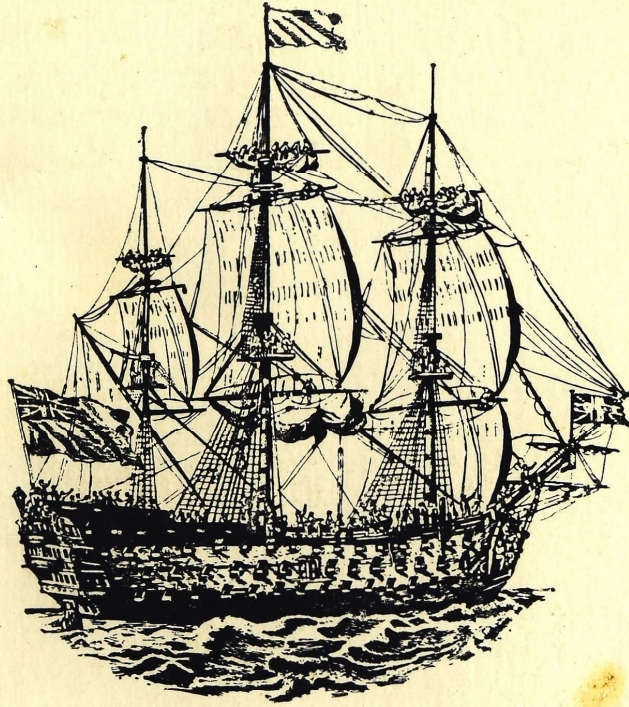


From Napoleon to Elizabeth II



THE HISTORY OF BROWN LENOX & CO LTD

The illustration on the cover is of
H.M.S. VICTORY, off Dover.

The history of Brown Lenox & Co Ltd

The origin and development of Brown, Lenox & Co. Ltd. read like pages from a history book. In the days of Napoleon, Samuel Brown, then a lieutenant in the Royal Navy, designed and patented the wrought iron chain which was to replace the hempen rope cables that were then used to hold a ship's anchors. This achievement proved to be one of the most important maritime developments of the 19th century. It is on record that he shut himself up in two small rooms of a house in Dove Court, Lombard Street, and spent months experimenting with his invention.

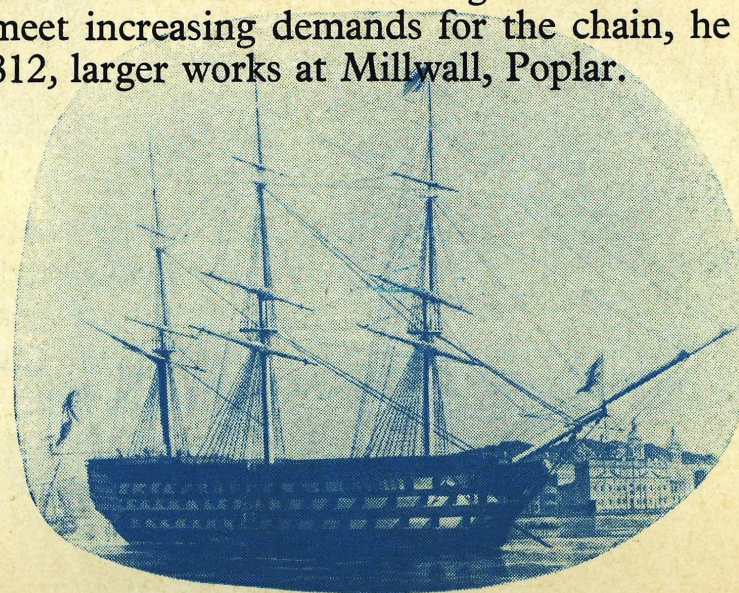
Having satisfied himself of the efficiency of the chain, he engaged smiths to manufacture it at premises in Narrow Street, Ratcliffe, and in the Borough near Waterloo Bridge. However, he was unable to finance the project to completion, and enlisted the aid of relatives and friends.

This led to the formation in 1806 of a partnership between Lieut. Brown and his cousin, Mr. Samuel Lenox, which was, in effect, the beginning of the present firm.

To demonstrate the advantages of his type of chain, Lieut. Brown fitted out at his own expense a vessel called

the "Penelope"; the entire rigging was of chain, and chain was used for her cables. In this vessel he made a voyage to the West Indies, returning in 1808, having proved to his satisfaction the superiority of iron chain cable over the hempen rope cable that had so far been used.

He then approached the Navy Board to investigate its advantages, and a Committee of Naval Officers was appointed to report on the subject. The Report was so favourable that the Government immediately ordered four vessels of war to be fitted with Brown's chain cables. In August 1811, Lieut. Brown was made a Master and Commander in recognition of his invention. To meet increasing demands for the chain, he erected, in 1812, larger works at Millwall, Poplar.



H.M.S. HOWE (1815), off Greenwich.

From Napoleon to Elizabeth II

About this time Captain Brown, as he had then become, began to interest himself in the construction of suspension bridges, and amongst those for which he supplied materials and in some cases supervised construction, were:—

Union Bridge across the Tweed at Berwick.

Trinity Pier at Leith.

The suspension Bridge at Hammersmith.

Hexham Bridge.

The Chain Pier at Brighton.

He designed the Menai Straights Bridge.

The old chain pier at Brighton, completed in 1825, was probably one of the best known of these structures.

This photograph shows the welding of angle cleats onto an Admiralty Pattern Cylindrical Buoy at the Company's Millwall Works.

