

Inspecting the boilers at the London International Exhibition of 1862.

STEAM & HOT WATER BOILERS

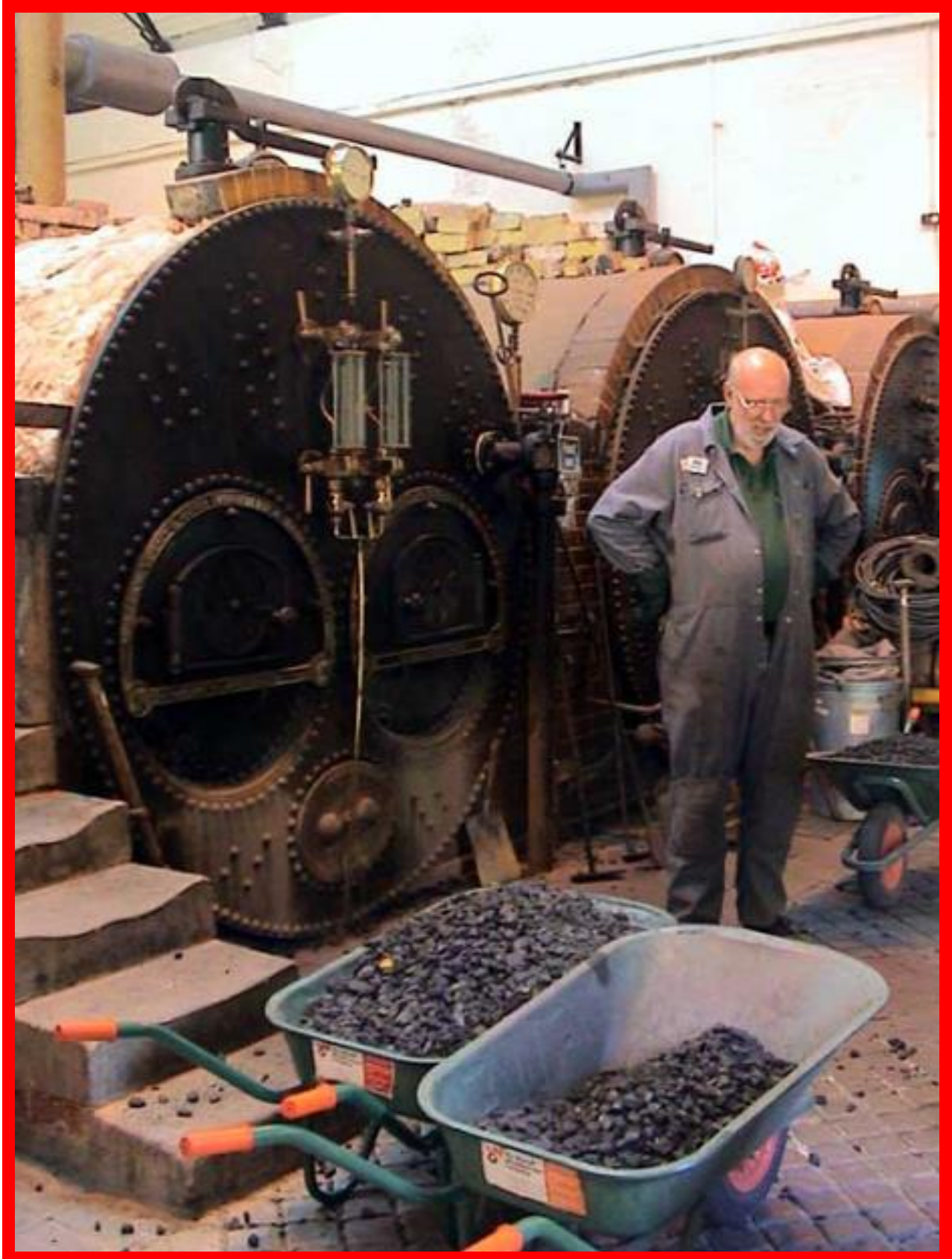
SOME HISTORIC EXAMPLES

BRIAN ROBERTS

CIBSE HERITAGE GROUP

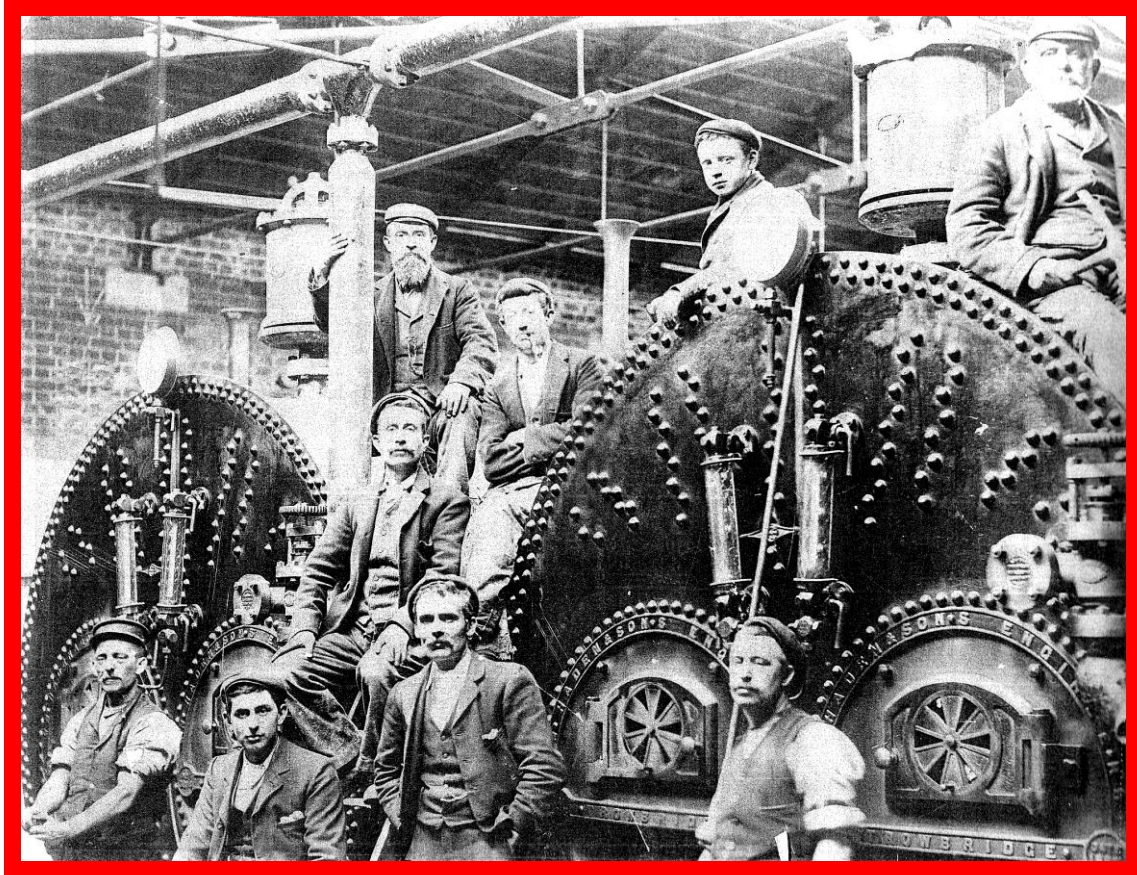
<2>

STEAM AND HOT WATER BOILERS



Lancashire coal-fired steam boilers at Papplewick Water Pumping Station, near Nottingham.

STEAM AND HOT WATER BOILERS



The Haden steam boiler erection team 1890s.

Information and illustrations are taken from the Heritage Group Archives and website and from the Paul Yunnie Collection, all having been put together over the last twenty years or more by Frank Ferris, Brian Roberts and Paul Yunnie.

STEAM & HOT WATER BOILERS 1-6

author's choice

London Exhibition 1, Papplewick Pumping Station 2,
Haden Erection Team 3, Anderton & Bolton 4, H.B. Smith 5, Hitchings 6,

HOT WATER BOILERS

makers in alphabetical order 7-19

Babcock & Wilcox 7, Beeston 8, Deards 9, Gurney 10,
Hartley & Sugden 11, Hitchings 12, Ideal 13, Jenkins 14, Jones & Attwood 15,
Lumby 16, Mather & Kitchen 17, Potterton 18, Weil-McLain 19,

STEAM BOILERS

makers in alphabetical order 20-25

Cochran 20, Fraser 21, Mills 22, H.B. Smith 23, John Thompson 24, Trevithick 25,

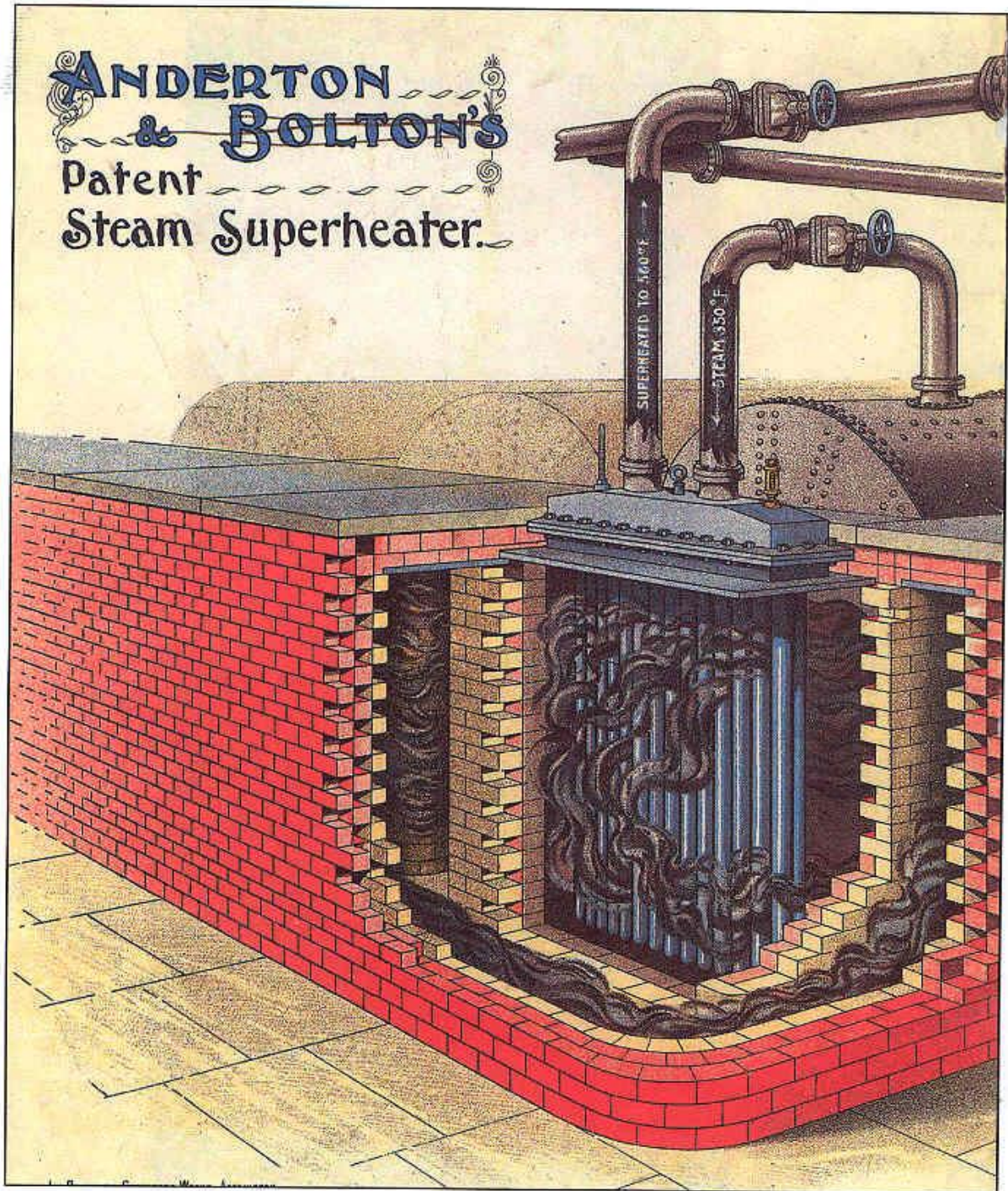
STEAM BOILERS

Some historic examples 26-44

Factory 26, Delivery 28, Installation 32, Operation 34,
Explosions 40, Graveyard 43

STEAM AND HOT WATER BOILERS

Anderton & Bolton

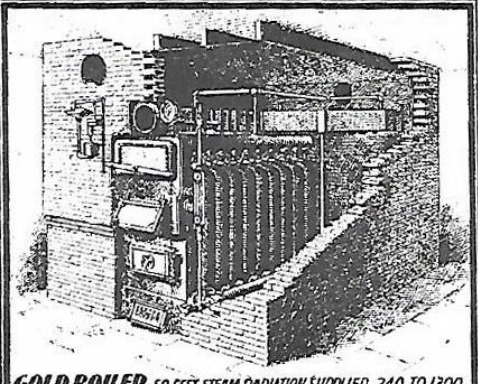


Advertisement: Anderton & Bolton's Patent Steam Superheater, c.1900
A Anderton & Sons, Antley Boiler Works, Accrington
[Paul Yunnie Collection]

STEAM AND HOT WATER BOILERS

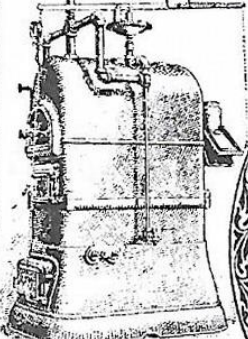
THE H. B. SMITH CO.
WESTFIELD, MASS.

EUROPEAN AGENT.
AUG. EGGERS
BREMEN
AND NEW YORK CITY

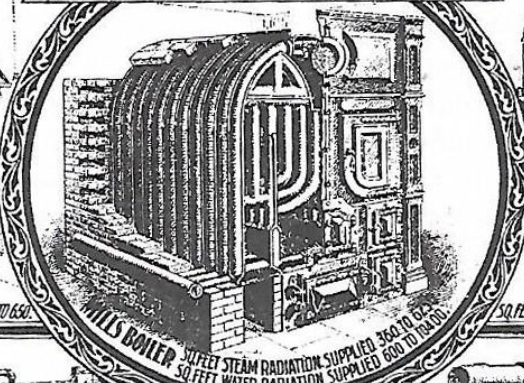


GOLD BOILER. SQ. FEET STEAM RADIATION SUPPLIED 240 TO 1300.

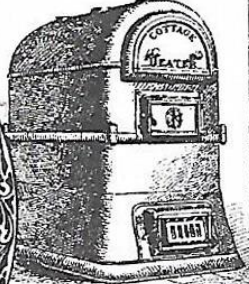
PACIFIC COAST AGENTS.
HOLBROOK, MERRILL &
STETSON,
SAN FRANCISCO, CAL.



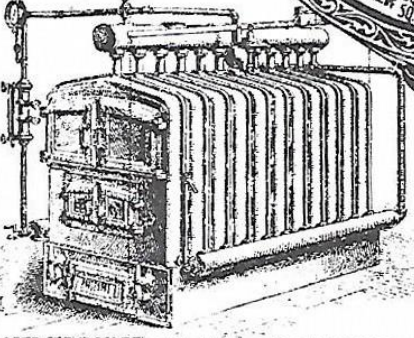
COTTAGE BOILER
SQ. FEET STEAM RADIATION SUPPLIED 100 TO 650



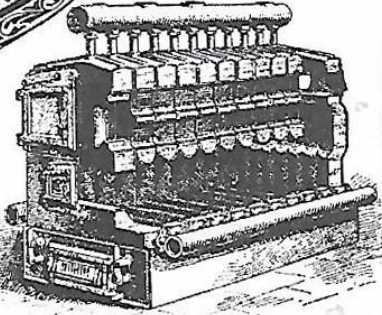
MILLS BOILER SQ. FEET STEAM RADIATION SUPPLIED 350 TO 600
SQ. FEET WATER RADIATION SUPPLIED 600 TO 1200



COTTAGE BOILER
SQ. FEET WATER RADIATION SUPPLIED 150 TO 1000



MERCER BOILER. SQ. FEET STEAM RADIATION SUPPLIED 300 TO 3500.



