

FIELDING & PLATT,

An innovative Gloucester engineering company.

The First 100 Years, 1866-1966

Stephen Mills

Note:

Much of the information contained in this article has been taken from a Centenary History Book, a single copy being produced by the company in 1966, in order to mark its centenary. It is a fascinating book and the Author is indebted to the company for their kind permission to examine and quote extensively from it.

Introduction

From modest beginnings, this Gloucester-based engineering company came to achieve world importance in a number of areas, and established a reputation for the remarkable longevity of its products. Initially, the company was to bring together talents and skills of several notable engineers of the time, the result being a range of machinery and plant that was to change working practices in a number of important areas such as locomotive manufacture and ship building.

Fielding and Platt still operate from the same site, the area around the present Atlas Works having been involved with engineering and iron working for well over a century; in 1851, the High Orchard Iron Works was built by William & James Savory (1) and by 1860, the Atlas Iron Works had also opened its doors. Within a few years, this had been acquired by Samuel & James Platt.(2)

The Older High Orchard Works was later used for the manufacture of steam engines and flour milling equipment by T & W Summers, who had taken over the works in 1881.(3) By 1897, Fielding & Platt were employing 500 hands and Summers & Scott, nearly 200 hands. By 1907, the latter had gone into receivership.(4)

Gloucester became an important centre for the engineering industry and Fielding & Platt were to come to dominate a number of important areas of this type of manufacture.

Early Days

The company was founded in October 1866, Samuel Fielding and James Platt bring their talents together in order to form a partnership in general engineering. Platt was already recognised as a first class engineer and Fielding combined a sound engineering background with a good business acumen. Crucially, he was also in a position to supply much of the capital needed to finance the new venture. On 12 October 1866, the first order was received by:

"Fielding & Platt, Founders, Engineers & Co,
Atlas Iron Works, Gloucester".

The quality of the company's products soon became apparent and ensured that business increased rapidly. Soon, sales of items such as drilling machines, milling machines, cast iron saw benches and a variety of engineering components (such as stop valves) were being produced. As a consequence, the company's reputation continued to grow and the types of work undertaken became more ambitious. They began to move into new areas. For instance, in 1868 they produced the first Gloucester-built iron sea-going steamer(5), followed in 1874 by a small steam boat (S S SABRINA) built for the Gloucester Dock company; she was primarily used on the canal between Gloucester and Sharpness. Other products were as diverse as magnetic swarf separators and the bridge across the Severn (adjacent to the North Warehouse) over the lock from the river to the Docks. Constructed in 1880, it continued to withstand heavy use up to its eventual replacement in 1962 - such longevity was to become a trademark of Fielding & Platt products.

Between 1873-75, the company was responsible for converting a number of broad gauge locomotives for stationary duties at Llanharon Colliery; these were Castor, Erebus, Prosperine and Tiger. Within less than a decade of its conception, the fledgling company had progressed to become one of considerable local importance, although this was merely a foretaste of what was to come within the next few years.

The Advent of Hydraulics

Up to this time, Fielding & Platt had not specialised in any particular area, concentrating on building up a sound base of general engineering. However, from 1871 the company began to specialize in hydraulic engineering, for in that year, a skilled and innovative engineer, Ralph Hart Tweddel, approached the partnership with plans for a portable riveter he had invented. Clearly impressed with what they saw, the partners provided the backing for the project, going on to develop a range of portable riveters based on the "Tweddel System". The riveters were to give the Gloucester company a world dominance in this area for many years.

The riveters eased innumerable problems for engineers of the day, the first practical application being the construction of the Primrose Street railway bridge, on the Great Eastern Railway, at Bishopsgate Street, London. Such was the success of the riveter, that before long it had been widely adopted by the ship-building industry and was in use throughout much of the world. Meanwhile, their success was being repeated in numerous other fields, such as travelling units built for riveting the sewage mains of Sydney, Australia, in 1892. The riveter also played an important role in the construction of the Forth Bridge, opened in 1890.(6) Many were supplied to locomotive builders and railway companies, world-wide (Appendix 1).

Further Progress

In 1874, Samuel Fielding died, James Platt becoming senior partner with James and John Fielding (Samuel's sons) becoming equal junior partners. Fortunately, the two new partners brought considerable skills with them. James inherited a generous share of his father's business acumen, whereas John was an outstanding engineer; he devoted much of his time and talents to the organisation of large scale production of the many and varied inventions made by James Platt, Ralph Tweddel and himself. There were many patented products and advances made, the years between 1873-1892 being particularly productive. Many designs were registered, these included various types of travelling crane, furnaces, hydraulic presses, and specialised machines for forging, punching, riveting and bending girders. Some of this heavy duty equipment was of considerable capacity; for instance, a 900 ton flanging press was produced as early as 1874.

