

# LOCAL INDUSTRY CONTRIBUTES TO WAR EFFORT

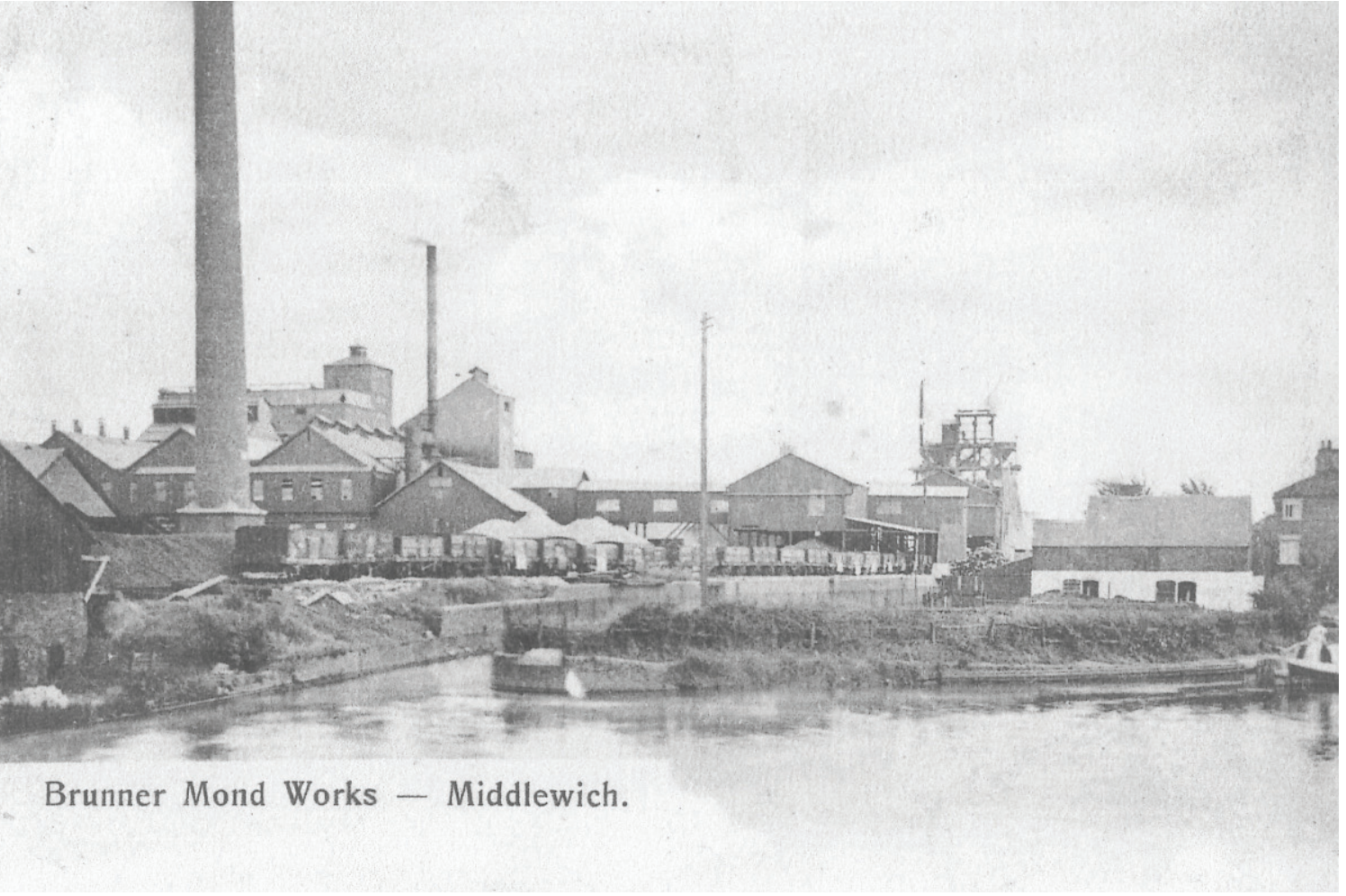
## In the Great War in 1914 Brunner Mond put their resources at the disposal of the nation.