MERCER BOILER. SQ. FEET WATER RADIATION SUPPLIED 450 TO 6900.

WESTERN AGENTS. WESTERN BRASS MFG. CO, ST. LOUIS, MO.
SALESROOMS
133 CENTRE STREET, NEW YORK CITY. 510 ARCH STREET, PHILADELPHIA, PA.

13. Advertisement: H.B. Smith Co., Westfield, Mass. Domestic Engineering, April 1900, p. 46.

STEAM AND HOT WATER BOILERS

HITCHINGS & CO'S
Corrugated Fire Box Boiler.

FOR HEATING GREEN HOUSES, GRAPERIES, &c. &c.

FACTORY AND OFFICE: 233 Mercer St. NEW YORK.

Patented July 23d. 1867.

DIRECTIONS FOR SETTING AND USE.

Place the boiler on a brick base, raised a few inches above the floor of the pit or cellar, with the top of the boiler as much below the level of the heating pipes as is practicable. Let all the pipes (both flow and return) have a slight descent, so that their entire contents will drain and empty into the boiler. In preparing the pit for the boiler, have in mind that the form of the circulation is increased by increasing the depth of the boiler below the level of the heating pipes.

To secure a good draft, place the boiler near the chimney and avoid the use of horizontal pipes or flues. A brick chimney is preferable to any kind of metal or clay pipe, for the large size boilers, it should be twelve inches square inside, for the smaller ones, eight by twelve inches, or eight inches square, inside, and carried up three or four feet above the ridge of the roof and above any surrounding objects.

Lehigh, or other of the hardest varieties of Anthracite Coal, is the best and most economical fuel; when that cannot be obtained, Bituminous Coal or Lignite, or Hard and Cokes mixed, may be used. Soft Anthracite, Shove or Rag coal is best for the small boilers, while the ones known as Furnace or Broken Coal is best for the larger ones; coal that is burning leaves a residue of clinkers, none or stone, is not good for the purpose.

To obtain the best results, keep the fire box, door and ash pit of the boiler clean. Before kindling a new fire, turn the grate over and remove all clinker and dirt. If inferior coal is used, this must be done every day. Do not turn the grate over while hot, as it is then liable to break. See that the fire at the back of the fire box is not extinguished, and occasionally open the upper door and clean the upper fire. This should be done as often as necessary to prevent the accumulation of dirt, and varies with the kind of fuel used.

When kindling the fire, open the damper in the outlet to the flue, and open the ash pit door sufficiently to give the necessary draft; after the fire is established, the damper should be partially closed. When leaving the fire for the night, fill the fire box with coal (scor) level with the fire door; regulate the duration of the fire by closing the damper more or less, as may be found necessary. If this does not give sufficient control, then close the ash pit door and regulate the resistance in it; but in all cases use the damper as the first and principal means of controlling the fire. The fire must not be made below the boiler and pipes any dirt with water so as to secure a free circulation; nor must the boiler and pipes be exposed to frost, which it is, while filled with water.

A boiler is damaged by heat during the process of setting for use; then for the winter's use, and every care should be taken to diminish the corrosion. When the season for firing has passed, let water remain in the boiler and pipes; thoroughly clean the coal and dirt from every part of the fire box, flue and ash pit, and let the flues and damper remain open, and keep a free circulation of air through the boiler-pit or cellar. In case the boiler is placed in an extremely damp pit, the interior of the fire box and flue, and also the flanges and bottom of the boiler and ash pit, should be thoroughly oiled.

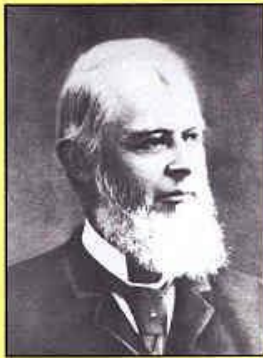
Figure VIII Nineteenth-century advertising broadside for a "saddleback" steam boiler (from ASHRAE Centennial collection, donated by Ms. Janet Alford)

HOT WATER BOILERS: BABCOCK & WILCOX

Babcock & Wilcox

In 1856, 26-year old Stephen Wilcox of Rhode Island, USA, patented a water tube boiler that increased heating surfaces, improved water circulation and, importantly, was inherently safe.

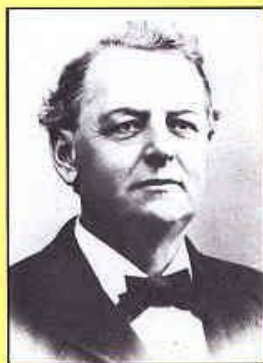
In 1867, with his friend George Babcock he established Babcock, Wilcox & Company to manufacture water tube steam boilers. Growth was stimulated by the demand for steam power after the Civil War and later by the building of electrical power generating stations.



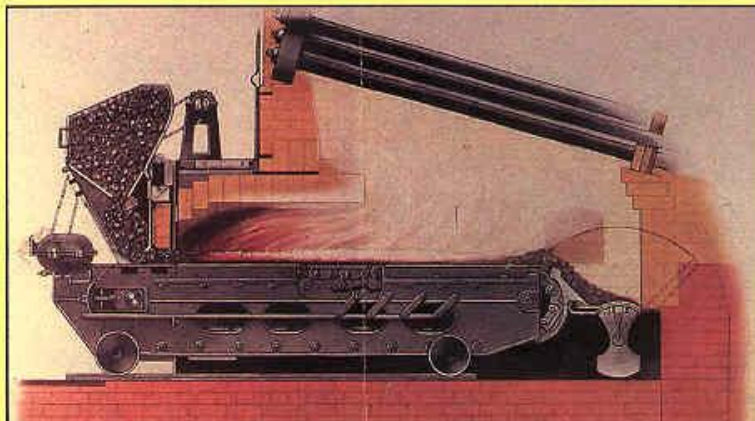
George Herman Babcock, 1832-93



Babcock & Wilcox Boiler Installation at the National Liberal Club, Westminster, London, 1887. [Brian Roberts Collection]



Stephen Wilcox, 1830-93

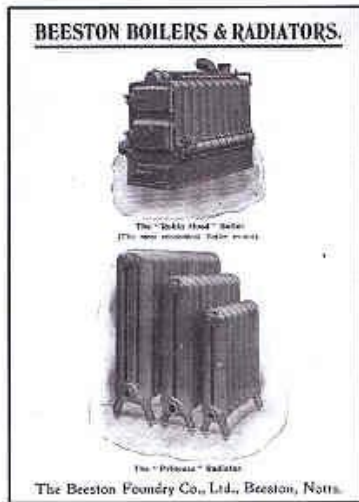


Patent Mechanical Chain Grate Stoker, Babcock & Wilcox, Renfrew, Smoke Abatement Leaflet No. 610, c.1912. [Paul Yumie Collection]

HOT WATER BOILERS: BEESTON

Beeston Foundry

The Beeston Foundry (later Beeston Boiler Co) was established in 1895 at Beeston in Nottinghamshire. They became famous for their Robin Hood sectional hot water boilers which in 1921 covered a range of types: Major, Senior, C Pattern, F Pattern, General and Junior. In addition, Beeston manufactured a range of domestic boilers and greenhouse apparatus.



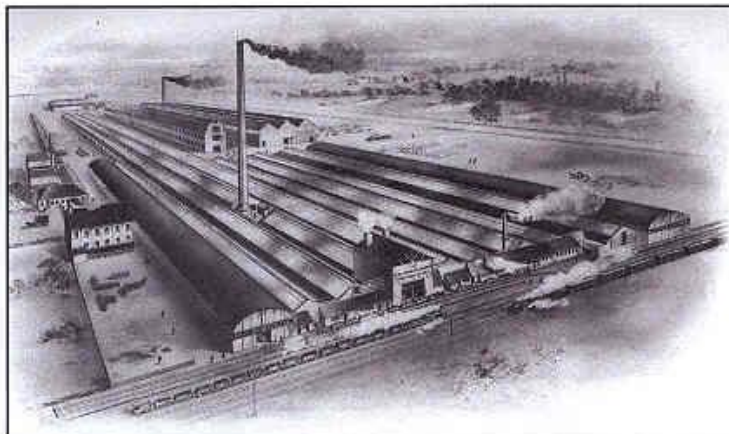
Catalogue: Beeston Foundry, 1904



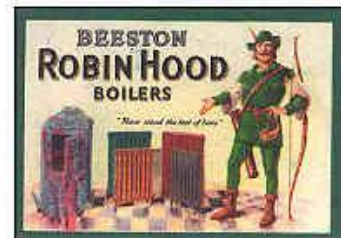
Advertisement: Robin Hood Boilers, 1933



Sir Louis F Pearson CBE
1864-1963
Sixth President IHVE 1903
Chairman Beeston Boiler Co
Scientist & philanthropist,
knighted for his social, industrial
and public services



Beeston Foundry, Offices & Works, Beeston, Notts, 1921.



HOT WATER BOILERS: DEARDS

W & S Deards

The firm of W & S Deards and Sam Deards were active in business in the 1880s, operating from the Boiler Works, Harlow in Essex, and with offices in Southwark Street, London. The firm produced their Patent Victoria Dry Glazing system for horticultural glasshouses and a variety of glass-roofed buildings. In addition, they made the Sam Deards Champion Coil Boiler, which was awarded numerous medals and prizes in Victorian competitions and exhibitions.

THE RIGHT THING AT LAST.

PERFECT SIMPLE
CHEAP

SAM DEARDS'S
PATENT VICTORIA
DRY GLAZING

MESSRS W & S DEARDS
BOILER WORKS
HARLOW ESSEX

PERFECT SIMPLE
CHEAP

100,000 FEET USED AT THE FISHERIES, 1883, HEALTH, 1884, INVENTIONS, 1885, COLONIAL & INDIAN EXHIBITIONS, 1886.

FULL SIZE BAR
FIXED

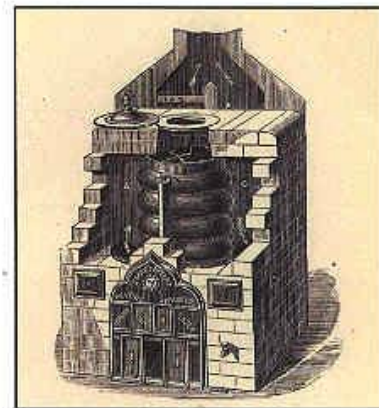
PLEASE NOTE & READ.

HAVE YOU SEEN
THE PATENT
OF 'VICTORIA'
DRY GLAZING
PERFECT! SIMPLE! CHEAP!
SEND FOR PARTICULARS TO
Messrs. W. & S. DEARDS,
HARLOW, ESSEX

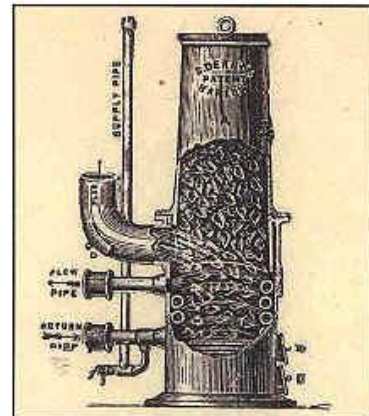
SAM DEARDS'S
CHAMPION COIL BOILER

OBTAINED
179° OF HEAT
& CONSUMED LESS FUEL &
PRODUCED MOST HEAT PER BUSHEL OF FUEL
OF ANY BOILER IN THE CONTEST AT LIVERPOOL 1883
& WON **FIRST PRIZE** IN THE 1000 FEET
ALSO **FIRST PRIZE** IN THE 500 FEET
1000 BOILERS NOW IN USE
S.D. PREVIOUS AWARDS, 16 PRIZE MEDALS & DIPLOMAS
LONDON & RESIDENCES BY W. & S. VICTORIA DRY GLAZING WORKS
OFFICE | SOUTHWARK ST | HARLOW, ESSEX.

FROM SIXPENCE PER FOOT.



W & S Deards Coil Boiler in Brickwork
[South Kensington Smoke Abatement Exhibition, 1882]



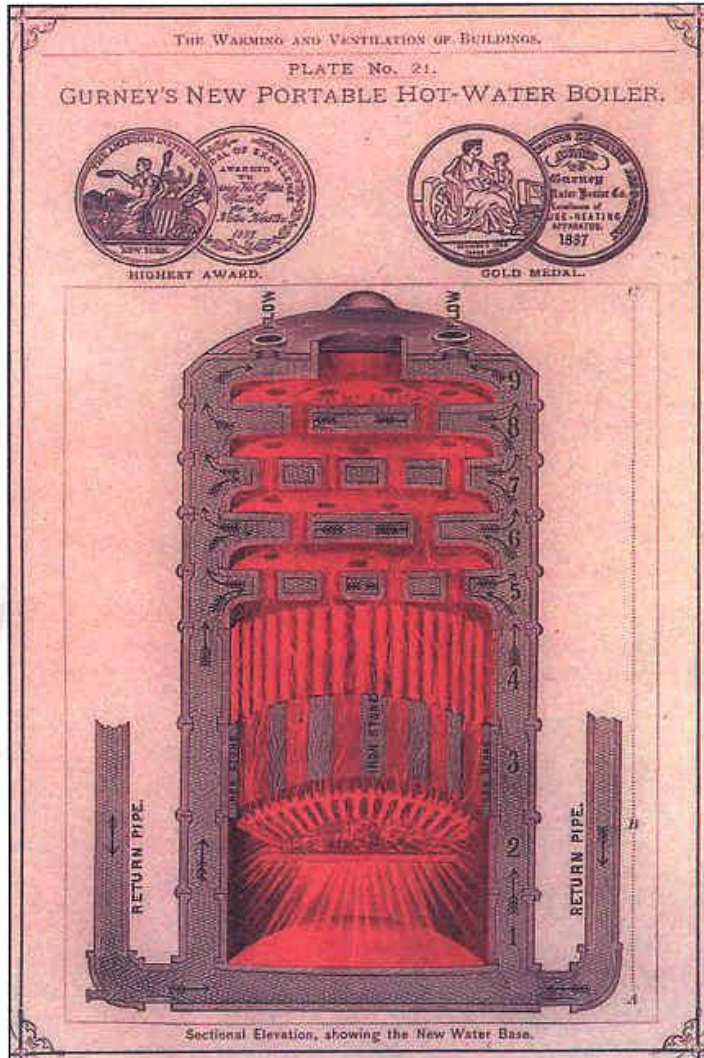
S Deards's Portable Patent Coil Stove
[South Kensington Smoke Abatement Exhibition, 1882]

Advertisement: W & S Deards, Harlow, Essex, c.1890
[Brian Roberts Collection]

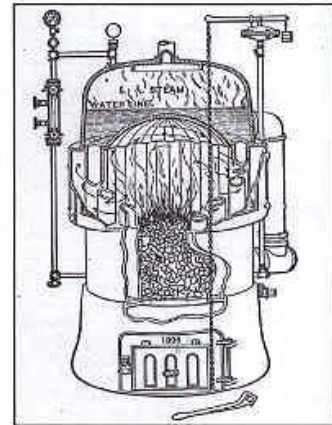
HOT WATER BOILERS: GURNEY

Gurney Heater Mfg Co

A pioneer manufacturer of hot water boilers in North America was the firm of E & C Gurney of Toronto, Canada. They entered the USA market in 1884, originally under the same name, but later changing to the Gurney Heating Manufacturing Company, operating from 163 Franklin Street in Boston. The firm also produced steam boilers.



Gurney's New Portable Hot-Water Boiler, Boston, Mass, USA, 1890s.
[Paul Yunnie Collection]



Gurney Doric Vertical Water-Tube Steam Boiler of 1896
[Baldwin on Heating, 1897]



Advertisement: Gurney Hot Water Heaters
Left: Double Crown Right: 300-Series
[Ventilation & Heating, Billings, 1896]

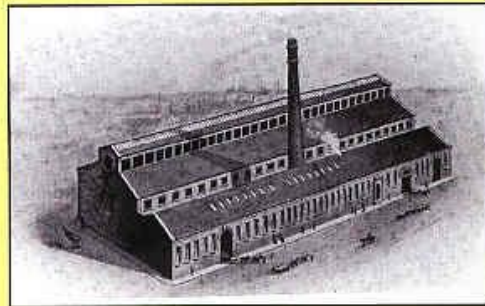
HOT WATER BOILERS: HARTLEY & SUGDEN

Hartley & Sugden

The boiler making firm of Harley & Sugden was established in Halifax, Yorkshire in 1867, becoming famous for their award winning welded and riveted boilers, which they manufactured at their Atlas Works. In 1904, they produced their successful *White Rose* cast-iron sectional boiler. Later, heating products were manufactured at the White Rose Boiler Works in Halifax and Branch Offices were opened around the country, that in London being Sundial House in the Euston Road.