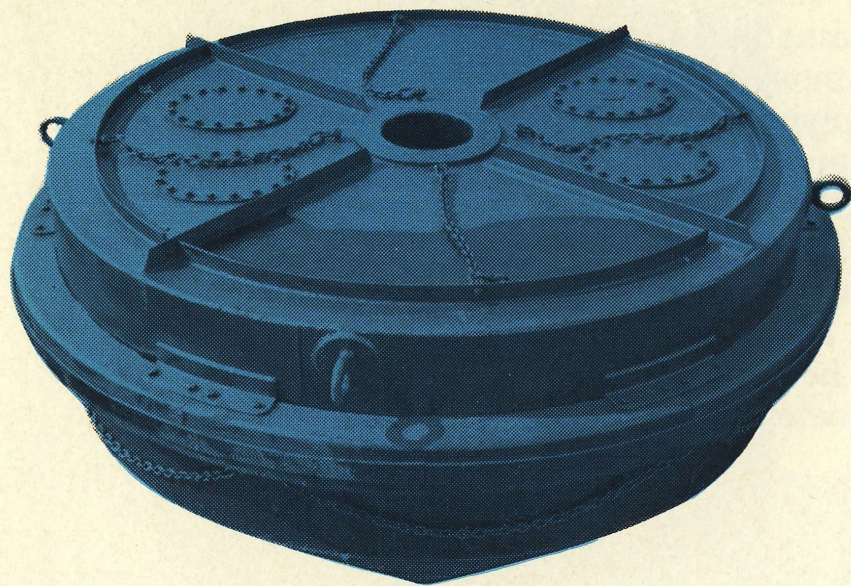


A Deed of Covenant was drawn up in which Samuel Brown and other gentlemen, including the Duke of Wellington and the Earl of Egremont, undertook to raise by subscription, in shares of £100 each, the sum of £27,000 towards the erection of the pier. Captain

The Chain Pier, Brighton.

Photograph by courtesy of the Hulton Picture Library.

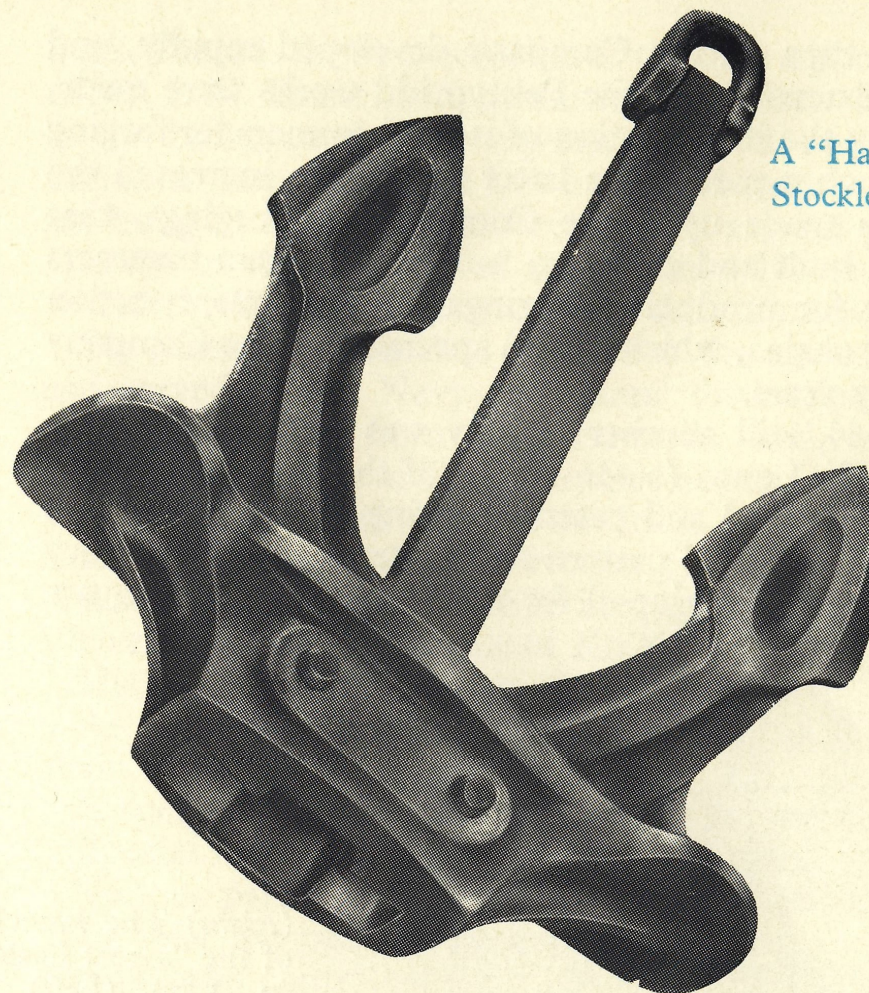
The history of Brown Lenox & Co Ltd



An Admiralty Pattern Peg Top Buoy.

Brown, himself, was responsible for raising some £17,000 of this sum. Queen Victoria visited the pier in 1837, where she was received by Captain Brown.

An important development at this period of the Company's history, was the design and manufacture of permanent moorings for vessels. The firm also introduced a new type of anchor, which was later approved by the Admiralty and became known as "The Admiralty Anchor".



A "Hall's"
Stockless Anchor.

From Napoleon to Elizabeth II

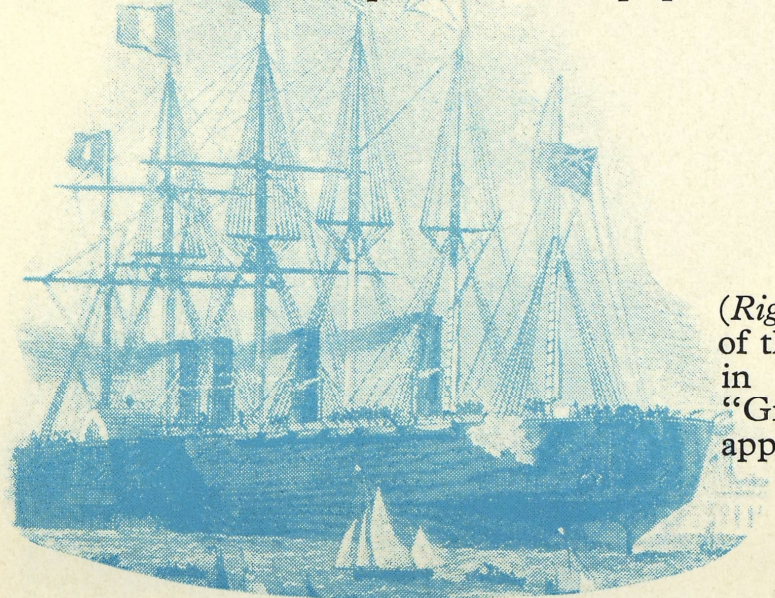
From then on the Company developed rapidly, and further extensions of the Pontypridd works were made, including the introduction of steam hammers for forging heavy anchor parts. The latter venture so increased the demands made upon the Company for forgings, that the firm built and erected a number of steam hammers specially for producing forgings for the square-section mooring chains, which were a speciality of the Company for many years.

