches wide. The coupling rod from the engine was connected at one end and the pump ran at twelve strokes per minute. The steam engine was directly coupled to the pump, speed was controlled by the governor and steam supply valve to the engine. This was critical and the steam valve was cracked open carefully until the correct speed was attained.

The singular pump worked from 1889 until 1932 when it was accompanied by the present John Thom No 1 Pump. *"The steamer stayed in case the electric failed. We always had a fire under that boiler, if anything happened to the electric one, I used to get the steamer going and it was away in no time. The works first had electricity with the installation of the No 1 pump in 1933, until that time the works relied on duck lamps and gas. Jack Stubbs was the contractor, Harry Arthurs and Frank Twiss wired the pump, then they wired up the works after that. With the new electric one, it would take 9-10 hours from 7.30am to 5pm to run the open salt pans, no night pumping was required'. 'I never knew the name of the steam engine, the fire lift was a cornice single furnace boiler about 30-foot-long and I think it was made by Joseph Adams & Sons, Wolverhampton. It went lower down in the brine shaft than the John Thom. These go to about 200 feet, that original one went right to the bottom, about 260ft".*

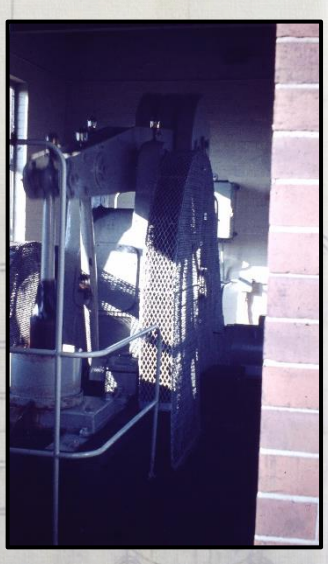


Map showing the original pump buildings, adit and bore holes

Thomas Matthews Pump

Upon the construction of the new factory at Elworth in 1949 it was decided to sink another borehole to give additional supply. Several trial boreholes were drilled; but only one found brine and this was at 200ft. In 1950 borehole No 5 was fitted with a Thomas Matthews Pump No 2. Its position was 25 yards from the 1889 shaft and enters the adit. This trail hole was enlarged to 21" internal diameter (I.D.) to a depth of 195ft and drilled to 330ft at 18" I.D. The upper 80ft length was opened to 24" to take an outer case. Inside the outer case and reaching down to 195ft was the lining proper of 18" outer diameter (O.D.) Two rings 18" O.D., one at 198 ft and one at 280ft, kept the well pipe central in the borehole. The well pipe was slotted with 5 ft deep slots between 200 and 205 ft in the region of the brine stream, then perforated for a further 40 ft where it passes through the upper salt rock, left plain for a further 40 ft where it passes through the middle marl then perforated for the remaining 50 ft where it stood in the lower salt rock.

This pump was removed in 1977 and moved to the Elworth site as a monument at the works entrance for many years until it was destroyed with the rest of the plant in 2010.
The red brick pump house No 5, can be seen in the yard adjacent to our site, it is on the local list for protection.



Thomas Matthews pump working in the 1960's

Company History @ Murgatroyd's

The Open Pan Salt Works

The rise of the Salt Industry in Cheshire

Until the Sixteenth Century, East Anglia was the main centre of salt production, although brine springs and pits of Cheshire had been a noteworthy source of salt since before Roman times. The Romans introduced small lead pans which were heated over wood fires and this technique persisted unchanged up to the Sixteenth Century.

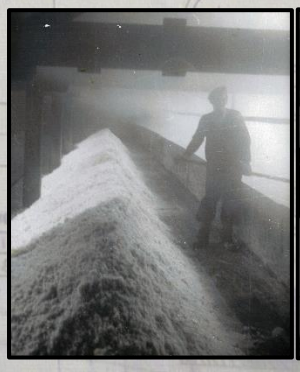
The decline of the East Anglian sea salt industry brought about an increased interest in Cheshire Salt. This encouraged increased production and the introduction of large iron pans. Naturally, the timber fuel supplies of the area became depleted, and coal was introduced from nearby Staffordshire and Lancashire coalfields.

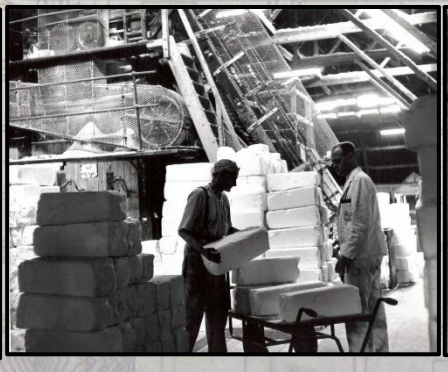
Cheshire soon became the centre of England's salt production and a worldwide export trade was also established. The Cheshire Salt industry of the last three centuries has been well documented and its development has generally followed the pattern of the Industrial Revolution.

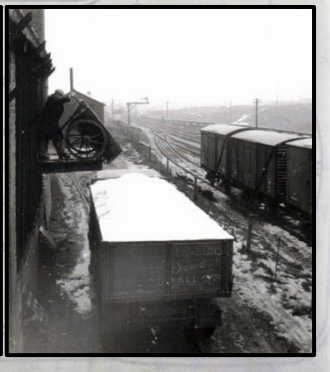
1. **Discovery of Rock Salt and the rise and fall of rock salt mining**
2. **Export trade, Canal Network, and the Weaver Navigation**
3. **Changing fortunes of the salt towns**
4. **Salt Taxation**
5. **The Salt Union**
6. **Brine Evaporation methods – introduction of Multi-effect Brine Evaporators**
7. **Chemicals from salt**

The salt-making process needs a brief initial explanation: Brine, from the saline water found naturally in the geological deposits underlying Middlewich, was the source for salt. At certain locations, the brine breaks out at the surface and can be collected for salt-making. This was how the earliest brine was found. During the medieval period brine pits were dug and brine was pulled out by bucket and sent along pipes or wooden conduits to the salt-houses or "Wych-houses". The brine was stored in "ships", long wooden troughs, or in barrels at the salt-houses, and was boiled in lead vats (or "leads") over open hearths. The people who undertook the boiling process were known as "Wallers" and often the salt-making area was referred to as the "walling-lands".

