



BOLDON CAMP HERITAGE GROUP

A.Reyrolle & Co. Wartime Production 1939 to 1945



October 1941 German Reconnaissance photograph showing the Reyrolle works and the River Tyne. The numbers refer to a list of specific targets in the Reyrolle works.

Background and Overview

Alphonse Reyrolle, a French electrical engineer, founded the company that bears his name at a site in Hebburn in 1901. The company specialised in electrical switchgear to serve the increasingly high voltages used in the developing electrical distribution industry. The switchgear needed to be very different from the light and socket switches we are used to in the home today. The operation of breaking a high voltage electrical circuit results in the generation of high energy sparks or arcs that can result in substantial damage, including welding the contacts closed with obviously dire consequences. The company developed and grew, coping well with the early death of its founder in 1919 at the age of 55.

Like many industrial businesses A. Reyrolle & Co. became engaged in a variety of activities to support the war effort during World War 2. However it should also be recognised that their prime product of electrical switchgear was also vital in enabling the ongoing safe supply of electricity for the production of armaments, aircraft, ships and supplies of food so essential to the success of the Allies against Nazi Germany.

As well as the war work, of which more later, Reyrolle were affected by employees joining the armed forces thus depleting the expertise available. Some of those volunteers were returned to Reyrolle on the basis that their work on switch gear and their specialist knowledge in this area was of more benefit to the nation than their undoubted enthusiastic participation in the army, navy or air force.

For those that did join up Reyrolle paid an allowance to bridge the gap between service pay and their earnings in Hebburn. This did not continue throughout the war but diminished as time passed. However, this does demonstrate the care that the company vested in their skilled and loyal workforce. Sadly there were some of those employees who volunteered and went to war were unable to return. For those that gave their lives for the country during the Second World War a Roll of Honour has been created and can be seen at the end of this article.

The manufacture and supply of switchgear continued throughout the wartime period, the equipment being essential to the war effort in maintaining a safe electricity supply for all aspects of the defence of the British Isles and to the eventual victory over Nazi Germany. However, the engineering skills and resources of Reyrolle were put to an increasingly diverse range of supplies making use of the factories already extant south of the River Tyne and to other satellite operations established to spread the risk of enemy attack.

Wartime Activities

During 1939-45 the concentrated effort of Reyrolle production was the continuation of electrical switchgear production. A letter to employees marking Empire Day 1940 stated:

“Switchgear is regarded officially as a vital war supply because it is the means of controlling the power upon which not only the production of all kinds of war material, but also the very life of the people depends. It is most necessary to appreciate too that not only the switchgear but also other products we are turning out are regarded officially as essential in one way or another, for the manufacture of munitions and in the public service, or for export as a contribution to the war effort required on the country’s economic front. Further, it must not be forgotten that research, experimental and development is necessary for these war efforts and their continuance at home and abroad.”

During the war many efforts were made to boost the morale of employees of all companies. One of these was a BBC *Works Wonders* concert, broadcast from a Reyrolle canteen in July 1941. General Money, GOC of the Northumberland Division addressed the audience:

“Although you do not make directly for us Bren guns, rifles or machine guns, yet you make the existence of these possible. You produce the electrical plant to make power stations, which in turn are essential for driving the wheels of production. Without power stations and without your plant we could never get into battledress.”

Existing designs of switchgear were generally adequate but some special designs were developed. A 66kV equipment for outdoor use was manufactured with some stored locally and others in Yorkshire. Specially

trained erection teams were trained to use these to restore power should catastrophic damage, principally from bombing, threatened essential supplies. Equipment was also supplied for back up plans to cover damage to the Royal Ordnance factories, Woolwich for example being particularly vulnerable. The main Royal Ordnance Factories had their own supplies using C A Parsons generators and Reyrolle switchgear.

Bomb damage was a problem throughout the war but the Reyrolle equipment proved remarkably robust with examples of substantial structural damage around still functioning electrical switchgear.

Electrical switchgear and electrical protection equipment manufactured at Hebburn were of major significance to the British war effort. However, the company's experience and expertise in engineering and manufacturing was not overlooked by the War Office, resulting in a wide range of products being developed and supplied, that were far from the traditional products of the company's factories.

A lot of work was carried out for the Royal Navy to such extent that a lot of communication was addressed to HMS Reyrolle! Initial work was to repair and renovate the control boards of the salvaged submarine HMS Thetis in 1939 resulting in an ongoing emergency repair service covering items from small gearing to gun control equipment.

Early in the war Reyrolle started manufacturing pre-fabricated wireless/telegraphy (W/T) cabins. Conventional ship building would have introduced a six month period to build and equip these cabins so they were produced, fully installed for later installation on the decks of Navy ships. By May 1944 a total of 38 corvette cabins and 16 frigate cabins had been completed and installed.