In 1844, still another activity was undertaken when George W. Lenox (a son of one of the Founders of the firm) introduced and patented lifting pulley blocks and sheaves "of special pattern and material". A very heavy demand soon developed for this equipment and thus a

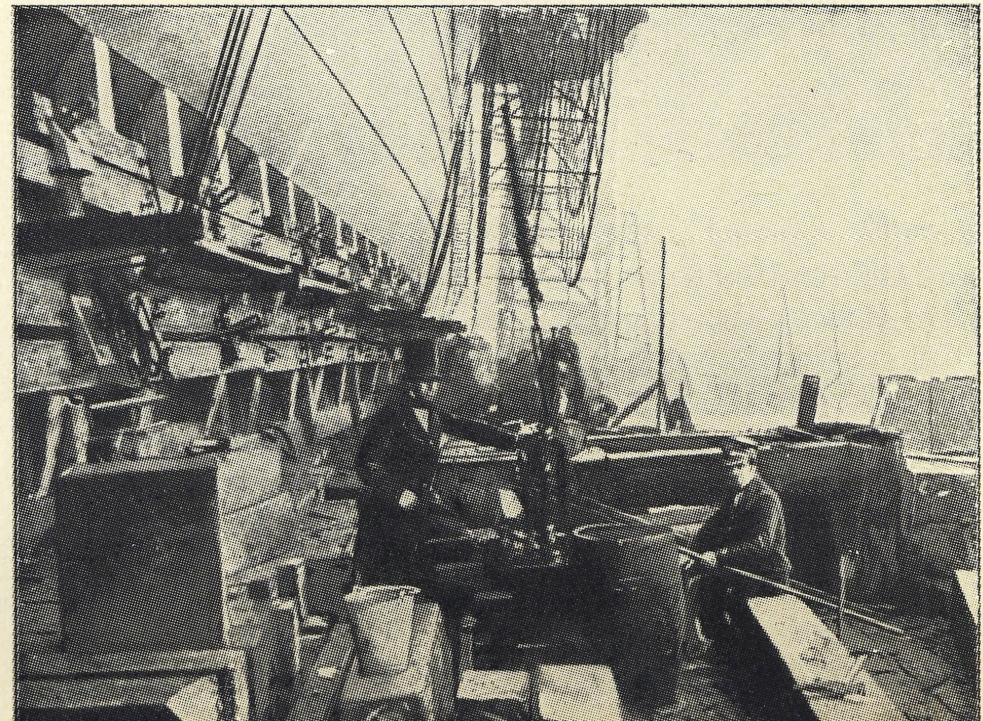
new industry was added to the already quickly expanding business.

Amongst the many projects at this period was that of supplying the iron cables for the "Great Eastern", a steam vessel designed by the well-known engineer, I. K. Brunel, who was closely associated with Mr. George W. Lenox. The ship was built on the Thames by John Scott-Russel and used for the purpose of laying the first Atlantic cable.

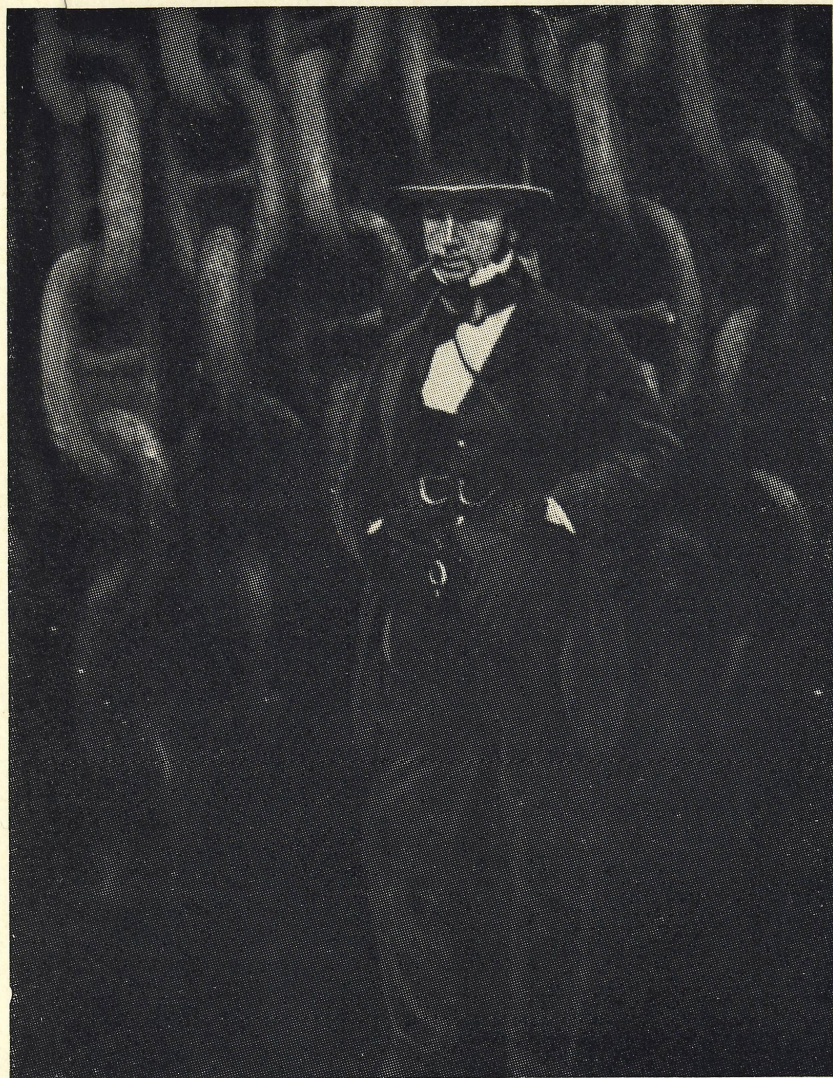
The iron cables, made at Pontypridd, were $2\frac{5}{8}$ in. diameter, and were easily the largest of their size at the



(Right) The launching of the "Great Eastern" in 1858. *(Left)* The "Great Eastern" as she appeared in 1869.



