The History of Spike Island

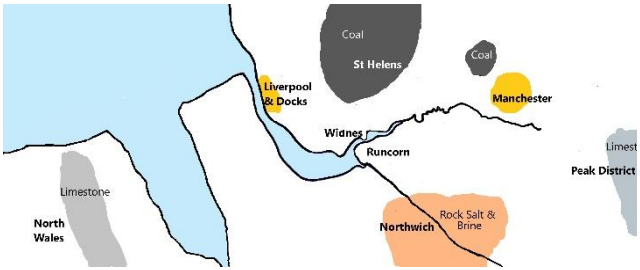
by Bob Roach

2026

‘Widnes’ Before Industry

Prior to 1820, Widnes was a collection of villages (e.g. Appleton, Farnworth, Ditton, Woodend) in a rural setting. People largely worked in agriculture and local crafts such as weaving and sailcloth making,. Apart from the River Mersey, it was an isolated area that had probably changed little for centuries.

Major Reason for Change



Map showing the location of required materials

There were large sources of coal and salt nearby, and limestone not far away. There was a demand for coal in mid-Cheshire for boiling brine (salt dissolved in water) to remove the natural reddish colour of salt. Also, there were the growing townships of Liverpool and Manchester that wanted coal and alkali.

Raw salt containing iron impurities – requires purification to produce white salt

Transport Developments for Moving Coal from the St Helens Area to the River Mersey

Packhorse ‘train’

Before there were waterways available, the main way of moving coal from St Helens to the Mersey was by chains of pack-horses. This was slow and it severely limited how much coal could be moved.

The Sankey Canal (Britain’s first industrial era canal) was opened in 1755 to move much more coal to the Mersey**. In the early days the canal ended 3 miles away from** Widnes at Fiddler’s Ferry - the lock that joined it to the River Mersey is still in place. Once there, it could then be shipped along the river to either:-

- Frodsham from where it could be shipped up the River Weaver to the mid-Cheshire salt field, or
- Liverpool - then a growing city and port.

What is now Spike Island and West Bank were unaffected by change for some time.

By 1835, this isolation had ended due to the development of railways. The **St Helens to Runcorn Gap Railway** had opened two years earlier. (Runcorn Gap was what the area that is now known as Spike Island was called – ‘Gap’ due to the narrowness of the River Mersey there). This railway was built for carrying coal from St Helens to the Mersey. With this being planned in 1829 when Stephenson’s historic railway joining Liverpool and

Manchester commenced operating; it was a very early railway.

In response to the competition that the railway from St Helens presented, the Sankey Canal (constructed for the same purpose some 80 years earlier), was extended from Fiddlers Ferry to Spike Island.

The railway crossed the canal on to Spike Island at a swing bridge at the top of the Spike Island Urban Heritage Walk – the bridge there now is fixed in place but the rails on which the old one swung are still in place.

Current bridge over the canal where the railway used to pass over, as below. The turning old mechanism for the old bridge can be seen

Engine leaving Spike Island on the bridge over the Sankey Canal – the building that is now Catalyst in the background, on the right

Why Manufacture Alkali Manufacture?

Alkali is a chemical that reacts with some other chemicals to produce a different chemical – **this can be a very useful characteristic.**

Leblanc Process for Making Alkali – Soda Ash

It was named after Frenchman Nicholas Leblanc who developed the process. It was a very inefficient and wasteful process - for very ton of saleable product there were several tons of highly noxious waste that was dumped wherever there was spare land available. However, f**or decades it was the only way to manufacture alkali for making much needed products such as glass, soap and for use in the cotton industry.**

By 1840, Leblanc factories were established in other locations such as St Helens and Runcorn.

Leblanc Process in Widnes

John Hutchinson

John Hutchinson, aged 28

Local folklore is insistent that one summer day a young man came to relax and regale himself with snig pie at the Boat House Inn. Perhaps he travelled from St Helens on the Runcorn Gap Railway: if he did, when he stepped out of the train he stood within a few yards of the scene of his future destiny. He was an ambitious young man, seeking to establish himself in the world. … His thoughts ran on salt and coal, pyrites and vitriol. He had seen the canal with its coal barges; he knew that a few miles away lay the inexhaustible salt fields of Cheshire: as he ate his eel pie, he made his

decision. So the story goes, and in fact, it must have happened in some such fashion. **Hardie p 7.**

N.b. The 'Boat House Inn' is now named the Mersey Inn. It remains a popular location because of its riverside setting and is still known as The Snig.