Gun mountings for 4 barrel 2-pounder pom-pom guns were another war specific product. Reyrolle developed a fabricated design to replace the then current casting which demanded a lot of machining to complete. This new design saved 100 hours of machining time, was accepted by the Admiralty who adopted the /Reyrolle design for all future mountings and over 100 of these were produced at Hebburn. A lot more were produced by other manufacturers to Reyrolle master drawings. Reyrolle also built a 2 inch rocket projector at Hebburn, work which was transferred from a bombed factory in the Midlands.

A more complex piece of equipment that drew on Reyrolle's electrical expertise was the manufacture of Remote Power Control to eliminate some of the human element in local control of gun production. Two basic types were involved, one electro-hydraulic and the other all electric. Testing and commissioning of this equipment was complicated by the number of locations where Remote Power Control was installed. At the same time units were being installed at Elswick, Scotswood, Glasgow, Liverpool and Barrow.

Partly due to the location of the Hebburn works on the banks of the Tyne and surrounded by shipyards, ship repair work became an important additional activity. Whilst this started with the repair of electrical equipment, it extended to a broader range of equipment including motor starters, switchboards, rheostats, telephone exchanges, searchlights, captain's sights, bakery ovens, hot cupboards, recording logs, plotting

tables, fire control gear and gunnery instruments. A new shop had to be set up to deal with motor repair serving some 300 motors at any one time ranging from small instrument motors to main drive motors for submarines weighing from 10 to 16 tons.

Royal visit to the Reyrolle Works by the King and Queen on 7th April 1943



The above photograph shows the King and Queen with Col. Bruce Leeson and Norbert Merx (extreme right) and to the rear, the stooping figure of Bill Harriman.



The above photograph shows the Queen being escorted by Col. Bruce Neesom with Frank Coates to the rear.

In 1943 repair work was extended to cover a wide range of mechanical items such as evaporators, oil and water coolers, diesel engines, compressors, fuel burners, boiler parts and many other items of equipment.

For the Army, work concentrated on guns and fire control equipment. In 1937 Reyrolle were contracted by the War Office to work on a sound location device for the detection of aircraft. Around 300 of these were supplied over a 3 year period although in truth these devices were already being displaced by radar, particularly since aircraft speeds had become too fast for accurate sound location.

Reyrolle manufactured gun mountings for 20mm and 40mm Bofors anti-aircraft guns. Manufacture of predictor units was also undertaken. A complication was that the Bofors designs were metric whereas Reyrolle manufacture was to the Imperial system.

Two major production schemes did not reach fruition before the end of the war. These were the manufacture and testing of the Number 7 Anti-Aircraft Predictor and the twin six pounder AA Mounting. A special test area was built which consisted of a tower fitted with reflector aerials and test items including 80 Admiralty balloons with targets and hydrogen cylinders.

Reyrolle manufactured 1,200 29mm Spigot Mortars and 1,500 mountings. A new ICI developed explosive was used in these mortars.

A navigational aid to allow rapid accurate deductions of position from sextant readings was manufactured for the Royal Air Force to a design developed by Kodak. Unfortunately the then dirty air of Tyneside caused problems with particles of dust trapped in critical parts of the device. The solution was an enclosed workshop with forced ventilation and filters which had to be built for this work. Airborne radar detectors were also produced.

Other wartime work was undertaken at the Reyrolle factories at Pelaw and Ashington.



Two production lines and testing of a gun sight for span calibration, fore and aft drift and gyro magnetic centre at the Ashington Factory.

As was briefly mentioned earlier efforts were made during the war to boost the morale of the factory workers. Wartime Radio Concert broadcasts and other entertainments was a moral boosting feature for the workforce. The BBC broadcast direct from factories “*somewhere in England*” with the most well-known being Workers Playtime that continued after the War and featured many of the stars of the day. At lunchtimes a series of concerts under the title “*Works Wonders*” were broadcast and Reyrolle Work’s concerts featured four times in these concert broadcasts during the war which usually took place in the works canteens using the talent available amongst the employees. Reyrolle had a well-attended choir and ran special concerts such as an annual Christmas Hour.



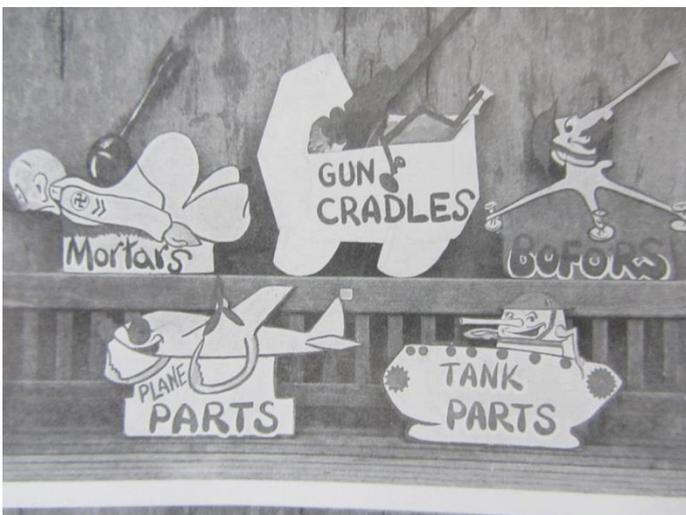
These two photographs show a group of employees from the Hebburn Works Office and also Holes Winders at Christmas time in 1945. Groups from departments all over the works would contribute to Christmas trees and presents which would then be donated to local charities.