The history of Brown Lenox & Co Ltd



This is a reproduction from the original photograph in the Company's possession, showing Mr. I. K. Brunel with cables manufactured by Brown, Lenox and Co. Ltd. as a background.

time. There is in the possession of the firm a photograph of Mr. I. K. Brunel with cables for the "Great Eastern" in the background. The caption reads "I wanted Mr. Lenox to stand with me but he would not, so I alone am hung in chains". Mr. Brunel took a great personal interest in the making of the chain cable and often visited the Works, to inspect them during manufacture.

Sir Samuel Brown died in 1852 at the age of 76. He had served in the Navy with some distinction during the French War from 1795 onwards, and was with Nelson at the Battle of Trafalgar. He became Commander in 1811 and retired Captain in 1842. In 1835 he was made a Knight of the Hanoverian Guelphic Order by William IV, and later in 1838 he received from Queen Victoria the further honour of Knight Bachelor.

His records at the Patents Office include:—

An improved method of manufacturing links for chain cable.

A special machine for scarfing links for use in chains.

Special links for suspension bridge construction.

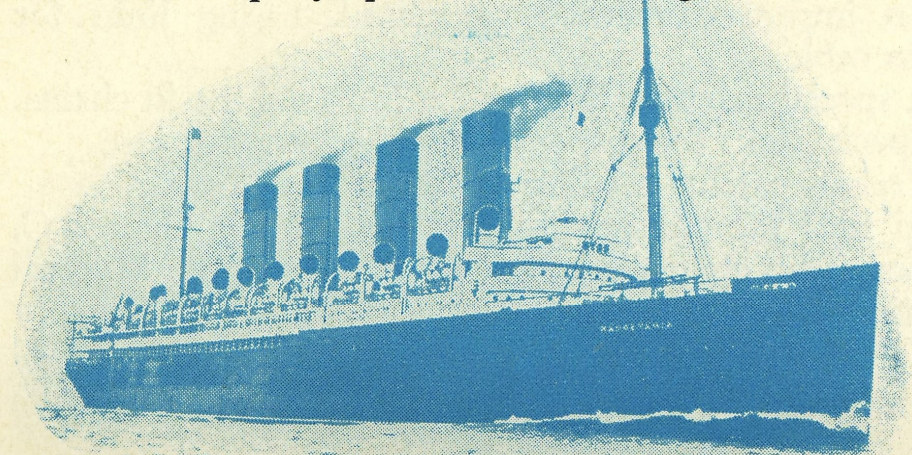
Various patents relating to marine engineering.

In 1891 the partnership consisted of Mr. George C. Lenox (who controlled the City office and the Millwall Works), Mr. L. Gordon Lenox and Mr. H. M. Gregory

From Napoleon to Elizabeth II

—the two latter were resident partners at Pontypridd. Mr. J. B. Richardson was appointed General Manager at Pontypridd in 1901, and later became Managing Director. Mr. Hugh Lenox became Managing Director of Brown, Lenox and Co. (London) Ltd., an associate company at Millwall formed in 1909, when the firm was converted into a Private Limited Company. Partners at various times prior to 1891 were John Jones and Hugh Mackie Gordon; the former founded the City Bank.

Around the beginning of the 20th century the firm considerably expanded its interests to include, amongst other products, volute and laminated springs for railway wagons; the steel for which was rolled in the Company's own mills. Many colliery requirements, including pit trams or tubs, were supplied in large numbers. At this time the Company operated iron rolling mills, foundries



R.M.S. MAURETANIA



Chain cables for the Cunard

Liner R.M.S. MAURETANIA.

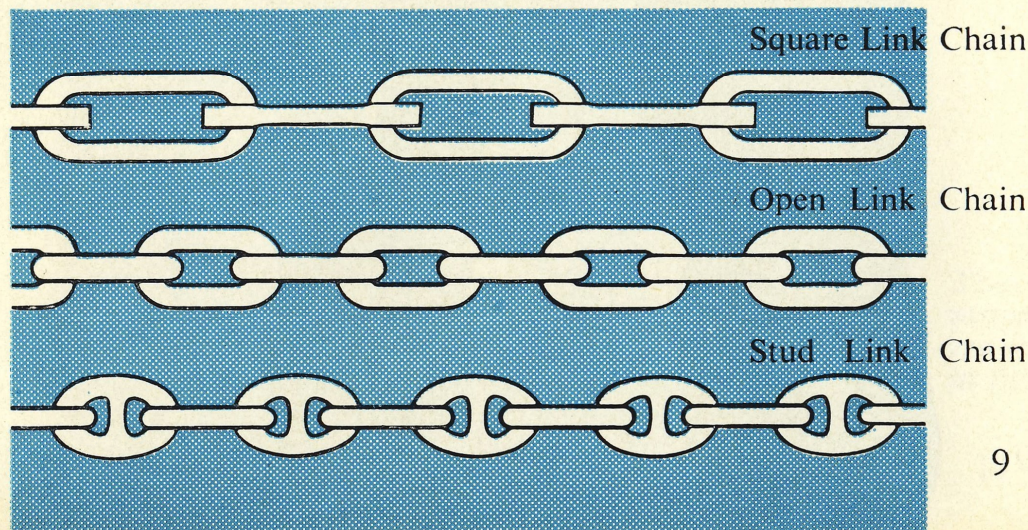
The history of Brown Lenox & Co Ltd

for cast iron, crucible steel and brass, and heavy forges, as well as the existing chain and smith departments.