Lord Moulton, Head of the High Explosives Department of the Ministry of Munitions, was told that the Country was lacking in ammonium nitrate for use in weaponry. He turned to Brunner Mond & Co, who had a reputation in this field, and asked them to produce nitrate of Ammonia; the process of treating calcium nitrate from Norway by using ammonia and carbonic acid to produce nitrate of ammonia was a workable plan.

Brunner Mond set about organising the process required, firstly starting at Lostock Works, then opening a new experimental plant at Plumbley and a much larger plant at Victoria, Northwich. Ultimately Lostock was supplied with Calcium Nitrate from both Plumbley and Victoria.

Resources were limited and the Norwegian supply proved insufficient so Brunner Mond began experimenting with nitrate from Chile Saltpetre, this process was successful although problematic and new plants were built under a Government scheme. Not only was the process successful in England, Brunner Mond made a free grant of it to the United States of America.

Because of the extreme nature of TNT the main works established at Rudheath (Gadbrook Works) was at least ½ mile away from domestic housing and water tanks were placed in each unit with a piping system. This was to ensure that fire was immediately extinguished, on one or two occasions this proved invaluable.



Brunner Mond Works — Middlewich.



An aerial shot of the Middlewich Brunner Mond Works, ideally situated between the Railway and canal networks. In the background is the open pan works of Murgatroyd's.

There was also a high demand for Trinitrotoluene (TNT). Local manufacturers were urged to supply sulphuric and nitric acid but a way forward was still required to enable teams of (mainly) women to safely load the shells, this task was also dealt with by Brunner Mond. At its manufacturing height, sixty tons of purified TNT was produced per day.

A third material, of which the country found itself short, was picric acid or trinitro phenol. Brunner Mond prepared synthetic phenol (carbolic acid) after a few weeks work by the company chemists in a make-shift plant. It produced 130 tons a week at its height from 1915 to 1918/9.

*“We have been indebted to your company for the manufacture of the bulk of the largest component of the high explosives used by this country in the war.”*  
Lord Moulton January 1919

**2,688 men from Brunner Mond's numerous works joined H. M. Forces in WWI. 1,790 returned and 291 paid the 'supreme' sacrifice.**

Brunner Mond made it clear that any volunteers for active service would get their support not just through security of work but wages too. Married men had half wages paid and a proportion paid for single men. The problem facing the company now was how to keep the company going when faced with staff shortages and war work consuming a great deal of time. The company had to keep trading, if only at a marginal profit. The 48 hour week became a 53 hour week, but even this did not go far enough. The solution was to employ women.

## Gadbrook in Rudheath was staffed almost entirely by women, 545 were employed working with TNT and Ammonium Nitrate.

In recognition of valuable services rendered during the War in manufacture of munitions, the King made the following appointments to the Order of the British Empire:-  
**J. G. Jarmay to be Knight (K.B.E.)**  
**H. Glendinning to be Commander (C.B.E.)**  
**A. W. Tangye to be Officer (O.B.E)**  
**F A Freeth to be Officer (Military Division) (O.B.E)**

*On behalf of the directors and the whole of the workpeople of the company, I wish to offer to you our heartiest congratulations and best wishes on your release from military service.*

*The loyal response to the Nation's call made by you and your comrades has been a source of great pride and gratification to the Company and all connected with it.*

*We rejoice that you have lived to return again to be amongst us, and we fervently hope the future, the security of which is so greatly due to your efforts and sacrifices, will be worthy of your exertions.*

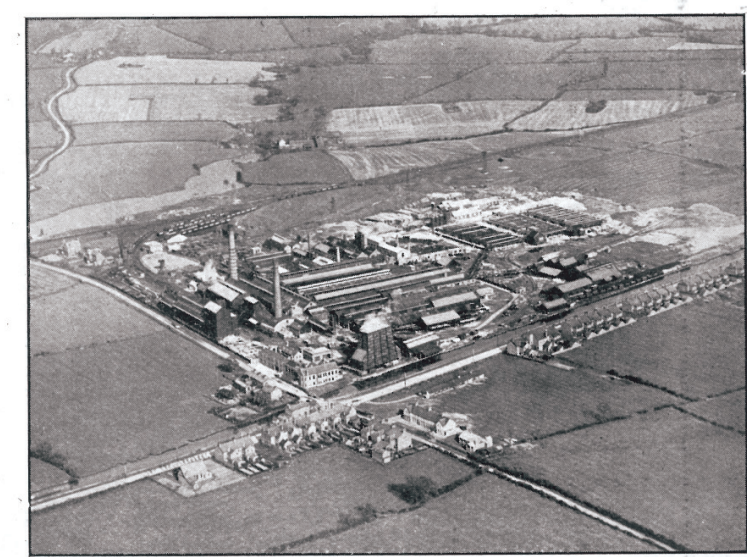
*Roscoe Brunner*  
Chairman of Directors, Brunner, Mond & Co., Limited  
March 31st 1919