The company continued to increase its reputation, awards for its products being steadily accumulated. Of these, some of the most prestigious were Philadelphia 1876, Paris 1878 and London 1880.

Diversification

Although the company's heavy machinery and hydraulic equipment was by now, well established, the decision was made to diversify into other areas. This initially took the form of engines. A number of different types of steam engine were designed and built, amongst the range being vertical oscillating cylinder units, vertical marine engines, as well as twin cylinder, simple horizontal variants. Although these were successful, it was for their later oil engines that they were to become particularly well known. In 1882, the company developed a 2-stroke engine that was powered by town gas and fitted with electrical ignition. A few years later came 4-stroke variants with tube ignition. It did not take long for the company to firmly established itself in this area, the

range of engines meeting with considerable success. Some, like most of the company's other products, were to achieve incredible longevity, working well on into the 20th century.

From 1890, oil engines began to assume a greater importance and in 1898 a semi-diesel engine was introduced, followed in 1912 by the first patent heavy-oil engine.

Fielding & Platt continued to refine and produce a range of engines throughout the First World War, and by the 1920s, had introduced the "Cold Start Engine". Engine manufacture continued up to 1932; at this time, manufacturing rights for their range of engines were acquired by Petters, the engines then being sold under the "Petter-Fielding Diesels" banner.

Despite the company's increasing sorties into new areas of manufacture, throughout this interesting period, the mainstay continued to be hydraulic engineering. Several notable examples included the overhead gantries installed at the Harland & Wolff Shipyard, Belfast; under these, the ill-fated LUSITANIA was built. Another interesting contract was for the installation of the hydraulic lifts for Blackpool Tower in 1898. During this busy period they also produced steam hammers, hydraulic cranes, and hydraulic coal tips, such as the one installed at the Newport Alexandra Dock (1907) and 100 ton presses for forging buffer guides at the GWR works in Swindon (1905). Railway work remained an important area, along with shipbuilding, for much of the company's early life (Appendix 1).

In its heyday, the company foundry was responsible for turning out a wide variety of castings. These were used as the basis for many of their products, a considerable number of which went overseas. As well as many general engineering applications, the range came to include machinery used in corn milling applications (see Fromebridge Mill, Appendix 2).

Conditions for the workforce were generally considered to be good, by and large the employer-employee relationship operating successfully over the years. However, like any large organisation, there were occasional problems. In March 1890, the Gloucester Journal carried an article describing one such event:

"The free labour question was raised in an unpleasant form in Gloucester on Wednesday. On that day Messrs Fielding and Platt, Atlas Iron Works, took on a non unionist in the foundry department and the 40 workers employed there thereupon ceased work and were paid off".

Modern Hydraulic Machinery

1925

More than 50 Years Experience
More than 12,000 Machines Sold



Tweedell's System is used all over the World

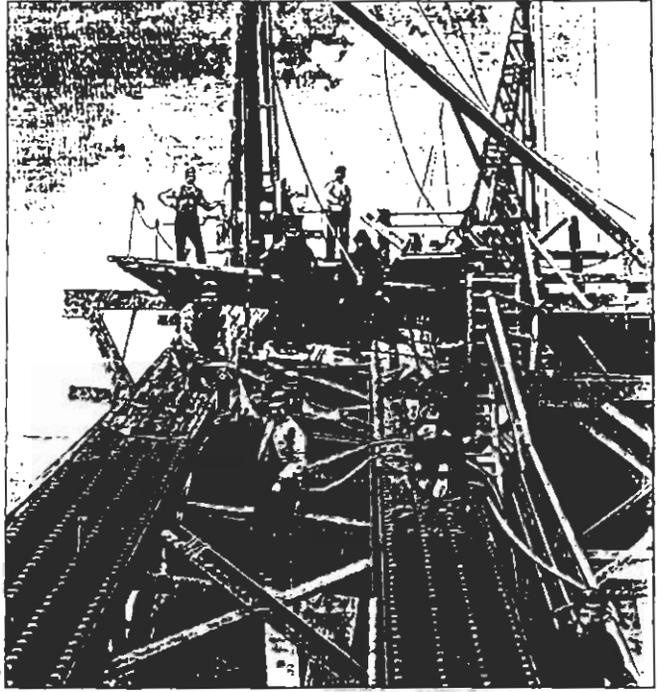
FIELDING & PLATT, Ltd.