Just 50 years after making the record-size chain cables for the "Great Eastern", the Company supplied those for the first "Mauretania" and subsequently for the Cunard Liner "Aquitania"; the size of the cables for the former was $3\frac{1}{4}$ in. diameter, and for the latter $3\frac{7}{8}$ in. diameter. Wrought iron cables were supplied also for such ships as H.M.S. "LION", "DREADNOUGHT", "RENOWN", "HOOD", "FURIOUS", "NELSON", "RODNEY", and for Merchant Ships including the Italian vessels "REX" and "CONTE DI SAVOIA". Chain cables, gear and moorings were also made for Argentinian battleships.

By this time the Company had become world known as designers and manufacturers of deep sea, harbour and river moorings, and were supplying moorings, anchors and other gear to many ports and harbours throughout the world, and also to oil companies.

Throughout these years, continual changes were taking place at Pontypridd. The use of water for motive



A number of links and a swivel of the $3\frac{1}{2}$ " wrought iron Mooring Chain for the Regent Oil Co. Ltd.'s mooring at Canvey Island, photographed in the Chainworks at Pontypridd.



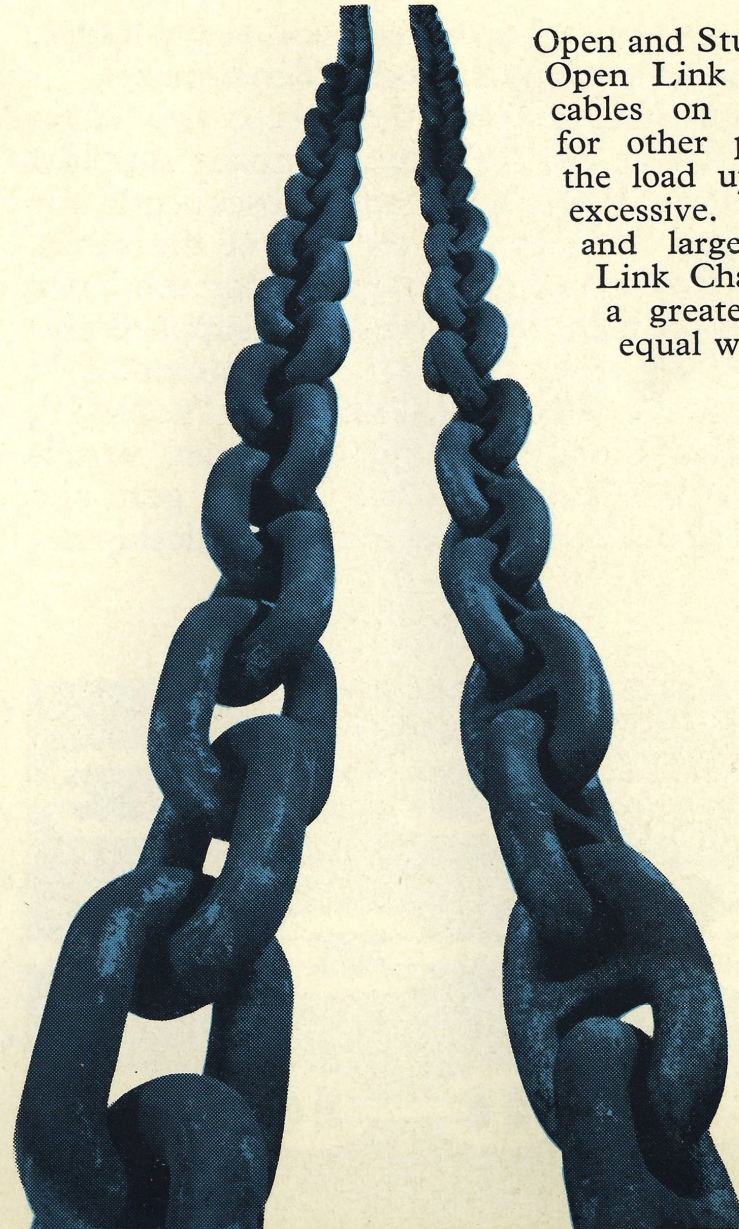
From Napoleon to Elizabeth II

power had been replaced by steam, and then by electricity. The Rolling Mills, Spring Making Department and Constructional Department were dismantled and replaced by extensions to the departments that were increasing in productivity. In 1922 a Steel Foundry was built and equipped with an electric arc melting furnace.

In 1928, considerable research resulted in the development of a patented method for the production of continuous lengths of *cast steel* chain 40 per cent stronger than the wrought iron cables of equivalent section. The Company was the first firm in the world to receive Lloyd's approval for the manufacture of *cast steel* chain for ships' use, and even now only a few companies throughout the world have received such approval. The Brown Lenox product is marketed under the registered trade mark BLeCO.

The success of the *cast steel* cables was considerable, especially as the new venture included large quantities of *cast steel* mooring chains for the British Admiralty.