In addition to the essential War work, a number of employees enlisted into military service. Initially this was with the full support of the Reyrolle Board to the extent that a system of allowances was introduced to top up the earnings of service men to their Reyrolle salary. The policy was reviewed every 3 months and some restrictions were introduced as the number of serving employees increased (by 1943, 682 employees were serving with forces and in receipt of allowances under the scheme). Nevertheless, over a three-year period a total of £30,000 had been paid out to dependents.

In June 1940 and in response to an Admiralty request, a Local Defence Volunteers force of an initial 350 men was raised and provided with 5 rifles! Their main function was to protect the works from saboteurs and German Para troops. This unit eventually became members of the Home Guard, specifically No 5 Company, 7th Durham (Jarrow) Battalion Home Guard, affiliated to the Durham Light Infantry at which point they received more arms. They quickly formed a platoon of cyclists to facilitate rapid response, an approach that became widely copied.

There was seen to be an ever present threat to the works from the air. Various defences were discussed including barrage balloons and camouflage yet with the exception of two high explosive bombs falling near the site boundary in 1941, causing some slight structural damage and a lot of smashed glass, the Reyrolle works remained untouched and undamaged throughout the war.

World War 2 came to an end, in Europe on 8 May 1945 (VE Day) and in the Far East on 15 August 1945 (VJ Day) following the surrender of Japan. Many of those members of the Reyrolle workforce who had served the country over those years, men and women, returned to their former employment. However, orders for most products became difficult to win and by October 1945 an employment policy of one in, one out was adopted as the company struggled with the post war world of commerce.



As part of the Hebburn Victory Carnival on 8th September 1945 the above cartoon cut outs were produced to adorn the float entered by the Reyrolle Hebburn Works. These cut outs give a good presentation of the many aspects of wartime production carried out by the Reyrolle factories during World War Two.

Unfortunately, as is the case in war, many of the former employees did not return and a company roll of honour for those who gave their lives accompanies this brief summary of the South Tyneside Company of A. Reyrolle & Co. in the period 1939 to 1945.

ROLL OF HONOUR 1939-45

A. Reyrolle & Company.

Name	Service	Location/Dept.
Alan Armstrong	Fleet Air Arm	Student
A E Bailey	Merchant Navy	E
R Bainbridge	RAF	Accounts
Peter Barkess	RAF	M
A Bird	Royal Engineers	Drawing Office
J A Blythe	Royal Artillery	Works Office
J W Carr	RAF	Contracts
R S Carr DFM	RAF	D
J C Charles	Royal Artillery	Apprentice
N Coffel	Royal Navy	K1
T R Cumming	RAF	Q
R F Davison	Royal Artillery	Foundry
W Dodds	CMP	WL
Wm Findlay	Royal Navy	Contracts
W Frost	Royal Engineers	Pattern Shop
W E Gore DFC	RAF	T&R
J E Grozier	RAF	Drawing Office
J Graham	Royal Artillery	G1
R T Gustard	Navy	R
H F Hamilton	RAF	Drawing Office
T Henderson	RAF	Time Office
F R Hinslea	----	G2
M W Hume	RAF	Contracts
J Jardine	RAF	Time Office
A Judge	Royal Engineers	Contracts
V Laffey	RAFVR	NX
J Langlands	----	H
A W Lauries	RAF	B1
G T Lincoln	Royal Artillery	L
B McKivitt	Royal Artillery	Foundry
J K Meyler	RAF	NA
H L Moffett	RAF	Drawing Office
J P Morrison	RAF	SCTS
W Nichol	RAF	Tool Room
G Norie	Royal Marines	P
T Nugent	RNF	Z
R Parker	KOSB	CM

E J Pawsey
A Purvis
J Quinn
Jas Sinclair
A C Smalley
R Smith
T W Smith
T N Swan
J N Williamson
A E Young

Green Howards
Royal Engineers
Army
RAF
Fleet Air Arm
Royal Artillery
Dragoon Guards
DLI
RAF

Contracts
E
Contracts
E
Student
WA
G2
Drawing Office
Welders
Y

Reyrolle from the air, after World War Two.



An aerial photograph believed to be taken by the Royal Air Force just after WW2 showing the full extent of the Reyrolle Works with the Newtown Works in the foreground and the Hebburn Works in the background.

Article by Stephen Calvert

Sources

Alan Wright : *Arcs, Sparks & Engineers. A Centenary History of A. Reyrolle & Co. Ltd (1901 – 2001)* Edited by Alan Wright, Published by Reyrolle Heritage Trust Press. ISBN 0 9538972-0-6