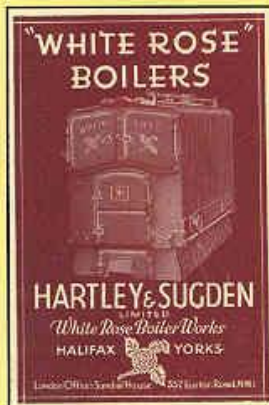
J E Hartley
President IHVE, 1913-14
Managing Director, Hartley & Sugden



Hartley & Sugden Works, 1870



Catalogue: Hartley & Sugden
Wrought Welded Boilers, 1873
[Paul Yinnie Collection]



Advertisement: White Rose Boilers.
[IHVE, 1946]

HARTLEY & SUGDEN'S
IMPROVED WROUGHT WELDED SADDLE BOILER
TO WHICH THE
GOLD MEDAL
WAS AWARDED AT THE
ROYAL HORTICULTURAL SOCIETY'S SHOW
AT BIRMINGHAM, JUNE, 1872

"GOLD MEDAL BOILER"
REGISTERED TITLE

ELEVATION IN BRICKWORK
CROSS SECTION
LONGITUDINAL SECTION
ELEVATION WITHOUT BRICKWORK

A Leaks Fit.
B Fire
C Centre Flue
D Right & Left Return Flues
E Water-way Terminal End
F Sliding Soot Door for Cleaning Flues, with Fire Brick Casing
G Sludge Plugs for cleaning internal part of Boiler
H Regulating Flues
I Hollow Space round Boiler utilising Heat given off from external surface of Boiler.

Catalogue: Hartley & Sugden, Gold Medal Boiler, 1872.

HOT WATER BOILERS: IDEAL

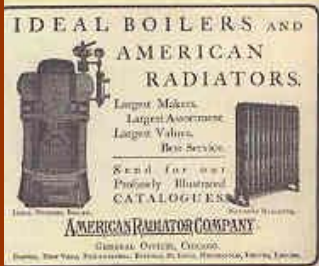
Ideal Boilers & Radiators Ltd



John Bartlett Pierce, 1844-1917
Founder American Radiator Co

The first business venture of John Pierce was as a storekeeper in Buffalo, NY. In 1872, he opened a tin ware shop in Ware, Massachusetts and went on to found the Pierce Steam Heating Company, which manufactured and sold solid steel boilers and cast-iron radiators for both steam and hot water heating systems.

In 1892, he merged his company with two others to become the American Radiator Company. Manufacture of heating products in the UK commenced in Hull in the early 1900s when the firm traded as the National Radiator Company, later becoming Ideal Boilers & Radiators, well known for the Ideal *Britannia* range of cast-iron sectional boilers.



Ideal Boilers from
American Radiator Co
[Baldwin on Heating, 1910]



National Radiator House
later Ideal House, Great Marlborough
Street, London, 1928



Advertisement: Ideal Domestic Boilers, date unknown
[The Magic of Hot Water, Brian Roberts & Paul Yennie, 2001]

HOT WATER BOILERS: JENKINS


Robert Jenkins

In 1856, Robert Jenkins set up as boilermakers in Rotherham, one of a number of similar mid-19th century firms who began business in Yorkshire. Jenkins manufactured wrought iron and steel welded boilers using the general name of *Ivanhoe*. His range of boilers included the *Chatsworth*, *Wentworth*, *Columbia* and *Delta*.

ESTABLISHED 1856.


R. JENKINS & CO., ROTHERHAM.

Registered Design.

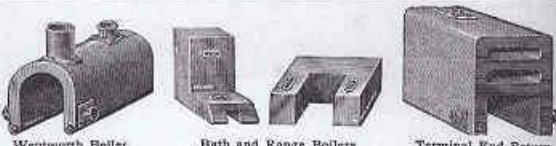


Air Cock, for Hot-Water Pipes, Radiators, &c.

Section of Air Cock.

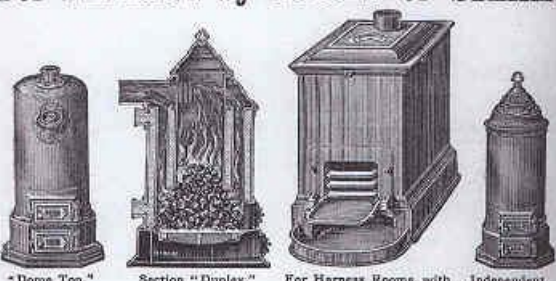


WROUGHT IRON AND STEEL
WELDED BOILERS
OF SUPERIOR QUALITY AND DESIGN.



Wentworth Boiler. Bath and Range Boilers. Terminal End Return Flue Boiler.

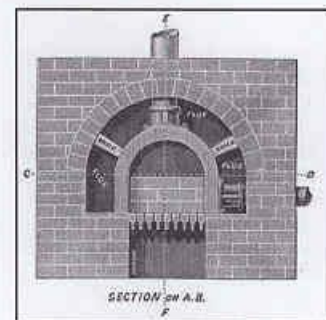
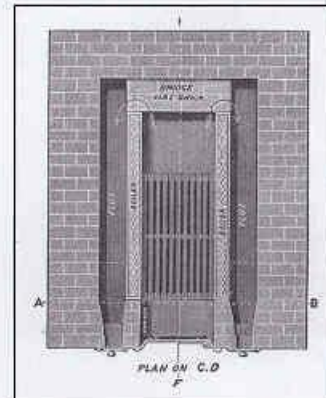
For HEATING by WATER or STEAM.



"Dome Top." Section "Duplex." For Harness Rooms, with Open-Fire Front. Independent Cylinder Boilers.

Illustrated Catalogue, with 265 Illustrations, forwarded on receipt of Trade Card.

Advertisement: R Jenkins & Co, Rotherham featuring a selection of steam and hot water boilers [Hood on Warming Buildings, Fredk Dye, 1891]



Jenkin's boiler in a brick setting [Dye, 1891]

BOILERS

BY STEAM OR HOT WATER



INDEPENDENT BOILERS, SUPERIOR QUALITY,
R. JENKINS & CO., ROTHERHAM.

ROTHERHAM.

Advertisement detail: Robert Jenkins [Dye, 1897]

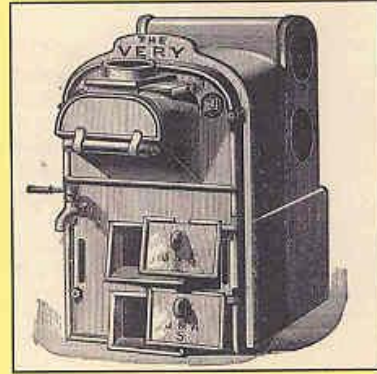
HOT WATER BOILERS: JONES & ATTWOOD

Jones & Attwood

In 1836 John Jones set up a foundry in Enville Street, Stourbridge. Walter Jones joined his father in 1862 and took an interest in hot water heating. In 1896 Jabez Attwood joined to form Jones & Attwood but this partnership lasted only 10 years, the firm continuing under Jones with the same name. Jones wrote the classic textbook *Heating by Hot Water*, which ran to three editions. Jones was a pioneer in determining the cause of boiler explosions, aided by his then young assistant J Roger Preston.



Walter Jones, d. 1924
2nd President IHVE, 1899
Twice awarded the IHVE
Silver Medal, 1903 & 1908



Jones & Attwood Boilers. Right: *The Very*
Left: *The Desideratum*, an Independent Boiler often considered "Tenants' Fixtures"
[*Heating by Hot Water*, Walter Jones, 1894]

MEDAL AWARDED 1883 and 1884

HEATING APPARATUS.

INVENTOR, PATENTEE, MANUFACTURER.

POWER OF THE EXPANSION HEAT HOT WATER TRADE.

Beware of Imitations.

J. ATTWOOD.

TO MERCHANTS, ENGINEERS, ARCHITECTS, BUILDERS, CONTRACTORS, AND ALL PERSONS INTERESTED IN THE MATTER.

USE MY SPECIALITIES.

SOLE AGENTS: FREDK DYE & CO. LTD., 10, ABchurch Lane, LONDON, E.C. 4.

Advertisement: J Attwood
[Hood on Warming Buildings, Fredk Dye, 1891]

JONES & ATTWOOD TITAN WORKS, STOURBRIDGE.

Heating Specialists and Consulting Engineers.

We manufacture at the Works illustrated above.
Heating Appliances of every description.
Estimates for Heating by High Pressure, Low Pressure, or Steam.
Plans and Specifications prepared for the Trade by trained Experts.
1,000 Boilers from 50 to 5,000 feet Heating Power always in stock.
Radiators, Pipes, Valves, and other Fittings in great variety.
Hot Water Supply a Speciality.
Our Indirect System is a safe cure for trouble caused by sediment deposits.
We examine and report on any existing apparatus.
We undertake to turn failures into successes.
We guarantee to correct any defects, however serious.
Arbitrations undertaken in case of disputes.
Inspection invited. Orders promptly executed. Success guaranteed.
Medals awarded 1875, 1881, and 1904.

Telegrams: "HEAT" STOURBRIDGE. CATALOGUES FREE.

JONES & ATTWOOD
STOURBRIDGE

Advertisement: Jones & Attwood, Stourbridge
[*Heating by Hot Water*, Walter Jones, 1904]

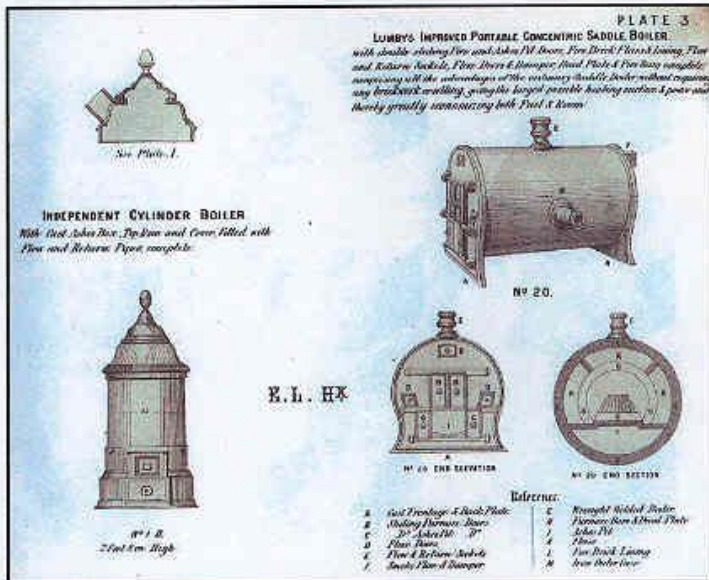
HOT WATER BOILERS: LUMBY

Lumby, Son & Wood

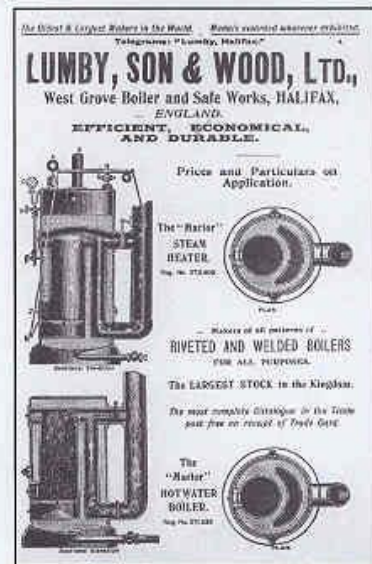
This pioneering boiler manufacturing firm was founded in 1858 in Halifax, Yorkshire by Edwin Lumby. For many years it operated from the West Grove Boiler and Safe Works; later from the Greetland Boiler Works with showrooms in London's Shaftesbury Avenue. In 1882, both Edwin and his son died suddenly. A new company, Lumby, Son & Wood was formed becoming a Limited Company in 1886. Sam Naylor became a Director in 1896 having worked there since 1876. He designed many boilers and secured numerous patents.



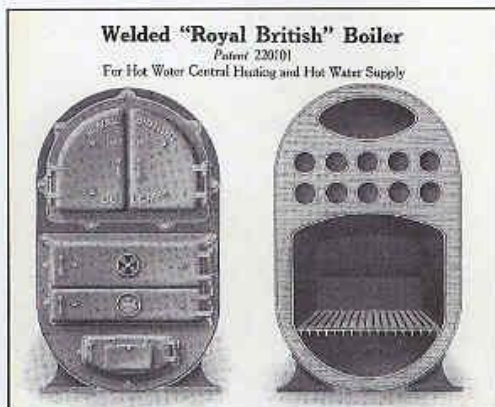
Sam Naylor JP
President IIVE 1916-18
Director, Lumby, Son & Wood



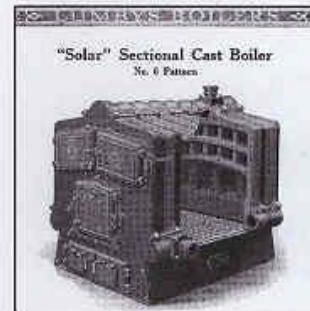
Lumby Independent Cylinder Boiler & Improved Portable Concentric Saddle Boiler
Halifax, 1861 [Paul Yennie Collection]



Advertisement: Marlor Steam & Hot Water Boiler
[Domestic Engineering, USA, 1897]



Lumby Welded Royal British Boiler, 1937



Lumby Solar Cast-Iron Sectional Boiler, 1937

HOT WATER BOILERS: MATHER & KITCHEN

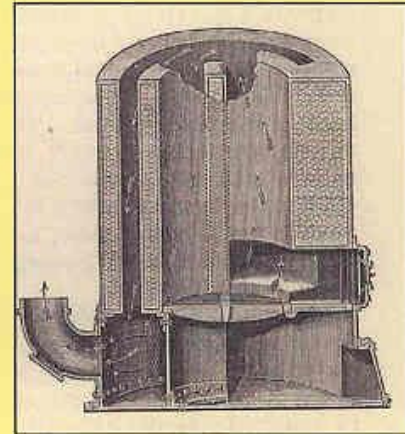
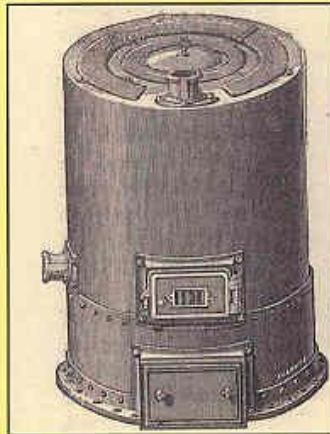
Mather & Kitchen

John Kitchen worked for Hartley & Sugden of Halifax for nearly 17 years before he set up in business making boilers as Kitchen & Company at the Severn Works in Derby. His main product was the *Severn* independent hot water boiler, which he patented and improved over the years. The firm became Mather & Kitchen before 1891. Of Mather nothing is known.

Kitchen was involved in the IHVE in its formative years and it is known that he was a Member of the IHVE Council in 1899.



John Kitchen



Mather & Kitchen Improved *Severn* Independent Boiler
[Hood on Warming Buildings, Fredk Dye, 1897]

GOLD MEDAL—MIDLAND COUNTIES EXHIBITION, 1891.
SILVER MEDAL—DERBYSHIRE AGRICULTURAL SOCIETY, 1891.

MATHER & KITCHEN,
Severn Boiler and Engineering Works,
DERBY.



**NEW PATENT "SEVERN"
HOT-WATER BOILER,**
FOR WORKING WITH OR WITHOUT BRICKWORK.

Designs less open, and has more direct-heating surface than any other Vertical or Horizontal Boiler.

EVERY PART OF BOILER MADE AND A LADDER ADJUSTMENT MADE IN STOCK.