SOLE MAKERS AND
CO-PATENTEES

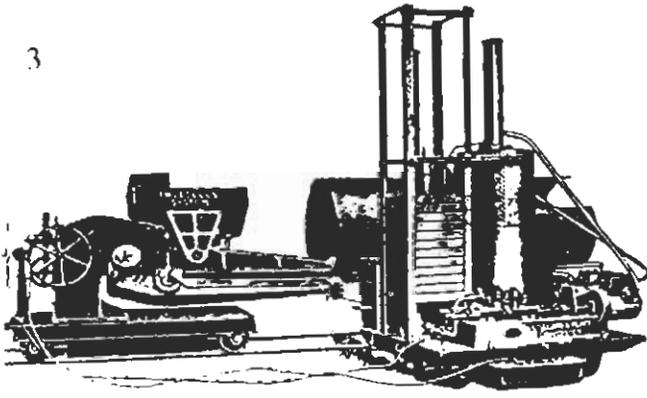
ATLAS WORKS, GLOUCESTER, Eng.
ESTABLISHED 1844

CONTRACTORS TO
His Majesty's & Foreign Governments, &c.

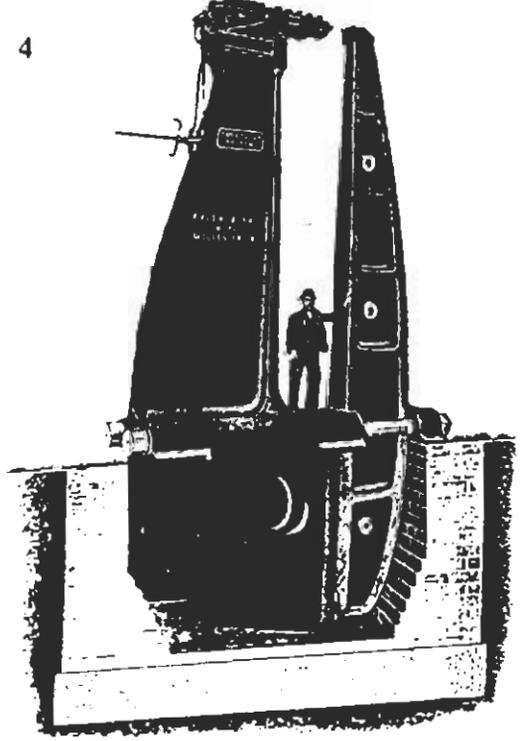
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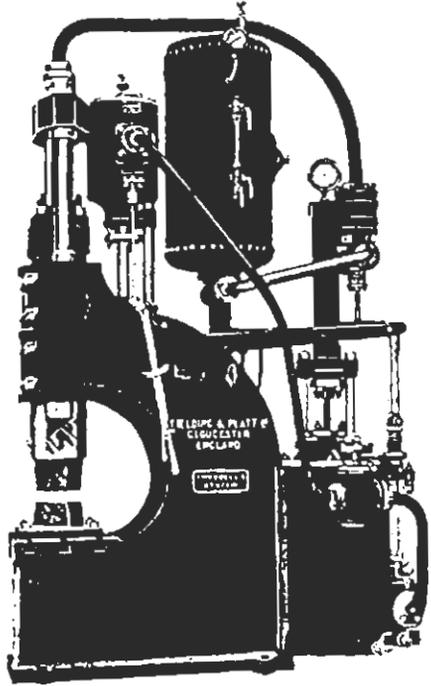
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- 1 From the company's trade catalogue of 1928.
- 2 Fielding & Platt riveters in use during the construction of the Forth Bridge c1890.
- 3 A travelling riveter used for the construction of sewage mains of Sydney 1892.
- 4 A large ship-building riveter.
- 5 Hydraulic press - one of the many variants produced over the years.

A Clean Sweep

The company's diversification programme took it into areas that had not previously been explored. For instance, although not widely recognised, Fielding & Platt produced the first vacuum cleaners in Britain. The design was based on that of Hugh Cecil Booth, who patented the idea then approached the company. As a result, the British Vacuum Cleaner Company was formed, providing a mobile cleaning service for customers. The machine was usually mounted on a horse-drawn cart, the suction pipe being fed into the house through a convenient door or window. Between 1902-1904, the company built 65 cleaners, 20 of which were driven by petrol engines, the remainder by electricity. Many examples were exported, some to such illustrious customers as the Czar of Russia and the Sultan of Turkey.