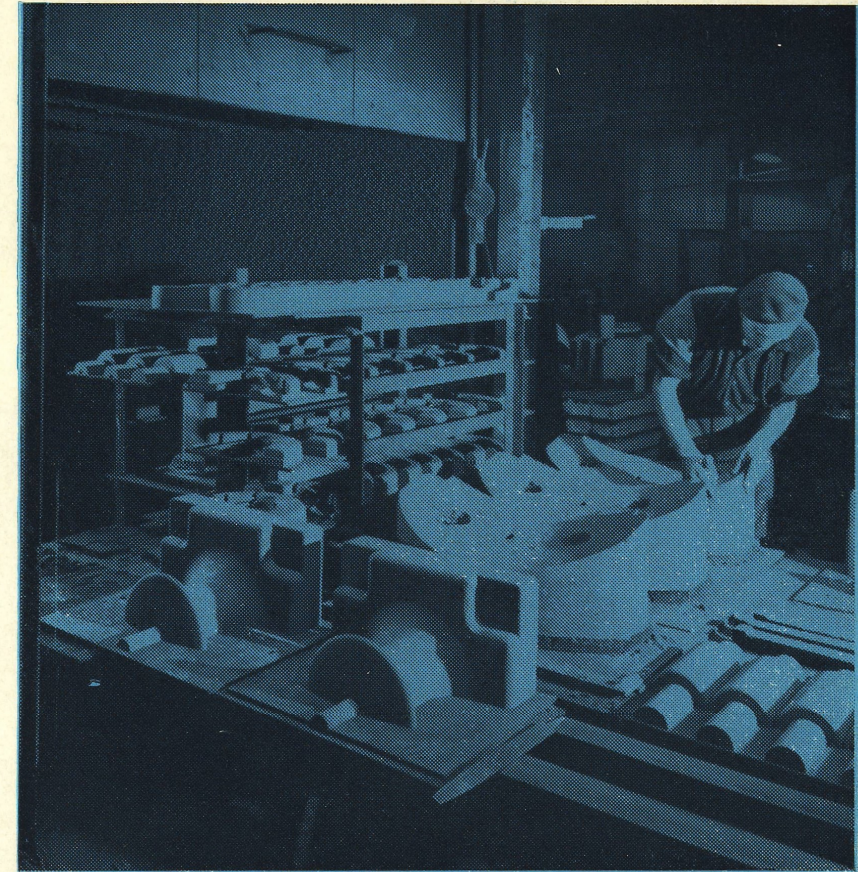
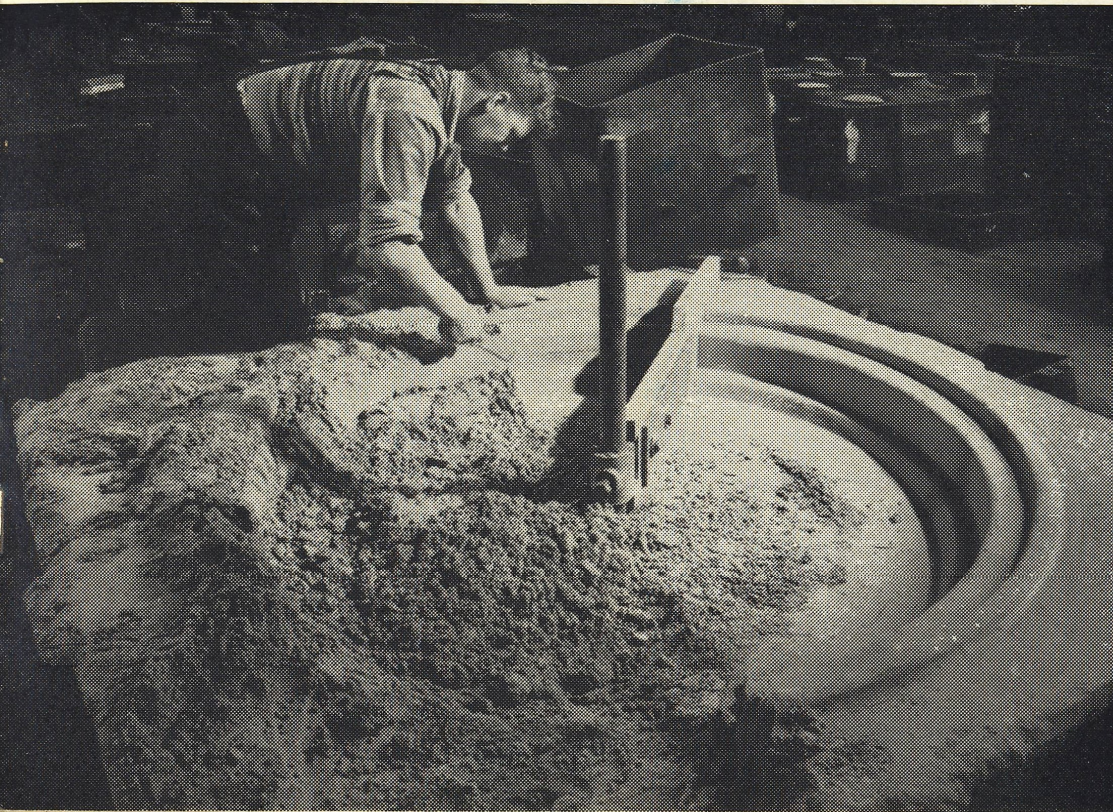
Thus today in the works at Pontypridd are carried out, side by side, the old craft of smithing, and the casting of steel into component form by the most modern methods, and a number of categories of general engineering work. All are subject to modern methods of quality control.



Open and Stud Link Chain. The Open Link Chain is used for cables on smaller ships and for other purposes in which the load upon it will not be excessive. For heavier loads and larger ships the Stud Link Chain is used, having a greater strength for an equal weight.

The history of Brown Lenox & Co Ltd

Complementary to the basic producing activities of the Pontypridd works, has been the erection and equipping of modern machine shops. The programme of expansion and re-equipment of the machine shops extends several years into the future. A wide range of machining operations can be carried out, and many of



The photograph on the left shows the preparation of a Sand Mould. Above, cores are shown ready for drying, prior to assembly in the moulds.

From Napoleon to Elizabeth II



the Company's products, especially steel castings, are delivered to the customer in a finish-machined condition.

For many years the Company has specialised in the design, manufacture and servicing of chains and lifting gear. Since 1954 the Company has held the licence to produce Heppenstall Materials Handling Equipment in the U.K.

The Company still operates its works at Millwall, and manufactures buoys for moorings, pressed steel tanks, and a wide variety of fabricated platework. At both Pontypridd and Millwall, large-scale development projects are envisaged for the future.