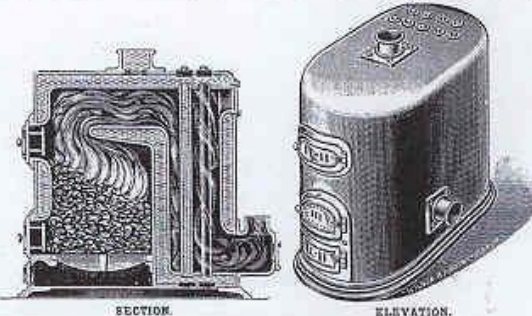
CATALOGUES AND ALL INFORMATION GRATIS.
00008 THROUGH THE TRADE ONLY.

Mather & Kitchen
New Patent *Severn* Boiler
[Hood on Warming Buildings,
Fredk Dye, 1891]

IMPROVED PATENT SEVERN BOILER
Most Compact, Powerful, & Economical Independent Boiler.

Suitable for all descriptions of HEATING.

Terminology, Sizes and Prices on application.



SECTION. ELEVATION.

ALL OTHER DESIGNS OF BOILERS SUPPLIED.

COMPLETE CATALOGUE FREE ON APPLICATION.

MATHER & KITCHEN, DERBY.

Advertisement: Improved Patent *Severn* Boiler, Mather & Kitchen, Derby
[Heating by Hot Water, Walter Jones, 1894]

HOT WATER BOILERS: POTTERTON

Thomas Potterton

Thomas Potterton expanded his father's building business, first improving the efficiency of kitchen ranges and boilers. In 1902, he introduced what is claimed as the world's first gas boiler for central heating using town's gas. He went on to invent the first cut-out valve system and an ether-capsule thermostat. He developed the *Victor* boiler, the *Seal-ed* oven cooker and the *Queen* combined gas and coal ranges. Potterton was a pioneer of multiple gas boiler installations for hot water supply. He was a founding Member of the IHVE and was born, worked and died in Balham, not far from the present CIBSE buildings.



Thomas Potterton, 1847-1926 and Mrs Potterton

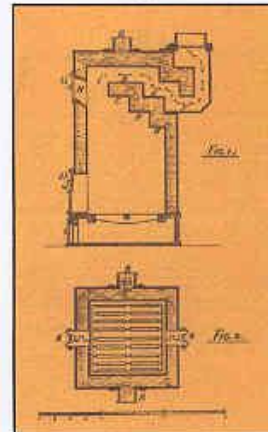
T. POTTERTON, Hot-Water Engineer,
CAVENDISH WORKS, BALHAM.

Telegraphic Address: "POTTERTON, LONDON."

No. 1 Boiler fitted to Range. No. 2 Boiler and Range fitted to Range. Range with Top Flues in Potterton Pat. Zig-Zag Boil.

POTTERTON'S PATENT ZIG-ZAG BOILERS are the most powerful Range Boilers ever invented. They are suitable for supplying very large quantities of Hot Water or Warming Flues in connection with domestic supply. Write for Catalogue.

Advertisement: Potterton's Patent Zig-Zag Boilers
[Hood on Warming, Fredk Dye, 1897]



Potterton's Zig-Zag Boiler
Patent BP 5182; 1894

HOT WATER SUPPLY.
Complete Equipment for the Smallest Flat or the Largest Residence.

POTTERTON'S "VICTOR" GAS BOILERS AND **COMPLETE AUTOMATIC APPARATUS**

No. 1 and 2. No. 3. No. 4. No. 5. No. 6. No. 7. No. 8. No. 9. No. 10. No. 11. No. 12. No. 13. No. 14. No. 15. No. 16. No. 17. No. 18. No. 19. No. 20. No. 21. No. 22. No. 23. No. 24. No. 25. No. 26. No. 27. No. 28. No. 29. No. 30. No. 31. No. 32. No. 33. No. 34. No. 35. No. 36. No. 37. No. 38. No. 39. No. 40. No. 41. No. 42. No. 43. No. 44. No. 45. No. 46. No. 47. No. 48. No. 49. No. 50. No. 51. No. 52. No. 53. No. 54. No. 55. No. 56. No. 57. No. 58. No. 59. No. 60. No. 61. No. 62. No. 63. No. 64. No. 65. No. 66. No. 67. No. 68. No. 69. No. 70. No. 71. No. 72. No. 73. No. 74. No. 75. No. 76. No. 77. No. 78. No. 79. No. 80. No. 81. No. 82. No. 83. No. 84. No. 85. No. 86. No. 87. No. 88. No. 89. No. 90. No. 91. No. 92. No. 93. No. 94. No. 95. No. 96. No. 97. No. 98. No. 99. No. 100.

A NEW SERIES TO OCCUPY NARROW SPACES.
In the design of compact hot-water boilers, the proportion of horizontal surface is an important consideration, but to meet the requirements of narrow spaces in limited residences.

EXAMPLE OF "VICTOR" COMPLETE HOT WATER SUPPLY APPARATUS FOR RESIDENCE WORK, OR TRADE PURPOSES.
For more illustrations, or information and details in order and complete apparatus, refer to the catalogue and the circular.

Advertisement: Potterton Victor Gas Boilers, date unknown
[Paul Yunnie Collection]



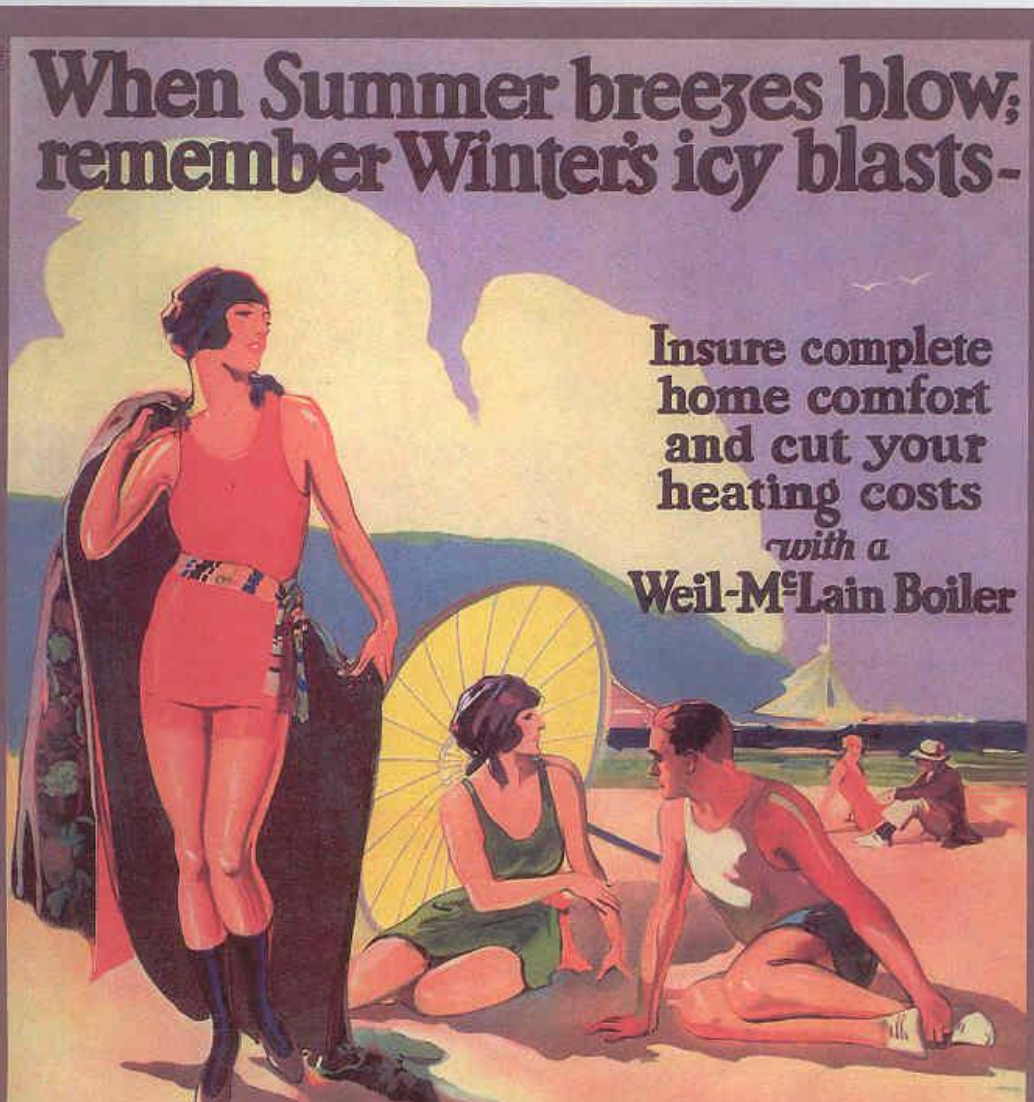
Delivery of Potterton boilers, 1906

HOT WATER BOILERS: WEIL-McLAIN

Weil-McLain

**When Summer breezes blow,
remember Winter's icy blasts-**

**Insure complete
home comfort
and cut your
heating costs
with a
Weil-McLain Boiler**



Weil-McLain
SCIENTIFIC COMBUSTION
BOILERS

Advertisement: Weil-McLain Scientific Combustion Boilers, USA, date unknown [ACHR News, 12 November 2001]

STEAM BOILERS: COCHRAN

Cochran



James Taylor Cochran
Director 1898-1902



Edward Compton
Chairman 1898-1902

In 1878 James Taylor Cochran, with his partner Edward Compton, set up Cochran & Co trading as general engineers and shipbuilders in Duke Street, Birkenhead. Compton invented what was to become the famous Cochran vertical steam boiler, the price of a 7 feet diameter boiler then being £729.

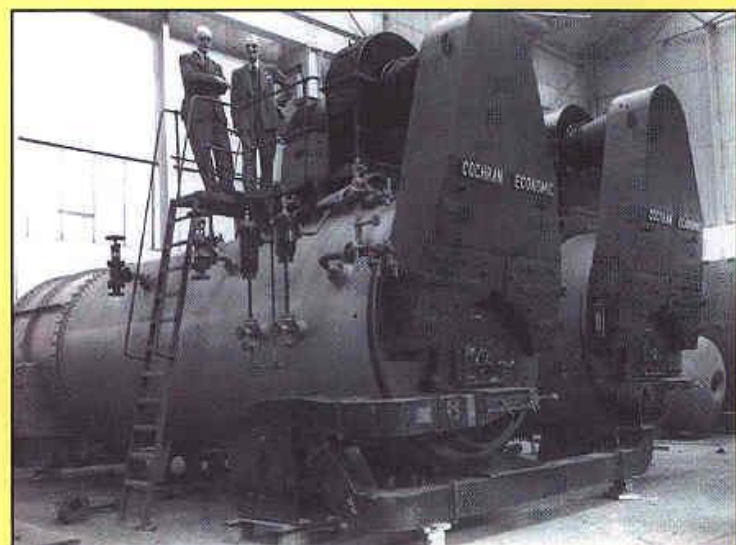
As the firm prospered the Birkenhead site was too small and in 1898 a new company was formed and moved to Scotland. This was Cochran & Co Annan Limited. Over the years, production changed from the famous Donkey boilers to steam accumulators, then Economic boilers and on to Chieftain and Clansman packaged boilers.



Ruth's Steam Accumulator made by Cochran for Westburn Sugar Refinery, c.1930



Cochran at the Colliery Exhibition
in London, 1904



Cochran Economic Boilers being installed at W D & H O Wills, New Zealand, c.1950

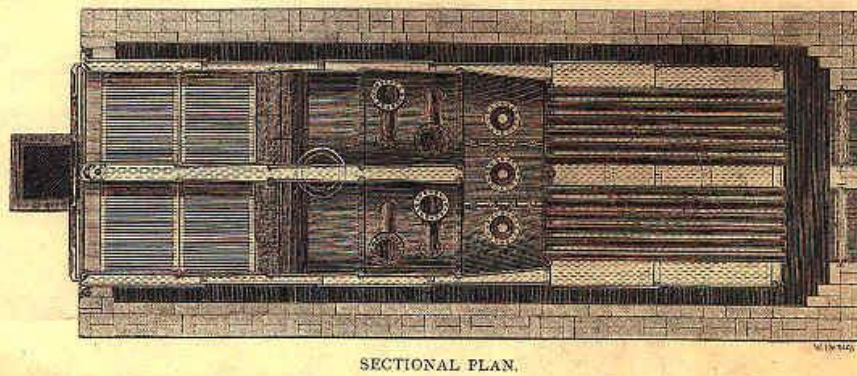
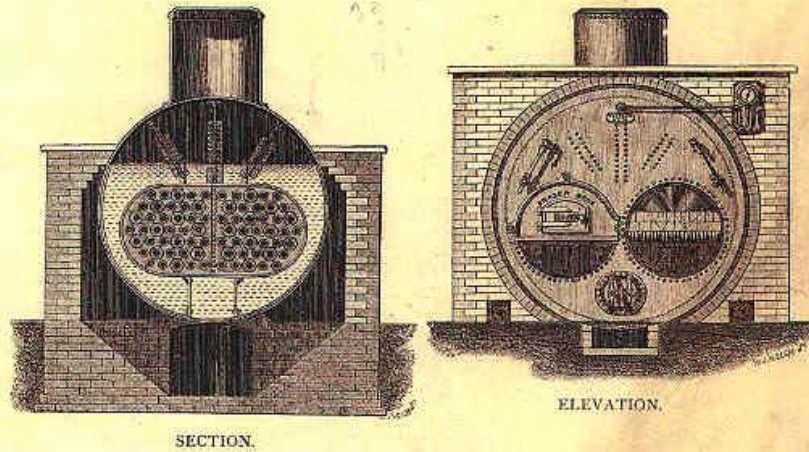
[All pictures from Cochran,
100 Years in Boiler Making, 1998]

STEAM BOILERS: FRASER BROTHERS

Fraser Brothers

FRASER'S SPECIAL COMPOUND BOILER.

STRONGLY RECOMMENDED FOR ECONOMY OF FUEL.

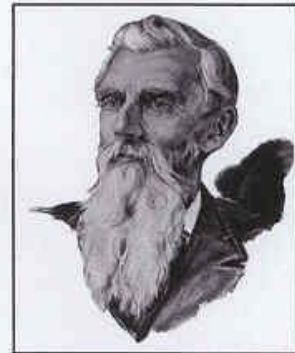


FRASER BROTHERS,
BROMLEY-BY-BOW, LONDON, E.

STEAM BOILERS: MILLS

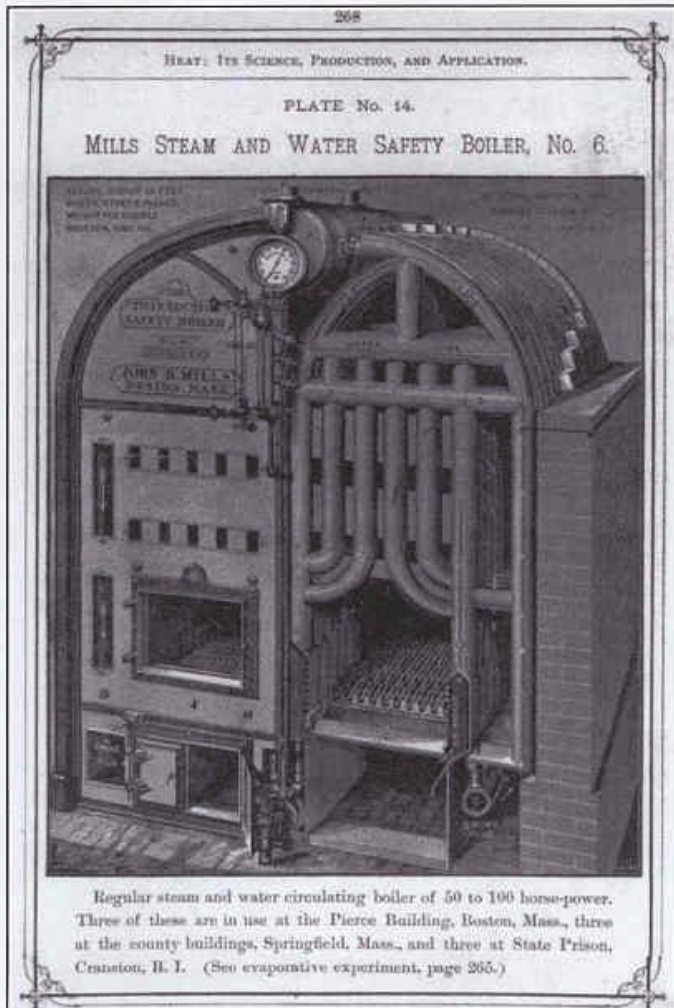
Mills

John Henry Mills has been described as a mechanical genius, who was in turn, craftsman, inventor, heating contractor, scientific investigator and engineering consultant. He patented a cast metal sectional boiler in 1867. Improved designs followed, to be manufactured by the Walworth Company and then by George W Walker & Co. However, from 1873 his boilers were manufactured exclusively by the H B Smith Co. His early boilers were steam type: later he concentrated on hot water design. Mills is considered most of the most widely renowned engineers in the USA in the last quarter of the 19th century.