'Boat House Inn', now the Mersev Inn

Then 21 years of age, Hutchinson was working in an alkali factory in St Helens. As a result, he was aware that coal mine owners had some control of the charges for transporting coal from St Helens to the Mersey - they kept them low by making high charges for transporting salt to St Helens.

Hutchinson realised that as a result of this, alkali manufacturing costs at Spike Island would be significantly lower that at St Helens where he was working. Also, the transport links existed to bring in other materials such as limestone & iron pyrites & to export finished product.

In addition, there was plenty of available land and, unlike St Helens, there were then not many people living nearby to object to the unpleasantness of a Leblanc factory, although many would be required once the industry was established here.

Being the first to consider setting up an alkali factory, he had the choice of where to locate his factory. He chose a strip of land along the eastern (far) side of the canal, a setting where he had good access to the railway, canal & river.

The Spike Island Urban Heritage walk features remnants of the site of his factory.

Others Would Follow and Set Up Leblanc Factories

Hutchinson also realised that such was the ideal nature of this area for alkali manufacture, other industrialists would probably want to set up factories nearby. Therefore, he leased much of the local land - anyone that did follow would have to go to him to rent sites for their factories and for areas where they could dump their waste.

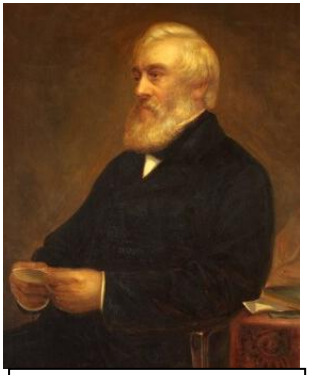
Many did follow, with James Muspratt, William Gossage, Henry Deacon, Holbrook Gaskell, William Pilkington being examples.

All these works burned a great deal of coal, invariably from low chimneys. This was photographed from by Driffield, a works manager who probably took it from the roof of his factory.

Smoke over south Widnes – Photo by Driffield

Hutchinson's Ruthless Nature

William Gossage thought he had found a way to recover the expensive sulphur that was discarded after stage one of the Leblanc process and entered into agreement with other Leblanc manufacturers to recover it from their waste.



William Gossage Painting in Catalyst

When Gossage's hopes proved to have been unrealistic, all the factory owners except for Hutchinson released him from the contract. He required that Gossage forfeited a strip of land along the side of Mersey Rd where he went on to construct his No. 2 factory. He also built a 'head office' on that land - this is now the location of Catalyst Science Centre and Museum.

Stages in the Leblanc Process

First Stage - Manufacture sulphuric acid.

This needed a source of sulphur, the one ingredient that wasn't available nearby. A major source of this was iron pyrites (a chemical made up of iron and sulphur). Whatever the source, sulphur was an expensive ingredient.

As sulphuric acid was difficult to transport due its highly corrosive properties, it was usually manufactured at Leblanc factories for immediate use. This was what Hutchinson did.

Heating pyrites in a furnace released the sulphur which was used to produce sulphuric acid. The two arched brick buildings on Spike Island that are featured in the Urban Heritage walk were probably built to protect already fairly derelict remains of pyrites furnaces.

Brick Arches over remains of pyrites kilns

With iron pyrites being a mined rather than a manufactured resource, it tends to contain a range of other chemicals such as copper, arsenic and small amounts of silver. As a result of the quantity of pyrites being burned in Widnes by several other factories that were set up following Hutchinson's lead, several copper recovery businesses were set up locally. NAMES

A major source of pollution of the Leblanc process was that this expensive material, so essential for getting things underway, finished up as waste, and waste that remains unpleasantly smelly and noxious on a long term basis because of the sulphur. There was a vast amount of it dumped on large areas of ground around Widnes.

Second Stage – Produce Salt Cake

Sulphuric acid and salt (brought from mid-Cheshire) were heated to a temperature well above that of boiling water and the mixture was stirred. Initially, this was done by hand using very long and heavy metal poles – there are several in the heritage area

/museum at Catalyst. Later, a mechanical means of stirring was introduced.

This produced a substance called saltcake, the desired product at this stage, and also hydrogen chloride gas, then known as muriatic acid.