The celebrations of the 150th Anniversary of the Company in June 1956 coincided with the erection and equipment of new laboratories to strengthen the control of materials and processes, and the decision to install the largest type of automatic chainmaking plant in the world. The latter, an ASEA-SVETS plant, produces

The sections of a 50 ft. chimney being assembled for the
chimney was made for *The Woodall
Construction Co. Ltd.*

ERRATA

Page 12, line 10

For "manufacturers" please read "manufactures"

The history of Brown Lenox & Co Ltd

high tensile steel chain up to 4 in. diameter, at a speed very much in excess of the old craft methods of making wrought iron chain, and has been operating very successfully since 1958.

In 1962 the Company opened a new Machine Shop, installing high precision and heavier machines, together with an Assembly Shop equipped with overhead cranes capable of handling structures weighing up to 35 tons.

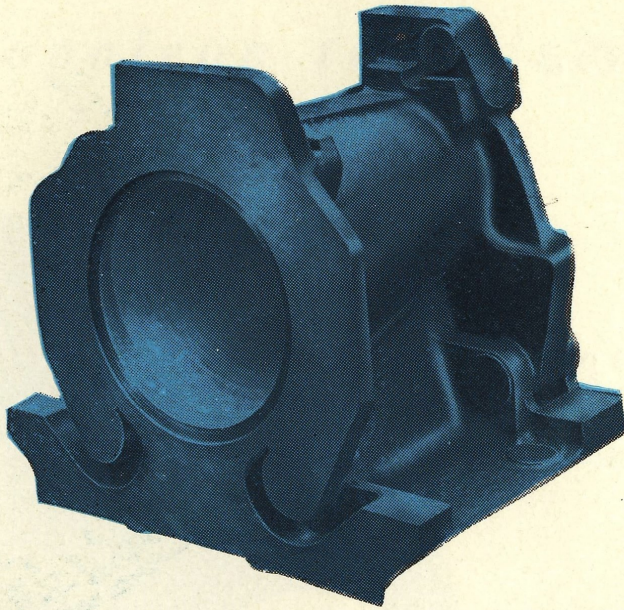
Because the bulk carrying ships are increasing in size and it is important to handle these vessels expeditiously and safely, a new design of dockside hook was designed and patented in 1964. This Quick Release Jetty Hook includes a bollard and is so designed that each hook carries one rope and each rope can be released independently of any others, although several hooks may have a common base.

Lambert Garland Moorings Limited, patentees and manufacturers of large stable platformed buoys, designed specifically to moor giant tankers, was acquired in 1964 enabling this Company to design and manufacture moorings for the largest oil tankers now in use or likely to be for many years to come.

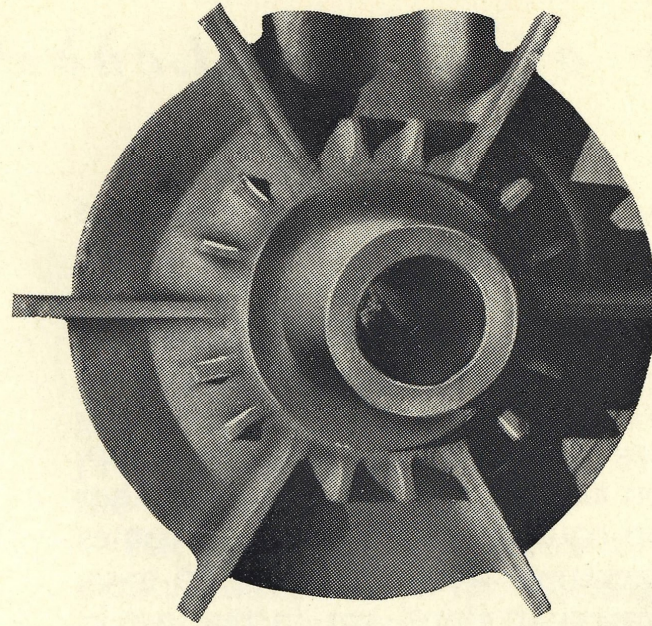
The photograph below shows a *cast steel* Rocker Arm for *The Steel Company of Wales Ltd.*, weight 1906 lbs. A special rig was designed by the Company to perform the difficult machining on this product.



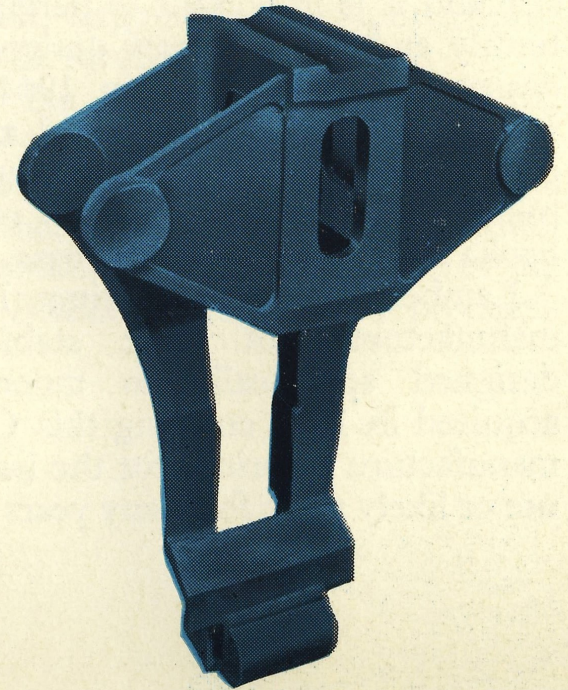
On the right is shown a *cast steel* Hose End, made for *The National Smelting Co., Avonmouth,* weighing 436 lbs.