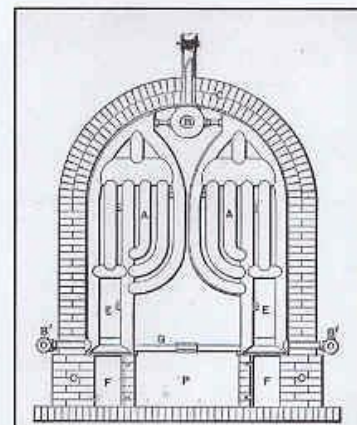


John Henry Mills, 1834-1908

Known as the *Father of the Mill's Boiler*, a brilliant inventor and self educated engineer worked as a freelance designer in a varied relationship with the H B Smith Company over the years from 1873 to 1897.



Mills Steam and Water Safety Boiler, No.6.
[J H Mills, 1890]



Mills Cast-Iron Sectional Heating Boiler with Top Steam Drum
[Baldwin on Heating, 1897]

STEAM BOILERS: H.B. SMITH

H B Smith Co

Founded in April 1854 from the original foundry and stove works in Westfield, Massachusetts, purchased by Henry Smith in 1853. The firm manufactured the boilers developed by Stephen J Gold, and later by his son Stephen, principally the "Gold" boiler, adapted from the earlier designs of George B Brayton of Providence, Rhode Island



Henry B Smith, 1817-1900
Company Founder



Edwin Smith, 1819-1886
Brother of Henry and Co-Founder

THE H.B. SMITH CO.
WESTFIELD, MASS.

EUROPEAN AGENT,
AUG. EGGERS
BREMEN
AND NEW YORK CITY

PACIFIC COAST AGENTS,
HOLBROOK, MERRILL & STETSON,
SAN FRANCISCO, CAL.

GOLD BOILER. 50 FEET STEAM RADIATION SUPPLIED 240 TO 1300.

COTTAGE BOILER. 50 FEET STEAM RADIATION SUPPLIED 120 TO 800.

MILLS BOILER. 50 FEET STEAM RADIATION SUPPLIED 350 TO 2000.
50 FEET WATER RADIATION SUPPLIED 100 TO 700.

COTTAGE BOILER. 50 FEET WATER RADIATION SUPPLIED 150 TO 800.

MERCER BOILER. 50 FEET STEAM RADIATION SUPPLIED 600 TO 3500.

MERCER BOILER. 50 FEET WATER RADIATION SUPPLIED 450 TO 6000.

WESTERN AGENTS. WESTERN BRASS MFG. CO. ST. LOUIS, MO.
SALESROOMS
133 CENTRE STREET, NEW YORK CITY. 510 ARCH STREET, PHILADELPHIA, PA.

Advertisement: H B Smith Co, Westfield, Mass, USA,
for Gold, Mills, Cottage & Mercer Boilers..
[Domestic Engineering, April 1900]

STEAM BOILERS: JOHN THOMPSON



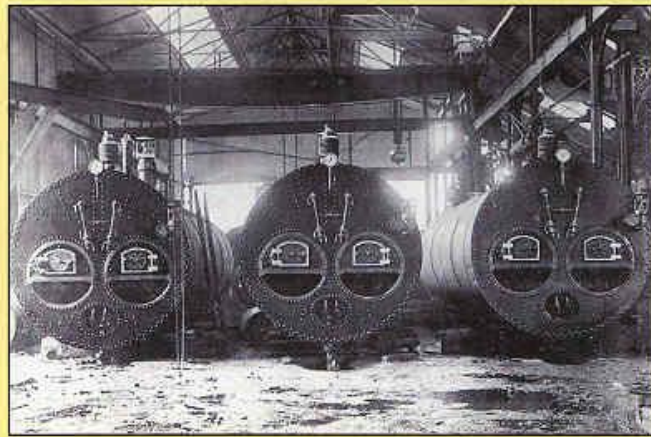
William Thompson, 1814-78



John Thompson, 1839-1909

John Thompson

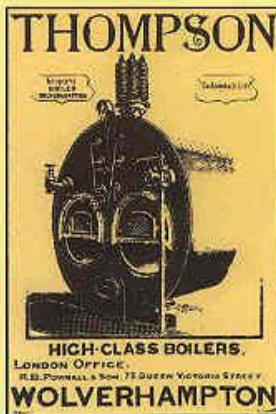
William Thompson founded a family boiler-making firm in Bilston, Staffs in 1834. It is said he was the first man to make a boiler from a template which significantly reduced manufacturing costs, but he failed to protect his ideas and the business ran into difficulties. Taken over by his brother Stephen, control later passed to William's son John under whose leadership the business flourished. By the time of John's death, the firm, now with some 600 employees, specialised in the manufacture of large dish-ended steel Lancashire boilers, shipping them to locations all over the world.



Lancashire Boiler Installation of 1895



A Lancashire Boiler goes to Chile, 1920s



Advertisement of 1894

[All pictures from 150 Years of NEI Thompson, 1984]



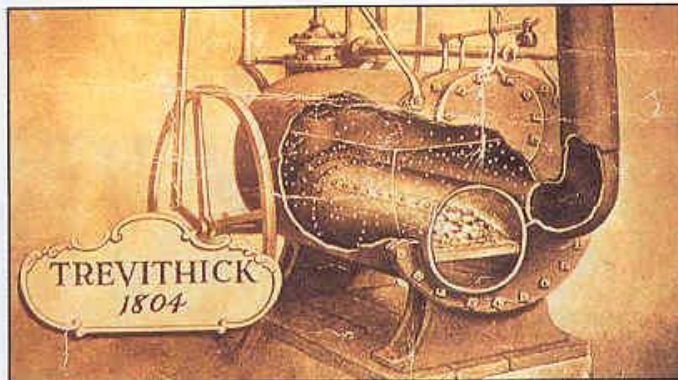
STEAM BOILERS: TREVITHICK

Trevithick

Richard Trevithick was a brilliant Cornish mining engineer who in 1804 developed a high-pressure boiler and steam engine and in 1812 produced the *Cornish* boiler. He had earlier built a road locomotive at Cambourne in 1801 and is famous for designing the first railway locomotive, running on rails, at Penydaren in South Wales in 1804. His use of high-pressure steam was in marked contrast to the low pressures used in the giant steam engines of Boulton & Watt. [Credit must also be given to Oliver Evans of Philadelphia who independently developed a similar boiler around the same period.]



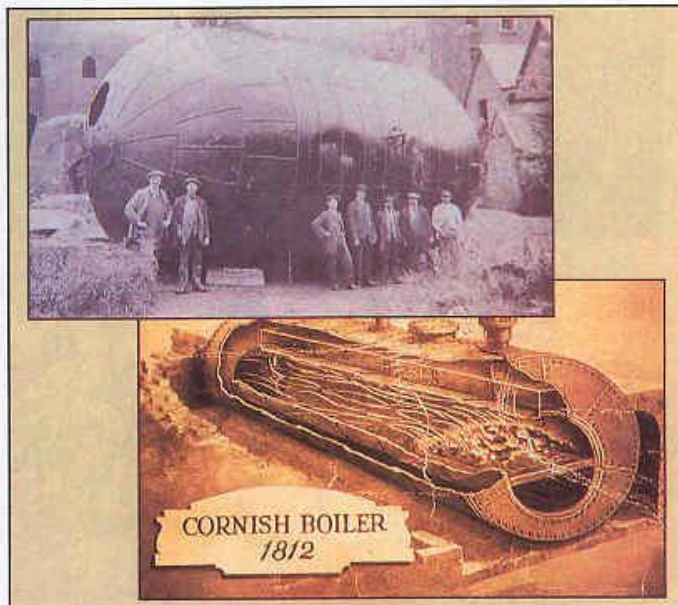
Richard Trevithick, 1771-1833



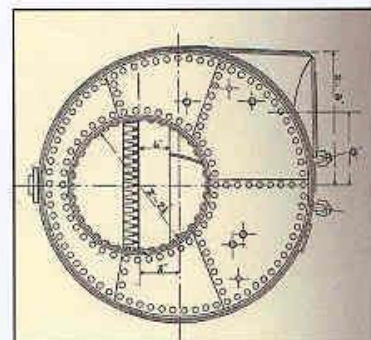
Trevithick's Boiler of 1804 when he revolutionised boiler design by placing the fire inside the boiler casing



Oliver Evans, 1755-1819



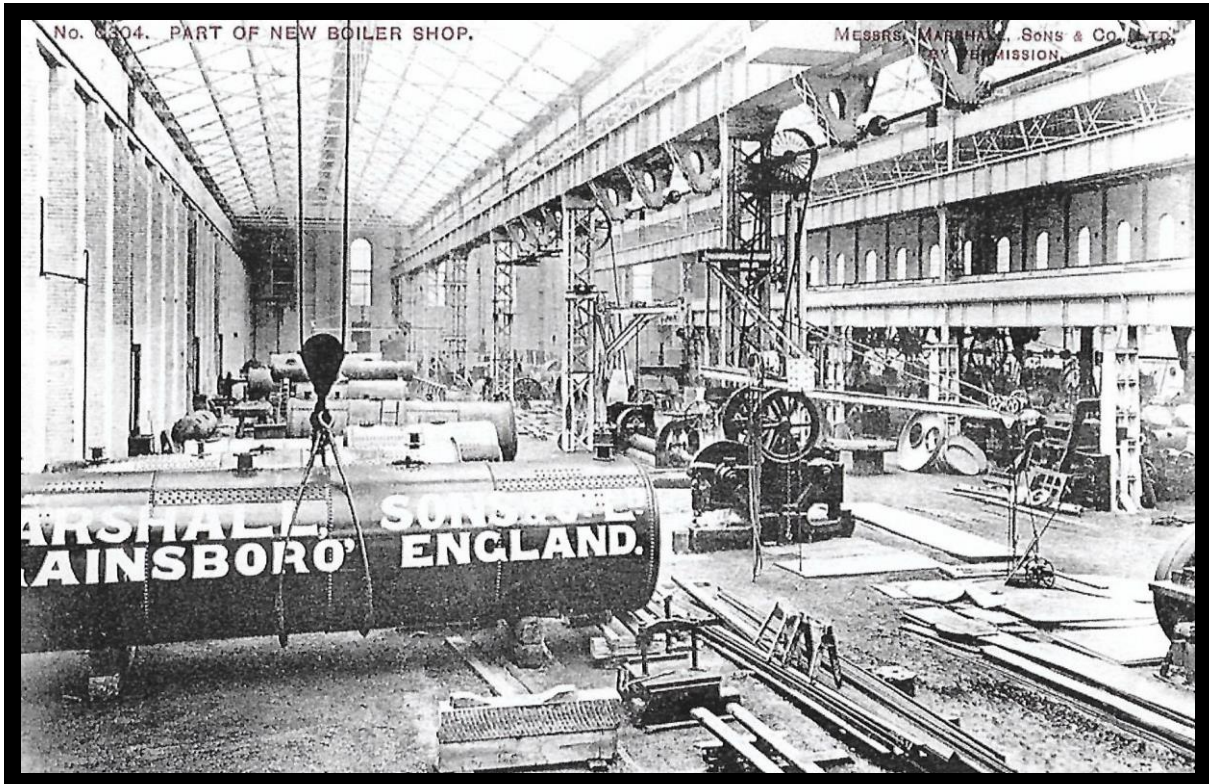
Top: Trevithick's egg-ended boiler, Bliss Hill, Ironbridge
Bottom: Trevithick's Cornish Boiler, 1812



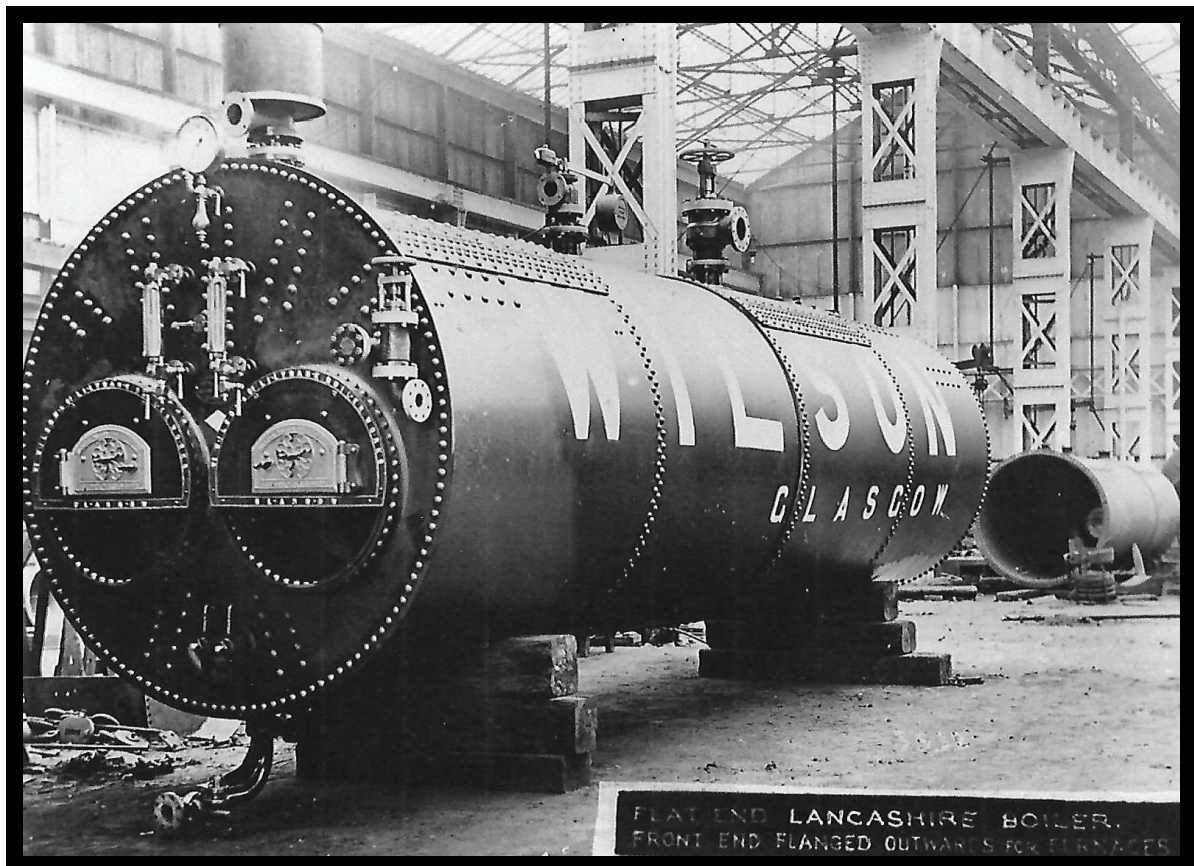
Trevithick's Cornish Cylindrical Boiler with internal furnace tube
[*Steam Boilers, Powles, 1905*]

[Boiler pictures from
Hubble-Bubble, Boil and Trouble,
Paul Yunnie, Building Services, August 1988]

STEAM BOILERS: FACTORY



Boiler Factory of Marshall, Sons & Company Ltd, Gainsborough.