The Old Order Changeth

Throughout this period, Tweddel was not a full partner in the business, but was retained as a permanent consultant. He did however, receive a share of the profits generated by his inventions. In 1895, at the age of 55, Tweddel died. Two years later, he was followed by James Platt, whose second son (Francis James) came into the business and assumed his father's place as Director (in 1901). After only two years with the company, he left to found the Dudbridge Iron Works, near Stroud.

James and John Platt remained as heads of affairs, James dying in 1921 and John in 1932. Three of James' sons followed their father into the business:

Frank (1872-1955), Arthur (1877-1948) and Sam (1882-1960).

A Long and Healthy Life

As already mentioned, Fielding & Platt products soon established a reputation for long, trouble-free working lives. As an example, in 1961, the Cotswold woodworking company of Messrs. Ryland & Co. contacted the Gloucester works in order to obtain new bearings for a Fielding cast iron saw bench. On checking back through the records it transpired that the bench dated from 1868! It was still in regular use and continued to be so once new bearings had been supplied.

Many early examples of the company's hydraulic presses continue in service after more than 60 years of continual use. Of 27 linoleum presses delivered between 1888 and 1906, no less than 17 were still in use in 1966.

In 1897, the Adamant Stone & Paving Company of Aberdeenshire installed a Fielding press to produce concrete slabs. This was

not the first press installed, as the first unit had been installed in December 1890, followed by a second three months later. This continued to work for a total of 73 years. Originally steam-powered, it was later driven by 168 hp Fielding twin-horizontal engine that worked for 37 years. Remarkably, the total maintenance costs over this period amounted to only £42. 8s. 1d.! Similarly, there are countless other Fielding & Platt machines that continue to give such outstanding service today.

In times of War

As with most other engineering companies in time of war, production was partially switched over to the production of military related items. During the First World War, Fielding & Platt started the production of extrusion presses (still one of the company's principal specialities). During 1916, the company manufactured extrusion presses for producing rod material from which cartridge cases were drawn. When peace finally returned, they had built eleven 500 ton presses and two 1000 ton units. Other machinery for the war effort had included specialised shell banding presses, hydraulic systems for tank assembly factories, gun sight mechanisms, and a thousand sets of mine sinker, as well as the hydraulic launching gear for HMS ACHILLES, THUNDERER and ORION. Many pieces of machinery had been shipped overseas.

After the war, production was once again turned back to the manufacture of machinery with more peaceful uses. During the 1920s, the company's output included plate benders, slab presses, coal hoists, oil engines, and of course, riveters. By the 1930s, specialised machinery for foundry use had been added to the list. Throughout this period of change and depression, the company's riveters remained an important part of production. For instance, in 1931 thirty one riveters were sent to Russia. By 1934, the economic climate had finally begun to improve, and the production of extrusion presses, which had been suspended for some time, was re-started. There was to be further change ahead, as in 1939, the company linked up with Worcester engineers Heenan & Froude Ltd. This was not the first links that had been established, as both companies worked together on the Blackpool Tower in 1878. The new concern was known as the Heenan Group, although Fielding & Platt retained its independence.

During the Second World War, the company manufactured a variety of machinery for military purposes. This included a 4000 ton press for the Bristol Aeroplane Company, used for the production of aircraft components. The press worked 24 hours a day, 7 days a week, from 1939 until well past 1945. A similar press was also supplied to Fairey Aviation Ltd. Other aviation needs were met by a stretch-forming press, built for the manufacture of the leading edges of Spitfire and Hurricane

wings, plus a 4700 ton press for making laminated wooden propellers.

Extrusion presses were also in demand for the war effort, and several of 600-800 ton capacity were shipped to Russia by hazardous Arctic convoy. As in the First World War, heading presses for the manufacture of shell case ends, and drawing and capping plant for making shell cases was also produced.

The Post-War Period

Fielding & Platt once more turned their attention to non-military markets and concentrated on hydraulic presses for a host of applications. For instance, production of presses for the manufacture of concrete slabs and kerb stones (a line made since 1890) resumed. The company continued the production of many of the items for which they had become famous, gradually refining and improving their products through the adoption of such features as automated control systems (during the 1960s) for their range of presses. In 1966, Fielding & Platt proudly celebrated their centenary year. In line with many similar engineering concerns, the size of the workforce had steadily decreased over the years, falling from 500 in 1976, to 75 in 1983.(7)

Much has happened since the company's modest beginnings. For instance, there is no longer a foundry at the Atlas Works, however they have kept abreast of a changing market place, perhaps wisely concentrating on products that they know well, and that they are well-known for. Over more than a century of operation, the company have been responsible for the design, development and manufacture of a remarkable range of machinery and plant. Fielding & Platt can truly be said to have been one of Gloucester's most innovative and successful engineering companies.