The Middlewich fallen, all employees of Brunner Mond & Co.  
**Royal Artillery – George Henry French, Percy French, Frank Wilton.**  
**South Lanc. Regt – Arthur Harrison**  
**Royal Engineers – Chris Carter, William Jones.**  
**Middlesex Regt. - Harry Lowe**  
**Lancashire Fusiliers – William Duncan**  
**Machine Gun Corps – John Willie Maddock.**  
**Royal Air Force – Fred Hough**



Brunner Mond from the Canal. In WW2 Middlewich Urban district Council feared this site would be targeted by the Germans and authorised smoke screens to help with camouflage.

ELECTRO BLEACH & BY-PRODUCTS LTD.  
MIDDLEWICH CHESHIRE.



Aerial view of the Company's Works.

Largely due to the war and development of the chemical industry product ranges of chlorine expanded, especially since 1945.

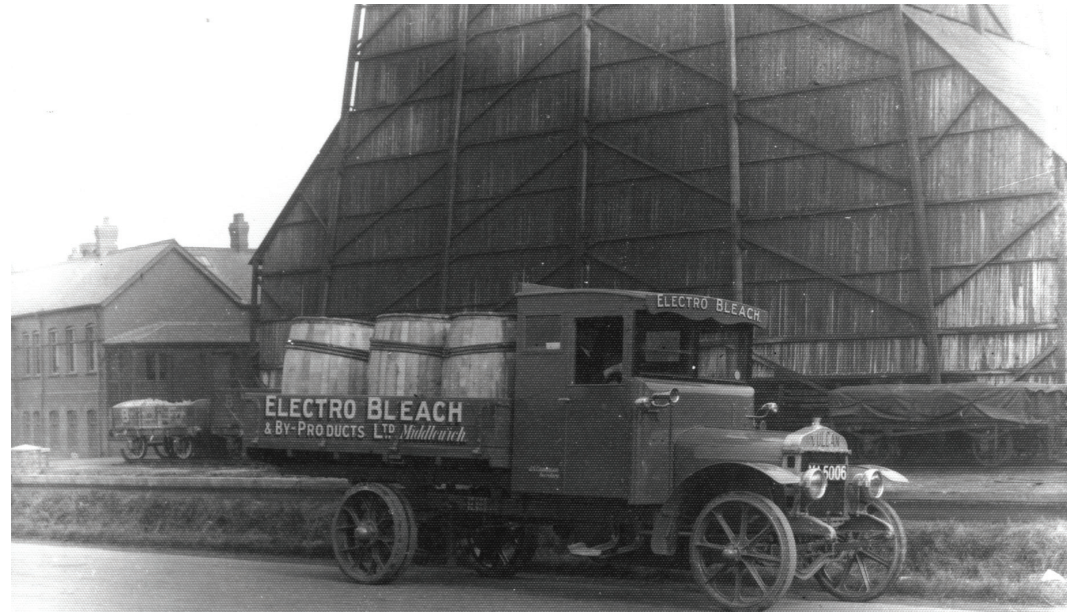
The era of the Great War in terms of the salt industry is significant in that the process of multi effect vacuum brine evaporators began. This process was destined to end the open pan operations, however due to the differing qualities and sizes of salt produced in a pan and the inability of a vacuum producing the same crystals the two processes lay side by side for nearly 70 years.

In 1917 Luke Hargreaves landed in Russia with the intension of establishing a factory using the Hargreaves-Bird process for the Russian Government. With the onset of the Communist Revolution the plan fell through. Mr Hargreaves returned to England, in view of the successful operations of the U boats in 1917, these voyages to & from Russia was very hazardous.