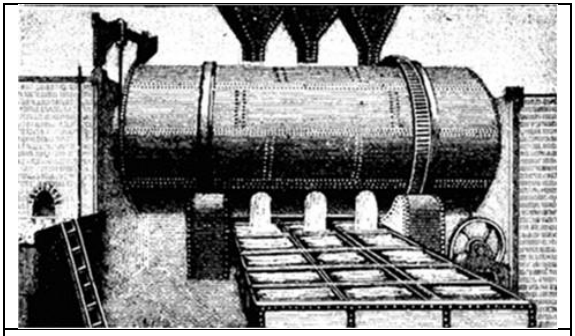
Initially, nothing was done to make use of the hydrogen chloride, and it was released into the atmosphere, killing any nearby vegetation. Although this gas could readily be absorbed in water to remove it from the atmosphere, it was only when threatened with Government action that Leblanc factory owners did this.

Even then, making the local water courses acidic wasn't ideal because it killed off any life that had been there.

It would be some years before ingenious industrialists found ways to convert this hydrogen chloride to chlorine, a chemical that was useful. Some of the pioneering work to do this was done by local industrialist Henry Deacon and his chemist Ferdinand Hurter.

Third Stage – Produce Black Ash

Crushed limestone and powdered coal were added to the saltcake and heated in a revolving furnace at a high temperature to produce Black Ash. This was a mix of Soda Ash (the required product) and other chemicals. This was run off from the furnace into metal trucks where it was then allowed to cool to a solid in the trucks.



Leblance Revolver Furnace

Fourth Stage – Extract Soda Ash from the Black Ash

Having solidified on cooling, the blocks of Black Ash were tipped out of the metal trucks and broken up by men wielding sledgehammers. Being the only soluble component, the soda ash was separated from the other material by dissolving it in hot water. Once so separated, the excess water was boiled off, crystalising the soda ash in the process.

Sledgehammer Gang

Waste from Leblanc Factories

There was at least 2 tons of noxious (noxious because of the sulphur) for every ton of soda ash produced. Over the decades vast amounts of this waste were dumped in many locations - **such sites remain toxic now**.

Many local people over the age of 70 will recall the area known as 'Ditton Alps' that was more or less where Dundalk Rd is now in Widnes.

'*Ditton Alps*'

Many more will recall the attempt to make a golf course in that area – initially, it was successful, but the pollution eventually broke through the covering layer. Hopes of being able to deal with the pollution and re-open the golf course were abandoned about 10 years ago.

Increase in Population of Widnes (approx.)

Year	Population
1821	1,400
1841	3,200
1861	7,000
1881	25,000
1901	29,000

Where People Came From

Life as an agricultural worker in the British countryside had become challenging, not least due to the introduction of machinery, e.g. an early form of ploughing reduced the need for the ground to be hand dug. Many were attracted to move to an area where the Industrial Revolution had created a demand for workers. In factory a setting, rather than their lives being determined by the seasons, they now faced long hours in routine work in cotton mills or factories.

Also, significant numbers of people came to Widnes from outside England, such as:-

Wales

As well as a similar movement from countryside to towns as in England, because the Muspratt family had an alkali factory in Wales as well as in Widnes, some of their Welsh workers moved to Widnes.

Many of the Welsh people who had moved to Widnes retained some of their traditional lifestyle, e.g. there were Welsh chapels. People of Welsh origin would often dress in traditional clothing on special occasions. Apparently, they had an annual eisteddfod - what a pity that no longer happens.

Ireland

The Great Famine, also known as the Irish Potato Famine, was a period of mass starvation and disease in Ireland from 1845 to 1852.

Many people sought to leave Ireland, sometimes dying as they walked to Dublin to sail to Liverpool. Some planned to then board another ship to go to some

distant places, whilst some aimed to settle somewhere in England, e.g. where they had family contacts. Quite a few settled in Widnes.

Lithuanians (although often described as Poles)

Due to Russian oppression, many Lithuanians emigrated. Those that came to Widnes usually did so in about 1880 via Scotland. With their names being difficult for local people to spell or pronounce, they were often given shorter names that local people could manage to say and to remember.

Incomers Not Welcome

In 1892 Edward Moss, **the Member of Parliament for the local area** called on the Government to *'take some steps to put a stop to the immigration of foreign paupers into this country*.'

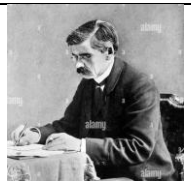
Leblanc Process in Widnes – Acidic Gas

For the first 20 years of the Leblanc factories in Widnes, acidic gas was released into the atmosphere, killing everything green in the area and affecting all living and working nearby. It would have been quite easy for the factory owners to dissolve this in water, but it was only when faced with it being a likely Government requirement did they do so.