Technological innovation in post-medieval times included the move from "leads" to iron "pans", and after the canal was constructed, narrow boats were used to ship the salt, rather than pack-horse or wagon as had been used previously. By the late 19th century deep shafts were sunk to find new sources of brine, and pumps were used to lift the brine into the saltworks. The growth of chemical industries created a whole range of new uses for salt. During the 19th & 20th centuries Middlewich became a centre of alkali and caustic soda production, as well as many other salt-related activities.







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Elworth

The post-war years saw the construction of a Chlor-alkali plant to produce vacuum salt and the basic products of brine electrolysis. These processes required purified brine; the raw brine was brought by pipeline alongside the railway from the pump house.

Dr Herbert Levinstein had sourced land within Elworth for the new company in 1942 and acquisition of brine rights & planning permission went ahead on a strip of land, between the canal and railway. On 25th May 1947 Murgatroyd's Vacuum Salt Co. Ltd. was formed.

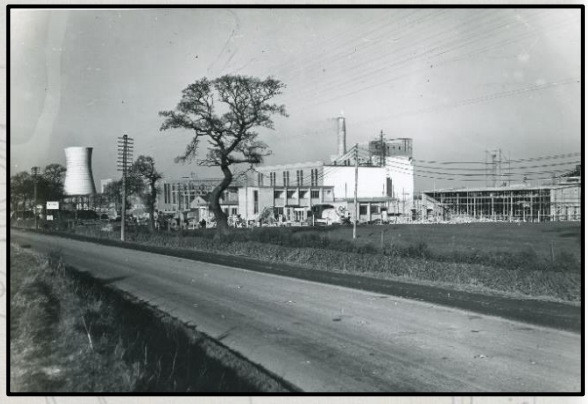
The design was by Sloan & Lloyd Barnes and construction, led by A Monk and Sons, continued for over two years. The new company produced vacuum salt, Chlorine, Caustic soda, hydrogen, hydrochloric acid, and sodium hypochlorite. Chlorine was used for the growing P.V.C. plastic industries, resulting in continuous expansion. A mercury cell installation giving high grade caustic soda was completed in 1956 and the chlorine capacity of the factory doubled overnight.

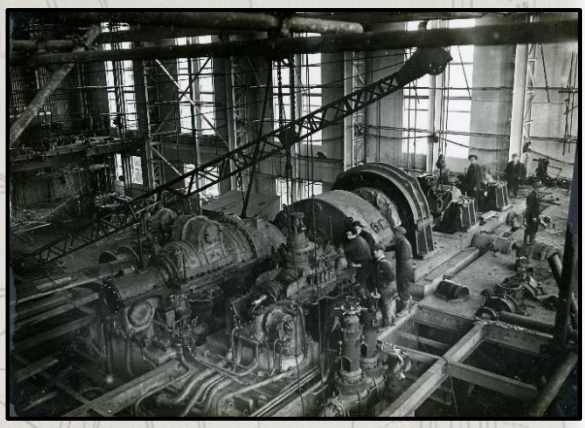
An important part of the new project was the construction of the three-mile-long brine pipeline alongside the railway from the old works in Middlewich, as new brine facilities could not be made on the Elworth site. To meet the increased demand for brine it was decided to put down a new borehole direct to the brine stream. This proved to be a problem since there was no accurate data on the direction of the adit in the original brine shaft. A firm of geophysical consultants was engaged and following their recommendations, four successive boreholes were drilled, all failed to hit brine. There is an anecdotal record that the fifth borehole was based on the advice of a retired salt worker involved in the digging of the 1889 shaft; sought out by McDermott, the manager of the salt works. Borehole No 5 found brine and an order for the Thomas Matthews deep well pump was placed on 31st December 1948. The quotation was for £2,230 and under 12 months delivery.

The decline of Open Pan salt making began early in the 20th Century, overtaken by an energy crisis, World Wars, changes in law and major modernisation. One by one the open pans financially failed as modernised Vacuum Plants became more viable. Murgatroyd's Open Pan works closed in December 1966. The brine shaft, as Ralph Oakes, foretold was still going strong, supplying brine to the Chemical plant until the 'Wild Brine' embargo took hold, finally shutting the 'profitable' brine pumps in 1977. BP Chemicals owned the Murgatroyd's site at this time, they struck a deal with British Salt sited at a very large and modern plant built in 1969 using the latest technology, and only just down the road.

As technology and the markets advanced, the new owners BP Chemicals commissioned a new plant in Baglan Bay and the Middlewich site went through a large programme of modernisation and rationalisation.

When the pumping ceased on 14th April 1977 the working depth of the saturated brine in the shaft was 73ft from floor level. In the following months, the level in the shaft slowly rose, today it is around 15ft and probably varying with the water table. This level when compared with the ordnance datum of the River Croco at Town Bridge indicates that it need not be very different to the level in the brine pit at the bottom of Kinderton Street as used in Medieval times.





Photographs taken from the picture albums belonging to Sloan Lloyd Barnes, illustrating the building of Elworth. These photographs were donated by Philip Green, a selection of which you can find on our website.