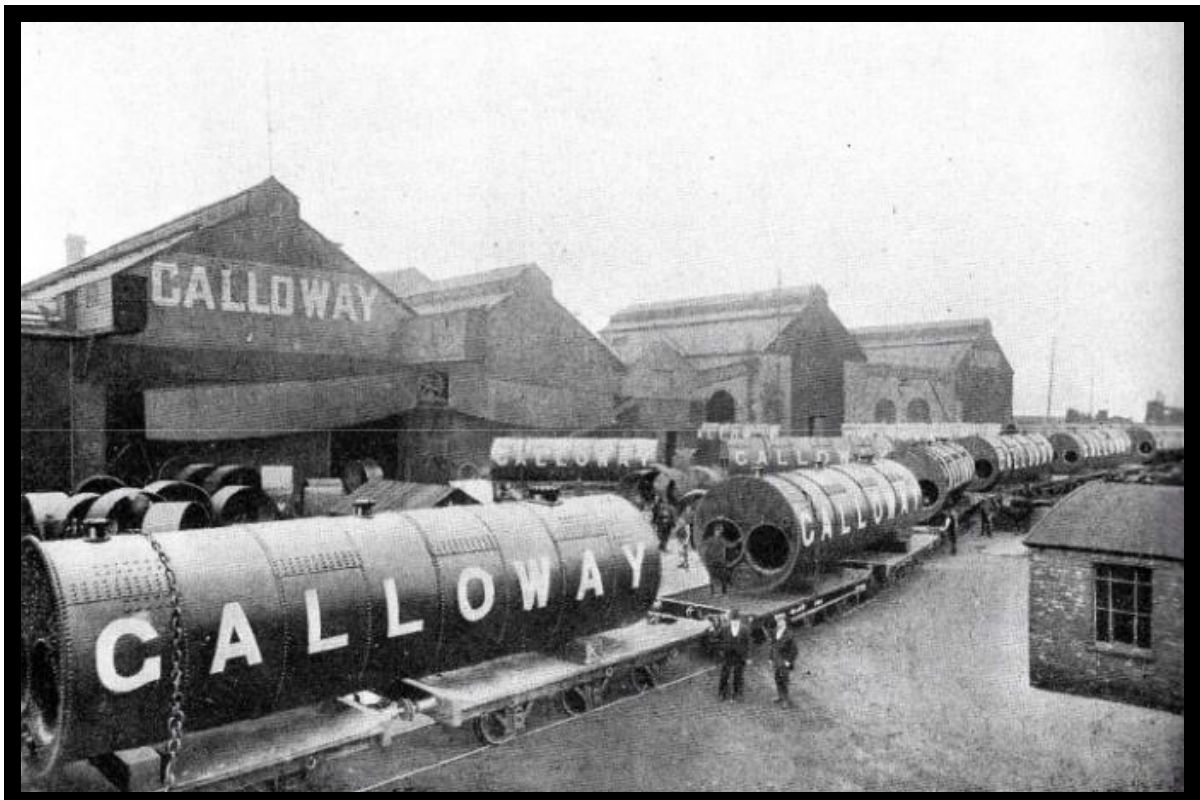


Lancashire Boiler by William Wilson & Company, Glasgow.

STEAM BOILERS: FACTORY

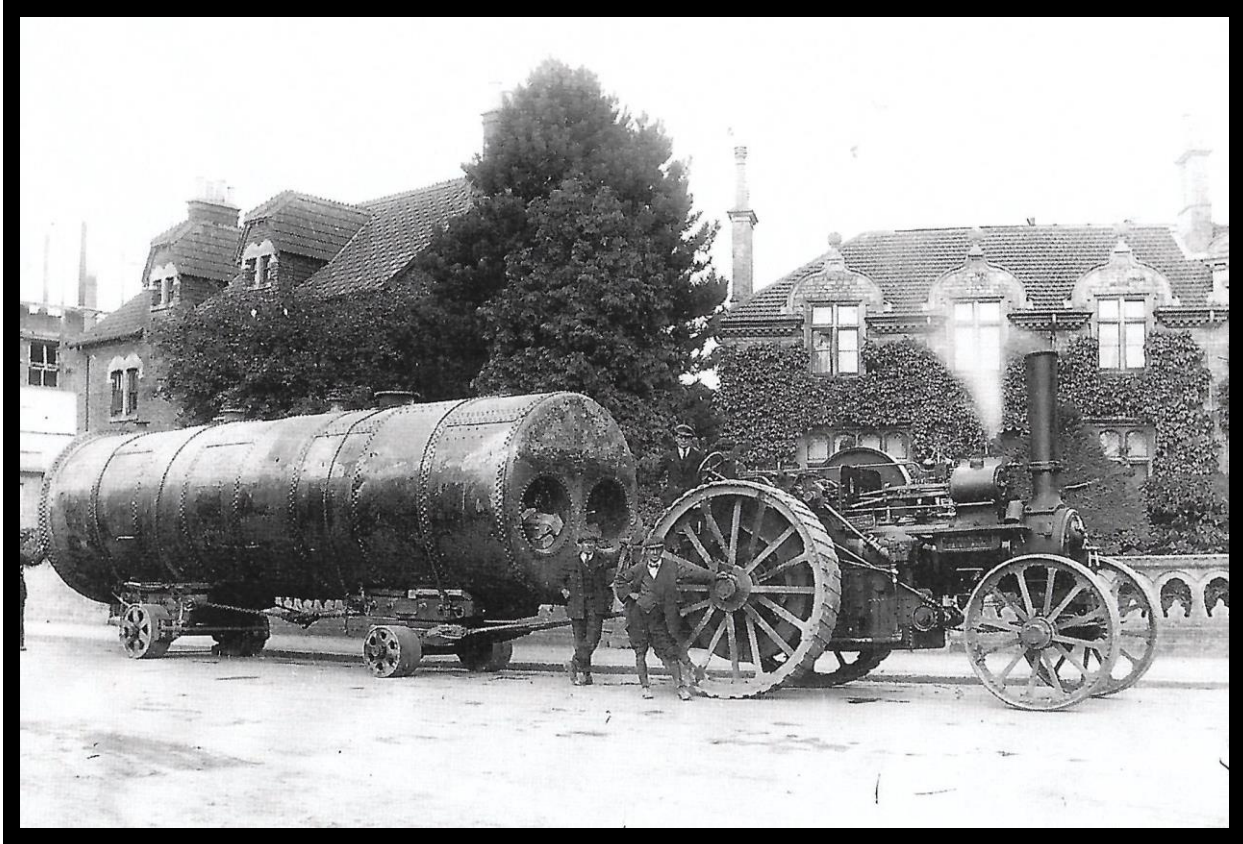


The Galloway Factory in Manchester (from a 1990 Documentary Film).



Galloway Boilers store.

STEAM BOILERS: DELIVERY

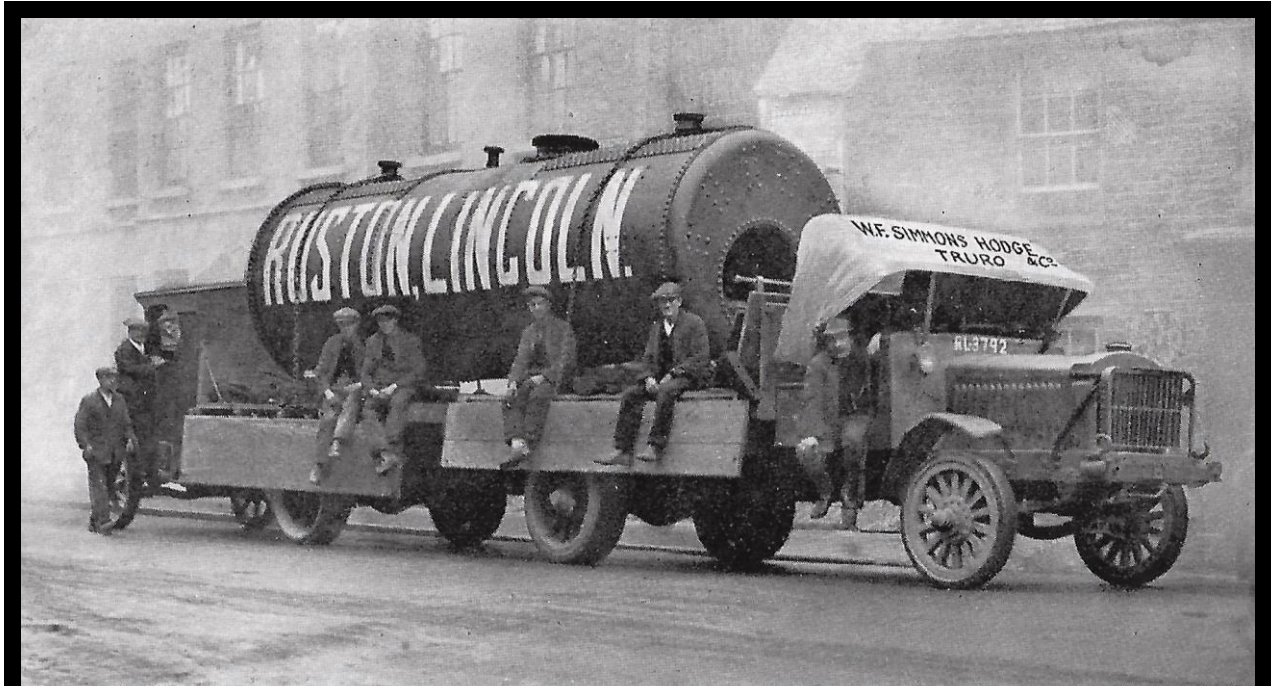


Lancashire Boiler hauled by a Traction Engine in Calne, Wiltshire, c.1919.



Boiler by J. Hickey & Sons Ltd, Richmond.

STEAM BOILERS: DELIVERY



Copyright Photo.]

An unusual method of Transport adopted by
W. F. SIMMONS HODGE & COMPANY
TRANSPORT ENGINEERS
PUBLIC ROOMS,
TRURO.

[by Jordan, Truro.

Tel. No. 253.

Telegrams: "Simmons Hodge, Truro."

Transporting a Ruston Boiler in Truro.



TEAM OF MULES HAULING LARGE COCHRAN BOILER
OVER MOUNTAINS IN SOUTH AMERICA.

Mules hauling a Cochran Boiler in South America.

STEAM BOILERS: DELIVERY



Elephants hauling a Marshall Boiler in Ceylon (Sri Lanka).

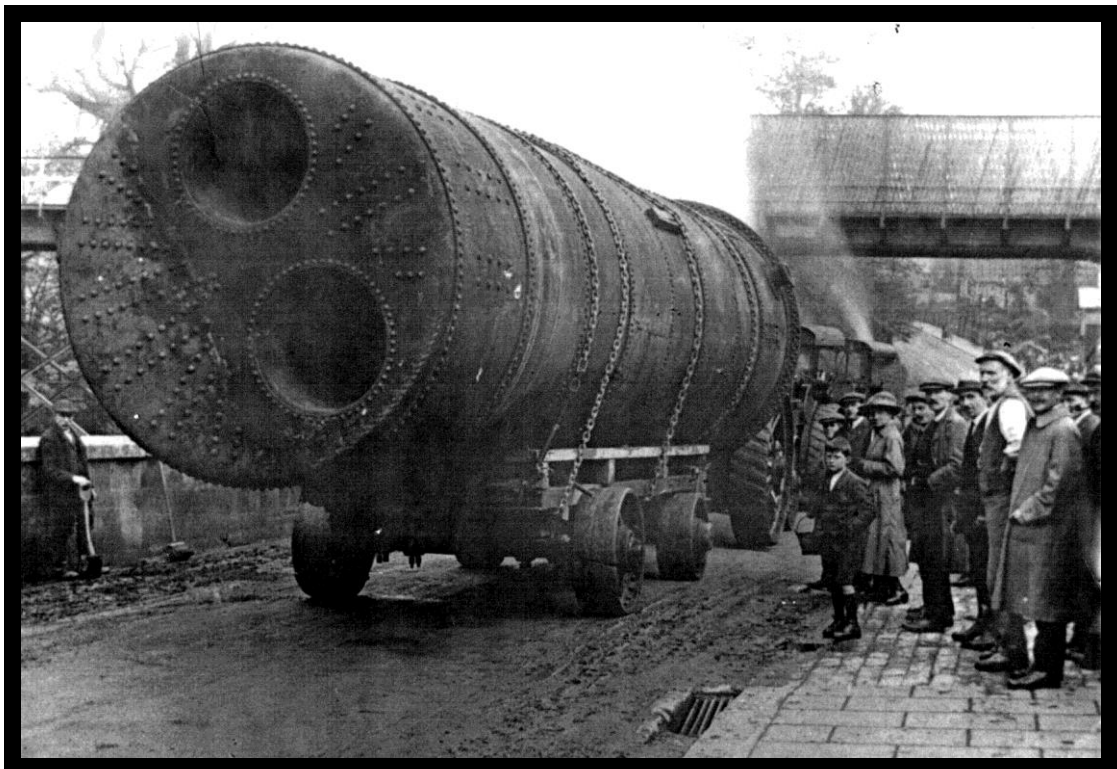


Moving a Marshall Boiler to a tea factory in Ceylon (Sri Lanka).

STEAM BOILERS: DELIVERY

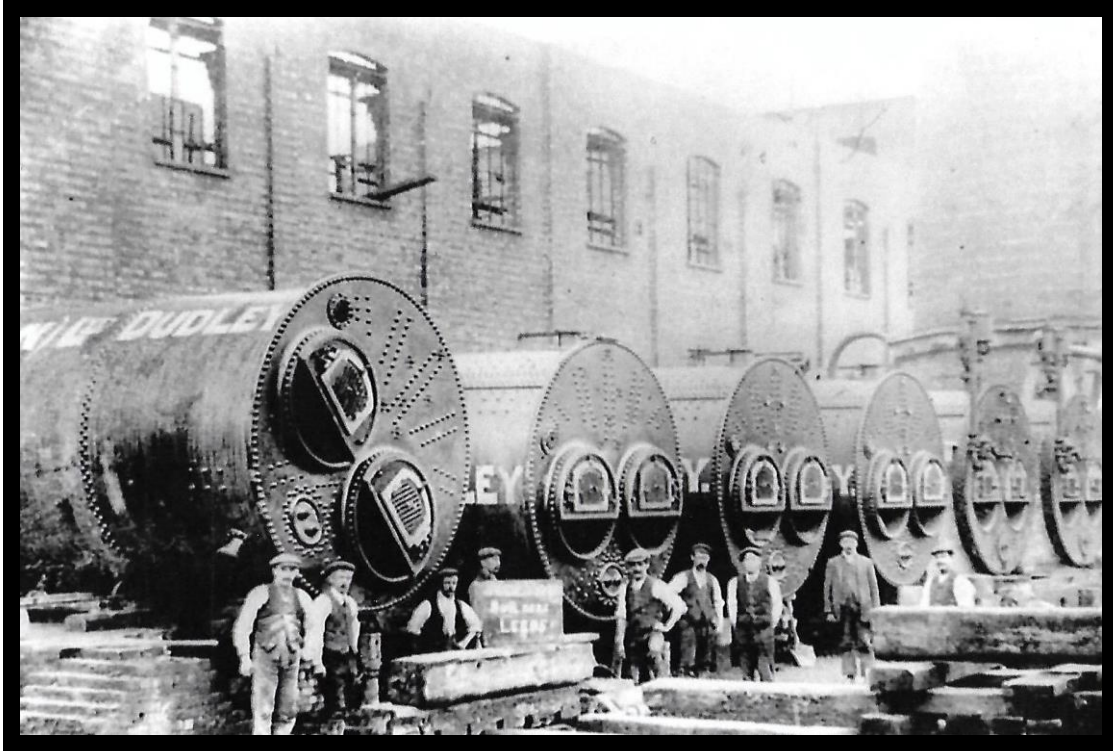


Transporting a Boiler for Contractor Wm. Freer Ltd of Leicester.