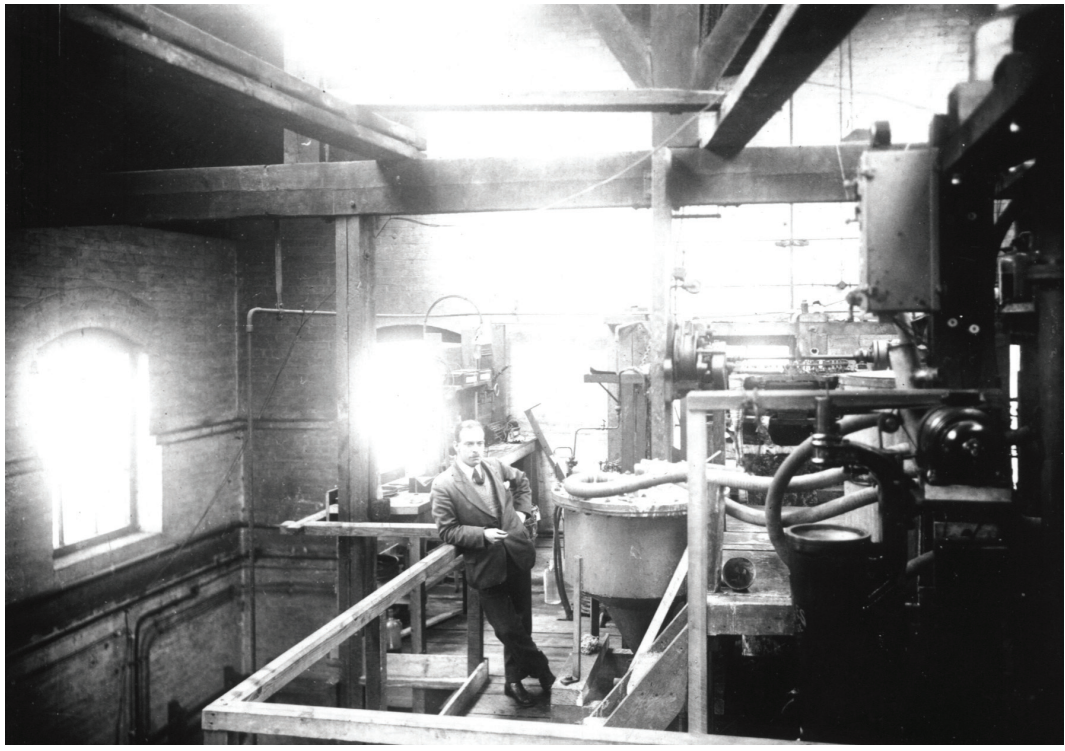
## A shortage of ammunition played a significant part in the role of the chemical industry. Britain generally was hampered by man-power and chemical component shortages.



The Memorial which still stands outside Ours Sanitary-ware.



Early transport vehicle, a Vulcan, at Electro Bleach.



Luke Hargreaves standing in the pilot plant, The Metal Deposition Research Project.

“By 1917 thanks to the new munitions factories and the women that worked in them, the British Empire was supplying more than 50 million shells a year. By the end of the war, the British Army alone had fired 170 million shells”. Despite Germany’s industrial advantage over Britain before the war and in its early stages, it was Britain’s chemical advancement particularly with pyrites and saltpetre that secured the chemical race, especially in explosive production by 1917.

There was no option for Britain but to develop their own chemical weaponry, developing counter chemicals to protect against gas attacks. During the war, chemical usage was; Chlorine – 93,800 tons used, Phosgene – 36,600 tons used. The Allied Nations overtook Germany 1917 and 1918 in terms of successful and cost effective manufacturing.

This war was labelled as ‘The Chemists War’. The Hague Treaty of 1899 – prohibited use of ‘poison or poisoned weapons’ in warfare. Tear gas was not seen as being against this treaty. It was Germany who used the first killing agent of Chlorine, a by-product of their dye manufacturing, counter measures then had to be introduced, wet handkerchiefs at first then developing pad respirators etc. British outrage at Germany’s use of poisonous gas at Ypres, seen as cowardly and ‘non-English’. By April 1915, 168 tons of Chlorine had been deployed.