Even then, the acidic water was allowed to flow into streams and the river.

It was only in about 1867/8 that two processes became available to recover chlorine (a very useful chemical) from hydrochloric acid that had previously gone to waste.

- One was developed by Lablanc factory owner Henry Deacon and his Research Manager Ferdinand Hurter,
- and the other Walter Weldon, a talented scientist and literary figure.

		
Henry Deacon	*Ferdinand Hurter*	*Walter Weldon*

This chlorine was a boost to the then struggling Leblanc factories because it could be used to make bleaching powder, a saleable product because it was a means of storing and transporting the gas.

The Spike Island Urban Heritage Guide includes a location that is apparently where there was a Weldon Tower for recovering chlorine from hydrogen chloride gas.

Stone bases said to be where Weldon Towers were

Working and Living Conditions

Working conditions

The working conditions in a Leblanc factory were dreadful, with long hours of physically demanding work, often done in sweltering conditions and with little or no regard by employers for health and safety. The 'bleach packer' job was probably the most unpleasant one but the best paid (more about them later).

Living Conditions

In an era before any form of local government, there were few of the amenities that we take for granted nowadays, e.g. refuse disposal, clean water or standards for the quality of housing.

As a result, families of Leblanc workers usually lived in small, badly built houses near the polluting factories. There was little restriction on entrance to factories, with the result that children were sometimes killed or injured when taking food into a factory for their father.

Beer drinking was significant. In part, this was because of the need to replenish liquid after working long shifts in hot conditions. Also, the pub would have been a place of some warmth and comfort in contrast to many of the nearby houses. With the quality of drinking water being poor, beer was also a healthier option because the water used was boiled in the making of the beer. However, this changed when a good supply became available with the opening of a reservoir at Pex Hill, near Cronton in the late 1860s.

Gossage's Works

What is now the Catalyst Science Discovery Centre was built by Hutchinson: later it became the head office for the Gossage soap works, one of the largest soap producers in the world at the time. The Gossage factory spread over the flat land below Catalyst right up to the edge of the canal – all that area that is now grass and trees was covered in large sheds with train tracks going into some of the sheds.

Decline of Lablanc Factories

By 1900 the Leblanc process was in decline and by 1920 it had more or less closed down. More modern & less polluting processes to make the required chemicals had become established in Northwich (ammonia soda process) & Runcorn (electrolysis of brine). Both these continue nowadays, albeit greatly developed over the decades.

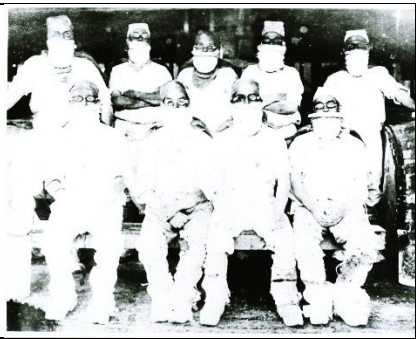
The renovation in the 1970s of the Spike Island area to what we see today was a major task. Around 2010 the planned route of the approach roads to the Mersey Gateway Bridge passing to the north of Spike Island, required special measures to remove pollution along its route before construction could begin.

Chlorine

An important property of chlorine is its ability to bleach colour in textiles, a key requirement of the textile industry in the Manchester area. However, such are the poisonous and powerful properties of chlorine gas, it is difficult to use that directly. However, by absorbing chlorine gas into a powder, particularly slaked lime, bleaching powder was produced. Although this was a rather unpleasant substance in itself, it could be stored, transported and used in that form as an alternative to chlorine gas.

To produce bleaching powder, thin layers of slaked lime was spread on the floors and shelves within a large shed. The shed was then sealed and filled with chlorine gas for several hours for the chlorine to be absorbed in the slaked lime. At an 'appropriate' time, the seal was broken to release, hopefully, as much of the un-used chlorine as possible and then the Bleach Packers went in to shovel out the powder that held the chlorine.

Although many of the jobs in the Leblanc industry were dreadful as seen by modern standards, this method of making bleaching powder has become a key means of depicting how grim work in the Leblanc industry was. The bleach packers used to wrap themselves up as much as possible to avoid being affected by the chlorin atmosphere.



Bleach Packers

Living and Working near Leblanc Factories

This was one of the first industrial processes for making a chemical and used noxious ingredients and the amount of noxious waste (galligu) was significantly greater than the amount of the required chemical that was produced.