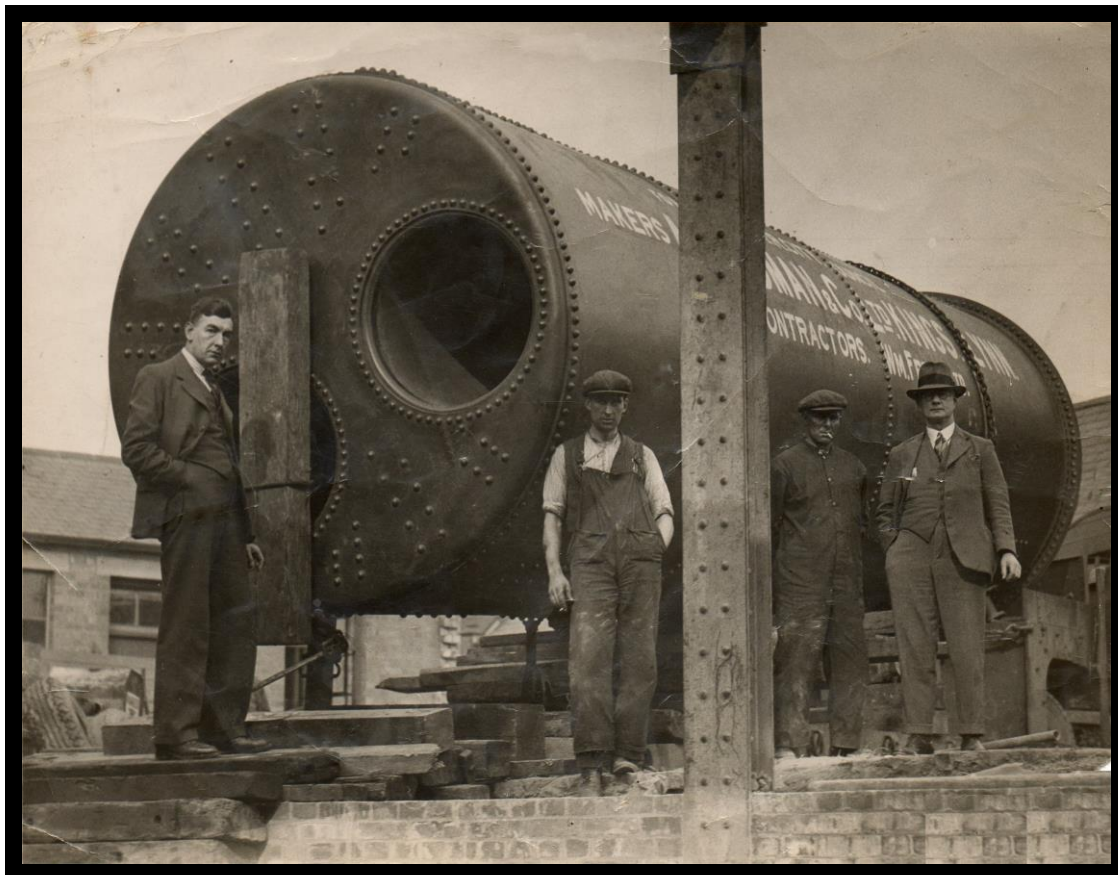


Boiler arriving at its destination on the Isle of Wight.

STEAM BOILERS: INSTALLATION



Boilers at Askern, Doncaster in South Yorkshire.



Steam Boiler awaiting installation by Wm Freer Ltd.

STEAM BOILERS: INSTALLATION

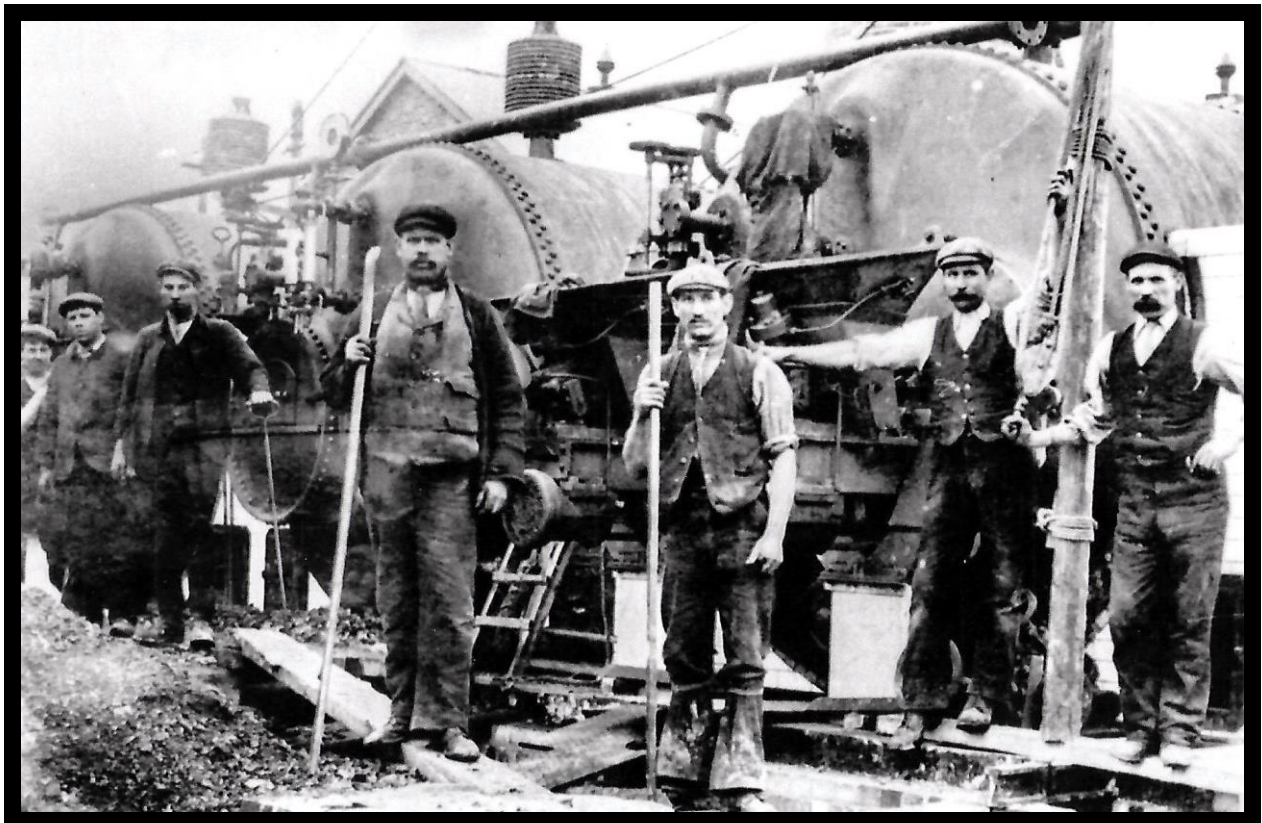


Galloway boiler on a crane 1900.

STEAM BOILERS: OPERATION

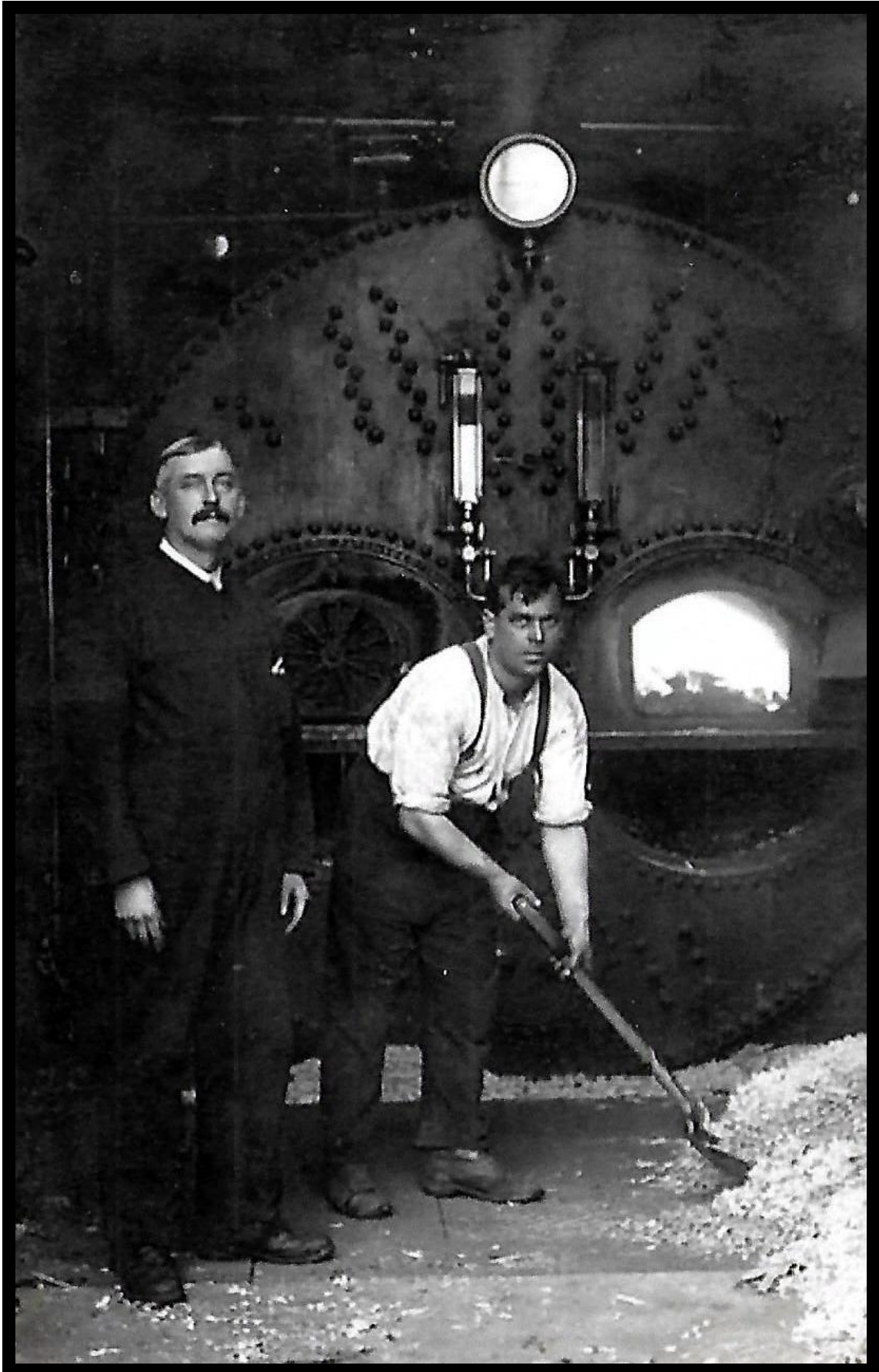


Boiler House at Keresley Colliery, near Coventry.



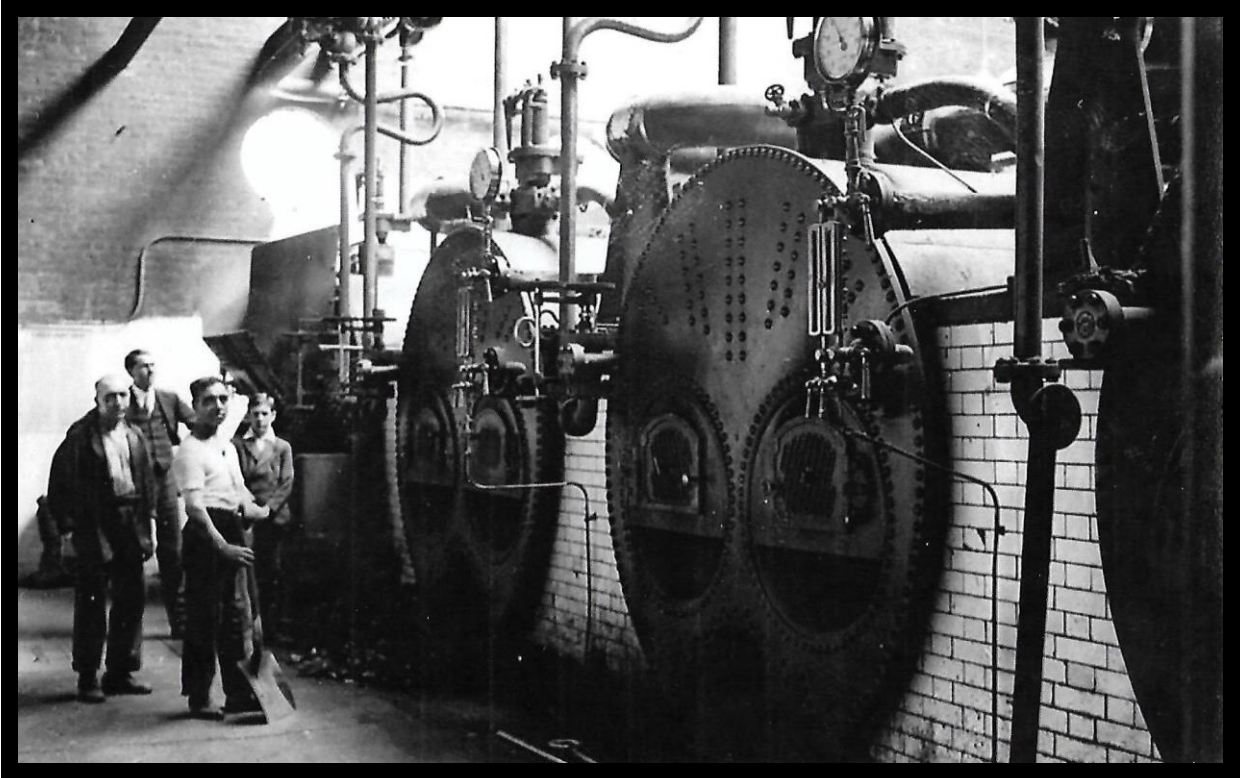
Stokers at the Bullcroft Colliery Boilers, near Doncaster in South Yorkshire.

STEAM BOILERS: OPERATION

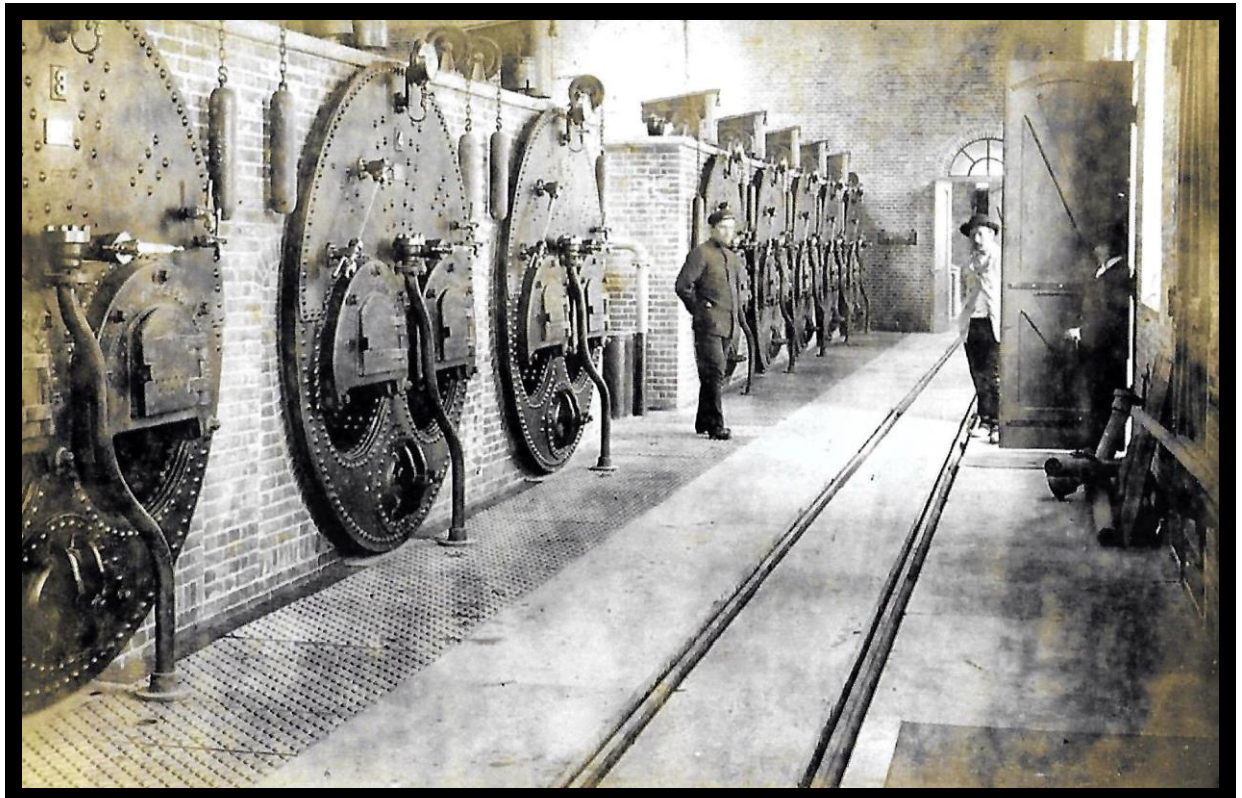


Ready to stoke a Patented Steam Boiler.