References

- 1 Victoria County History, Volume 4: The City of Gloucester, 1988.
- 2 Suppl. 56th Report of the Chamber of Commerce
- 3 Kellys's Directory 1870.
- 4 Victoria County History.
- 5 Gloucester Journal, 10 March, 1860.
- 6 The Engineer, 28 February 1890.
- 7 Gloucester Citizen, 1 May, 1976.

APPENDIX 1

Some of Fielding & Platt's customers prior to 1900

Governments:

British - Admiralty, War Office, Council of State for India.
French - Toulon, Indret, Brest, Cherbourg.
German - Kiel, Wilhlemshaven, Danzic.
Spanish - Ferrol, Carthagena, Cadiz.
Italian - Turin, Venice.
Also Russian, Greek, Ottoman, Japanese, etc.

Railways

London & North Western	Grand Trunk
Great Western	Canadian Pacific
Midland	Western Australia
Great Northern	New South Wales
Great Eastern	Victorian
North Eastern	New Zealand
London & South Western	Cape Railways
London & Brighton	Japanese Railways
Lancashire & Yorkshire	Ottoman Railways
Manchester, Sheffield & Lincoln	Chilian Railways
Taff Vale	Sud'Ouest (Russia)
North British	Pennsylvania RR
Midland & Great Western (Ireland)	Norfolk & Western
Great Southern & Western (Ireland)	Chemin de Fer de L'East
Glasgow & South Western	Chemin de Fer d'Orleans
Indian States	Chemin de Fer de L'Ouest
East Indian	Chemin de Fer du Nord
Scinde & Punjab	Paris, Lyon et Mediterranee
Oude & Rohilcund	German Royal Railways
Indus Valley	Queensland Government Railways

Locomotive Builders

Beyer, Peacock & Co	Societe Franco Belge Everard
Dubs & Co	Cail & Cie
Clyde Locomotive Co	R Wolf, Magdeburg
Vulcan Foundry Co	Petry Chaudoir
Societe Belfort	Richmond Locomotive Works
Claparede & Cie	Neilson & Co
Herr Schwartzkopff	Stephenson & Co
Societe Cockerill	Black, Hawthorn & C.
Baldwin Locomotive Co	Scheinder & Cie
Nydquist & Holm, Trollhattan	Herr Borsig
Kitson & Co	Herr Maffel
R & W Hawthorn	Eugene Muller
Phoenix Foundry Co, Ballarat	

Shipbuilding Yards

Fairfield Company
Harland & Wolff
J & G Thompson

Palmer's Shipbuilding Co
Sir W G Armstrong, Mitchell & Co
The Thames Iron Works
Napier & Co
The Barrow Shipbuilding Co
Denny & Co
Macmillan & Co
Aitken & Mansel
J L Thompson & Co

W Doxford & Sons
Wallsend Slipway Co
Day, Summers & Co
Cairn & Co

Earles Shipbuilding & Co
Wigham, Richardson & Co

John Readhead & Co
T Richardson & Co
London & Glasgow Engineering
Co
Barclay, Curle & Co
Blohm & Voss, Hamburg
Vulcan Co, Stein
Schichau & Co
Burmeister & Wain
Hawthorn, Guppy & Co
Cramps & Sons
Cleveland Shipping Co
Reiherstieg Schiffswerfte,
Hamburg
Rubbattino, Palermo
Campagnie Transatlantique
US Navy Yard, Brooklyn
Martinez Rivas & Palmer,
Bilbao
Diepveen, Leles & Smit
Fratelli Orlando Leghorn

APPENDIX 2

Fromebridge Mill:

One interesting example of Fielding & Platt's wares came to light during 1990, when the Author gained access to the recently closed mill. Although the mill had been used for a variety of purposes, its latter use had been for the production of animal feedstuffs. It transpired that the mill contained a wealth of locally manufactured equipment, including some of Fielding & Platt origin. This consisted of a triple mill stone set carried in a massive cast iron framework. When in use, the stones were under driven through three identical sets of bevel gears driven off a common main shaft, power coming from a (missing) steam engine. Clearly out of use for many years, the major components were still present below the level of the bed stones. The latter were carried in iron cradles, with adjustment points (for levelling) around the periphery. The transport and installation of such a weighty piece of equipment must have posed considerable problems during installation. Doubtless this was overseen by Fielding & Platt engineers, as was usual practice.