With the Leblanc process operating at temperature far about that of boiling water, the work involved was physically demanding, dangerous and damaging to health. As already said, particularly in the early stages, a large amount of acidic gas was released that, as well as affecting the workers, affected people living nearby and killed off vegetation.

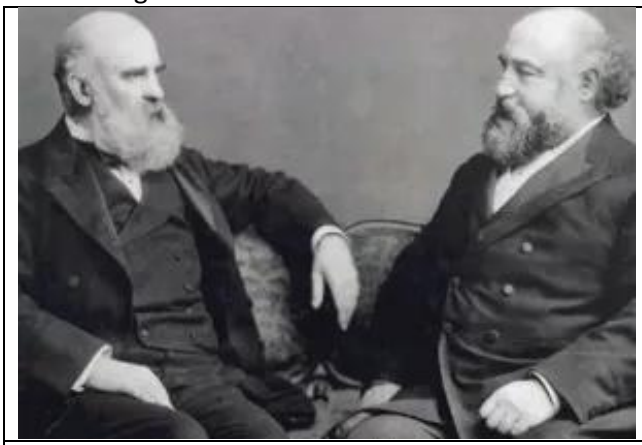
Most of the tasks in a Leblanc works required muscular effort and made some demand on the judgement and initiative of the industrial worker.

Better Ways of Manufacturing Alkali

In due course, two more modern and efficient ways of manufacturing alkali were developed.

Brunner Mond – now part of TATA

John Brunner and Ludwig Mond met when working for Hutchinson – quite likely in what is now the Catalyst Building. They decided to set up their own chemical business but which one! Mond (with his European links) heard of what was called the Solvay process, Solvay being the name of the man who developed it. He visited Solvay and decided that his new process was the one to go for.



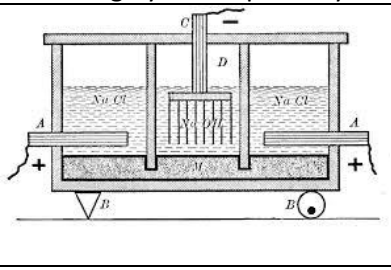
John Brunner (left) and Ludwig Mond

Caster-Kellner – now part on INEOS

This was another new process, developed separately by both American Hamilton Caster and Carl Kellner. Based in Runcorn, it used electricity to convert brine (very salty water) to alkali and chlorine gas.

The last use of the Leblanc process was in about 1920, probably extended by a few years due to the demand for chemicals in World War1 (1914-1918). Both the Brunner Mond and the Castner-Kellner processes

continue to operate in or near their original locations, albeit in highly developed ways.



Early Castner Rocking Cell

Hamilton Castner

John Hutchinson - Early Death

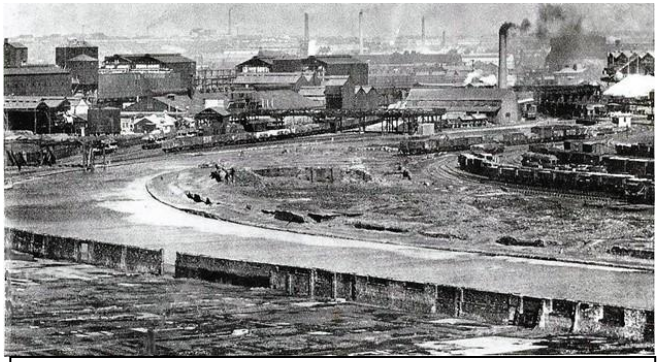
In 1865 at the age of 40 years Hutchinson died at his home. The cause of his death was certified as consumption – tuberculosis as it later became known as. He was aware that he was dying, although he wasn't religious, he received the support from the priest at St Bede's Church near Appleton Lodge where he lived.

When stricken by his mortal illness, Hutchinson expressed his friend [Fr Fisher} his desire to be buried where the latter would pass by his grave daily on his way to celebrate mass. **Hardie p 30.**

He was buried as he requested - his grave is on its own by the Presbytery door, i.e. the door to the priest's house, not the main entrance to the church. Until the 1950s, tuberculosis (also named consumption) was a serious and widespread illness that usually resulted in death. As well as Hutchinson, Hamilton Castner died from it aged 41.

John Hutchinson's Grave

Views of Spike Island



View almost anytime from the demolition of Gossage's Soap works on the near side of the canal anytime from the early 1930s to the early 1970s when the area began to be improved

View from similar location in 2007
Photo by Peter Vardy
Later efforts to repeat this photo have been blocked because of the subsequent growth of trees looking in that direction

The End