The Electrolytic Alkali Company were not only the first to establish a commercially viable cell but also introduced the salt vacuum process to Middlewich, and produced Chlorine gas and sodium carbonate, bleaching powder, soda crystals & caustic soda. The company also manufactured Sesqui Carbonate of soda and carbonate of lime; these processes were of vital importance to manufacturers and the Great War effort, both at home and on the front line.

The Electrolytic Alkali Company, by then the Electro-Bleach and By-products Company was taken over by Brunner Mond in 1919, becoming part of the ICI merger in 1927 and closing in 1930.

## MIDDLEWICH SALT WORKS IDENTIFIED DURING THE GREAT WAR PERIOD

- Verdin Cooke established 1903 at Bowfields open-pan salt works, Booth Lane
- Middlewich Salt Co. (1908, later Cerebos) at Bowfields Booth Lane
- Brunner-Mond & Co Alkali manufacturers, Brooks Lane
- Murgatroyd’s Salt Works Co., Brooks Lane
- Seddon, Henry, & Sons Ltd Salt Works, Pepper Street and Wych House Lane
- Simpson L. A. & Co salt merchants, Brooks Lane
- Electrolytic Alkali Co. (Electro-Bleach by-products which was taken over by Brunner-Mond in the 1920’s)

Between 1900 and 1912, the salt industry in general was dealing with declining markets abroad and with regards to soda / ammonia works, problems with production and efficiency.

In the case of Murgatroyd’s Salt Works this was now under the supervision of Dr Herbert Levinstein, having gained control of the company on the death of his father Ivan in 1916. Ivan Levinstein had three sons, the eldest took no interest in the company and the youngest Gerald Levinstein was killed in Flanders in the same year as his father.

The Levinstein interest wasn’t just the Murgatroyd’s Salt Works but other ventures including Blackley Dye works in Manchester, during the war the fortunes of both companies turned. Before the outbreak of war German supplies were used in the dye-works process, the British government had neglected the industry and only now realised the importance of dyed cloth supplies for the military uniforms and kit. As Murgatroyd’s supplied salt to the dye-works this meant a significant increase in production, whilst losing men to the war effort. Records show that 145 tons of salt were despatched to Blackley per month by rail in 1913. By the time war ended, the company was delivering 900 tons of salt per month.

While some companies’ fortunes were changing for the better, being involved in chemical processing, the Open Pan Salt Works who were general and export traders were suffering. Thanks to John Goodier, his deposit of Seddon’s letters from the First World War paint a picture of Henry Seddon and Sons fortunes through the campaign.

A lot of paperwork exists concerning the ‘starred’ occupations and movement of labour, written by Roland Seddon. Roland complains that orders received from Simpsons, (Salt packers in Middlewich) alone are 498 tons of salt which they are having trouble producing mainly due to lack of men, but also supply of coal, shortage of horses and hay to feed them.

By 1915, 45 men had enlisted from Henry Seddon’s and sons, all are named with the job at the works. From this year “starred men” have an opportunity of appearing before a tribunal to explain their roles, as the jobs “are not readily understood by those who have no experience of actual salt making”  
The final lists of people working at Seddon’s, their address and occupation, became attested men. They are then graded into a group system to go before a final committee. In 28th Jan 1916 the Salt trade is now fully on a list of reserved occupations.

**“I do hope they don’t touch lump-men, or we shall be entirely closed, 59 of our men have gone in the army and a large number on munitions. We have 87 men less than when war started and a large proportion of these left are old men who cannot do ½ a day’s work”**  
**Roland Seddon 15th February 1917.**

Letters from Seddon’s concerning recruitment and the necessity of keeping ‘starred’ men have many interesting stories. Calling up papers were served with efficiency but the letters reveal that sometimes ‘starred’ men were accidentally called. The company were duty bound to get involved on behalf of their staff. The letters are a great insight into the struggles of the industry, even to the point of not knowing how old their staff actually are!

This ‘starred’ list did not always consider how various businesses worked. This is illustrated by complaints from Seddon’s that certain war work required salt, such as food preservation, cheese production, chemical weaponry, textile dyes etc. but failed to protect the workers who produce the salt and thereby did not understand the industry. This left a number of problems for salt and chemical manufacturing as a whole.