STEAM BOILERS: OPERATION

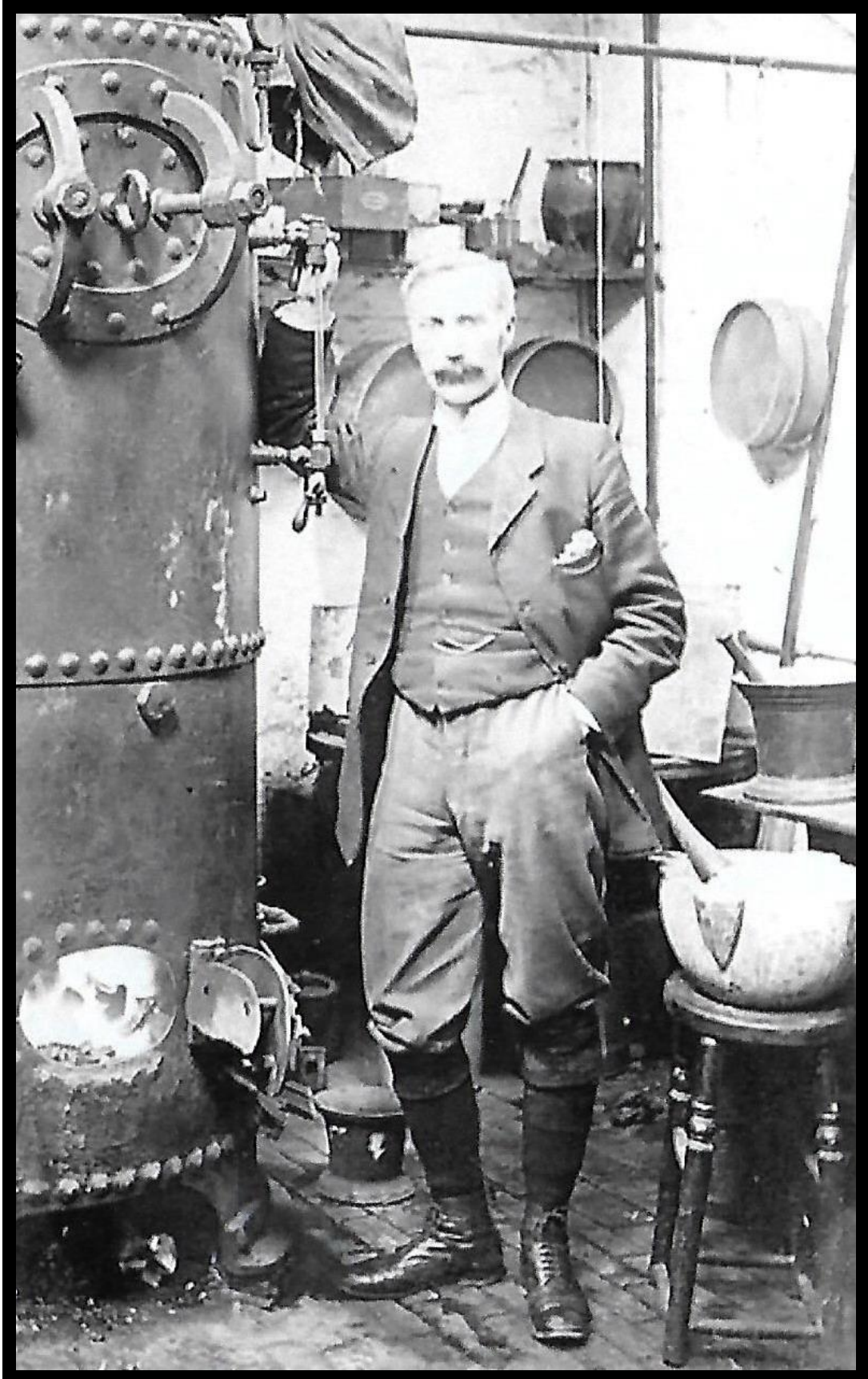


Bank of Lancashire Steam Boilers.



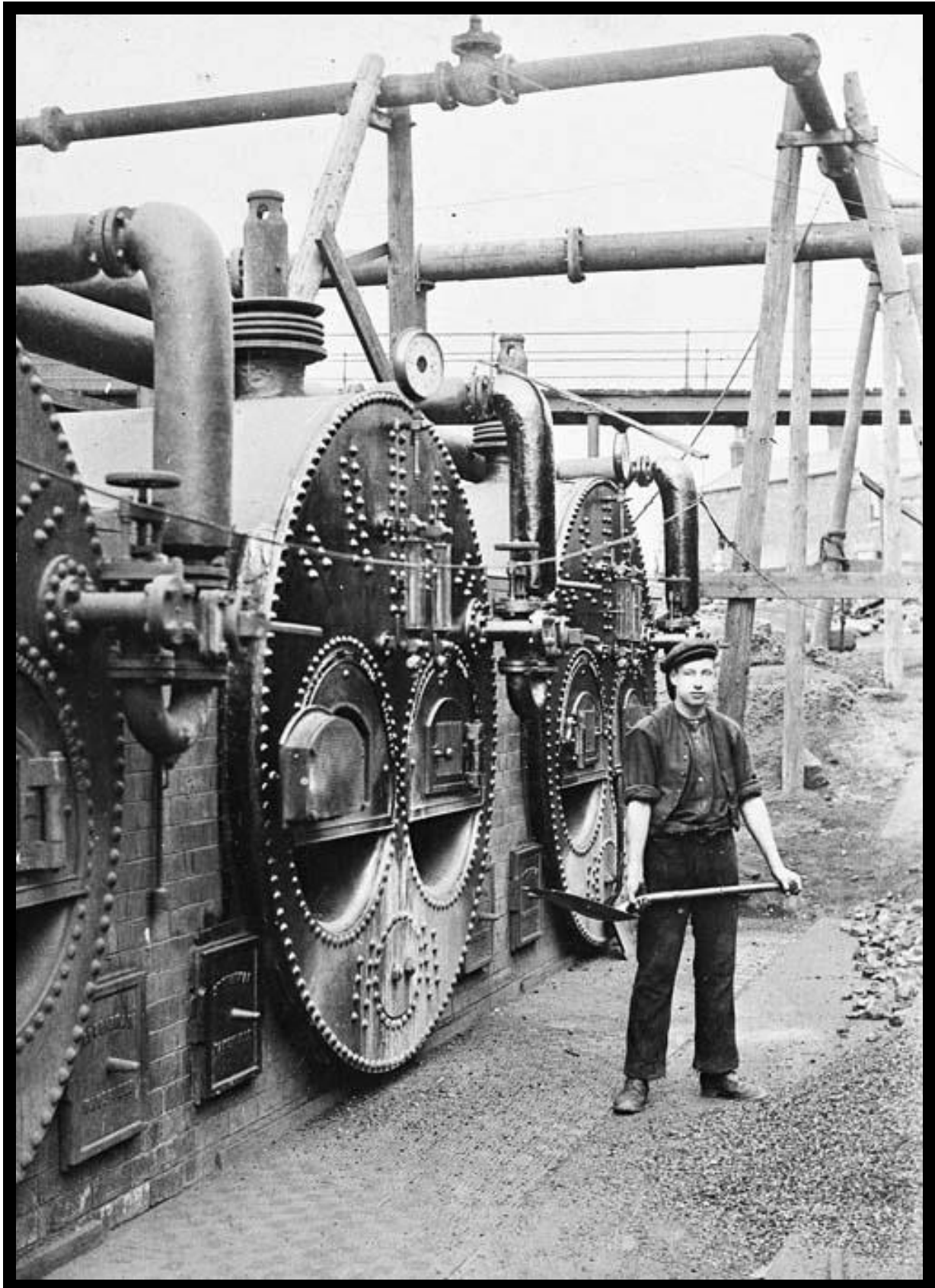
Postcard featuring eight Steam Boilers.

STEAM BOILERS: OPERATION



A Vertical Steam Boiler.

STEAM BOILERS: OPERATION



Stoker with three Lancashire Steam Boilers.

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STEAM BOILERS: OPERATION

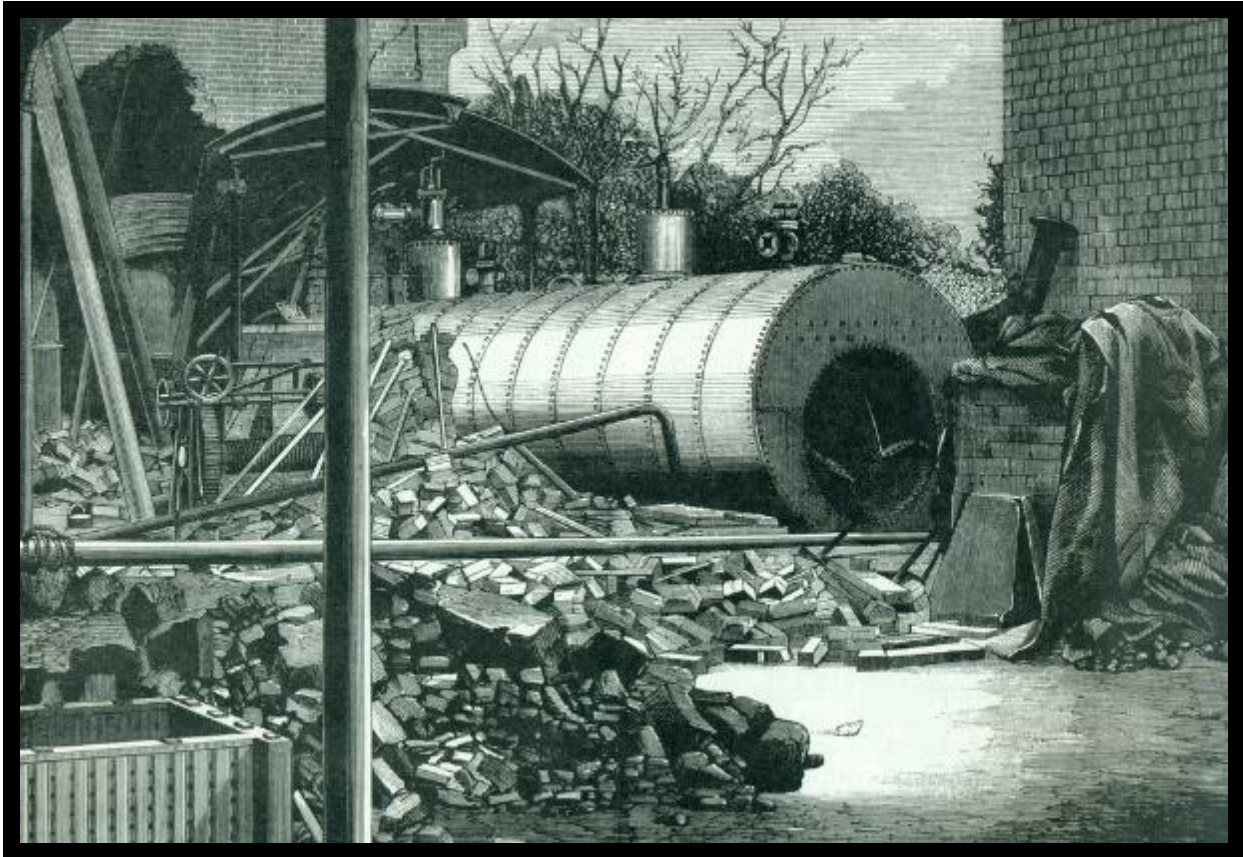


Feeding wood into a Galloway Steam Boiler at Coldharbour Mill in Devon.



Four Lancashire Steam Boilers at Papplewick Water Pumping Station, now a Museum.

STEAM BOILERS: EXPLOSIONS



Boiler Explosion at the Bass Brewery, Burton-on-Trent, 1866.



After the Boiler Explosion in the Millfield Iron Works, Wolverhampton, 1852.

STEAM BOILERS: EXPLOSIONS



After the Boiler Explosion at Lord Brothers, Todmorden, West Ridng of Yorkshire, 1875.



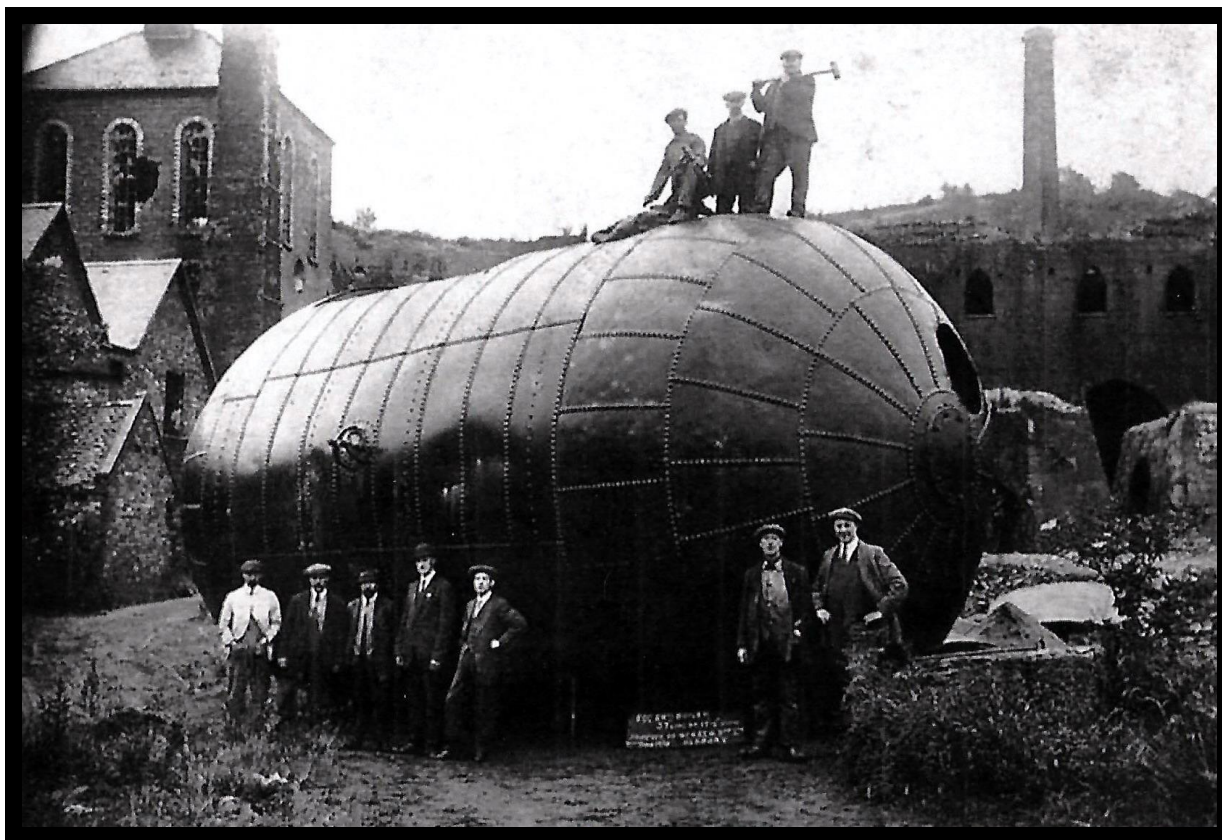
Destruction of Egg-Ended Boiler and Building at Bridgefield Mill, Rochdale, 1854.

STEAM BOILERS: EXPLOSIONS



Aftermath of Boiler Explosion at Rose Bank Bleach Works, Ramsbottom, Lancashire, 1873.

STEAM BOILERS: GRAVEYARD



Egg-ended Boiler removed from Blists Hill Blast Furnaces, Telford, Shropshire.



Haystack Boiler from Cheddleton Flint Mill, Leek, Staffordshire.

STEAM BOILERS: GRAVEYARD



Steam Boilers long abandoned, rusting away, location unknown.