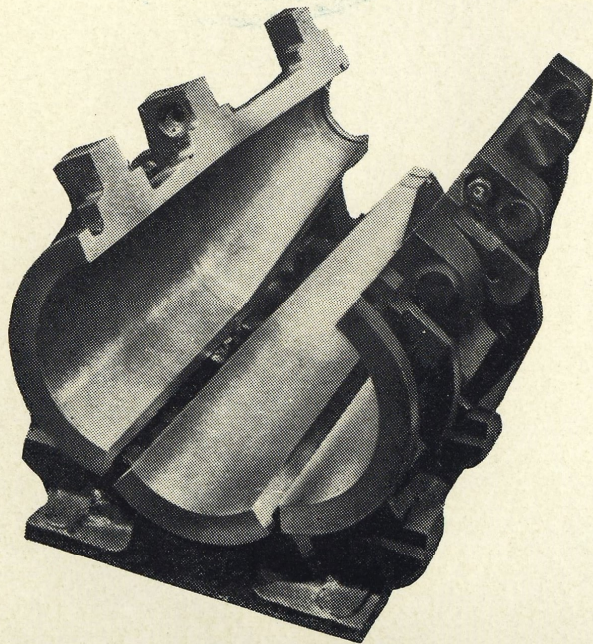
A *cast steel* Drive End Axle, weight 25 lbs.

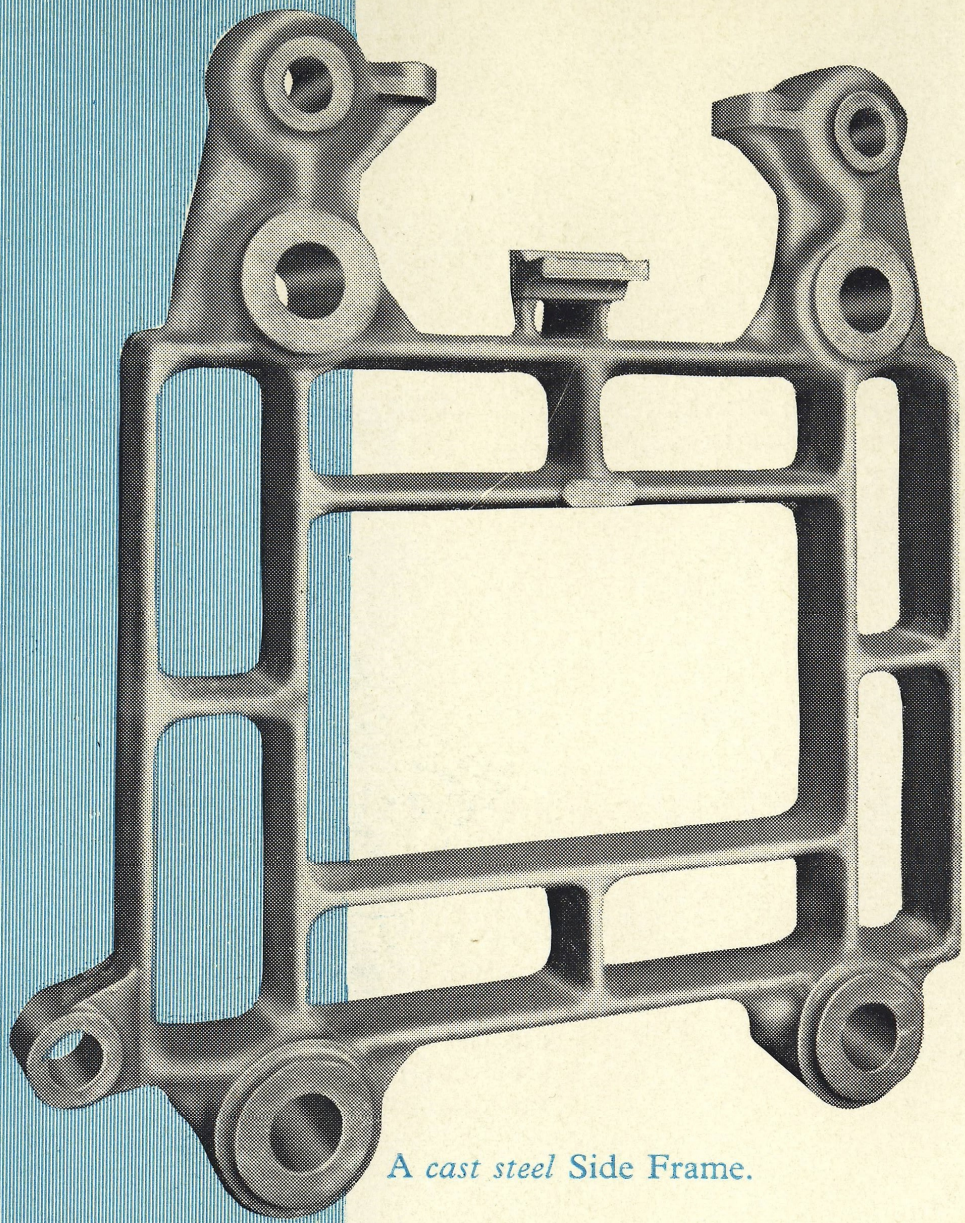


A *cast steel* Frame, weight 101 lbs.



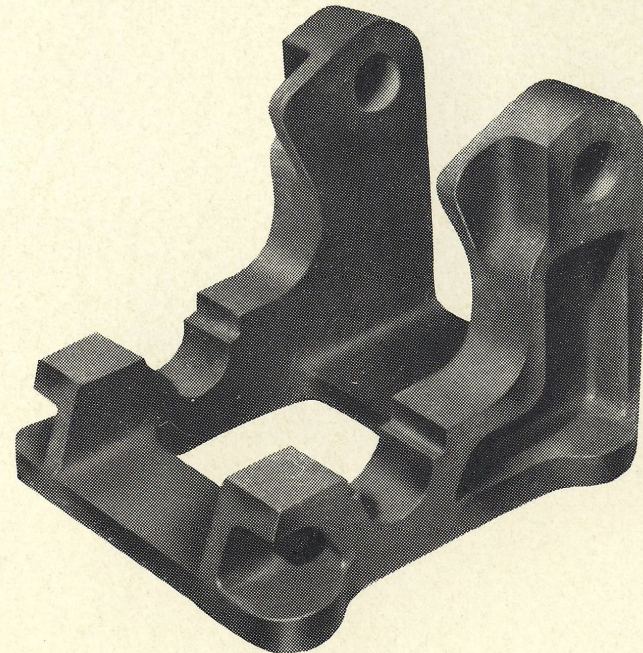
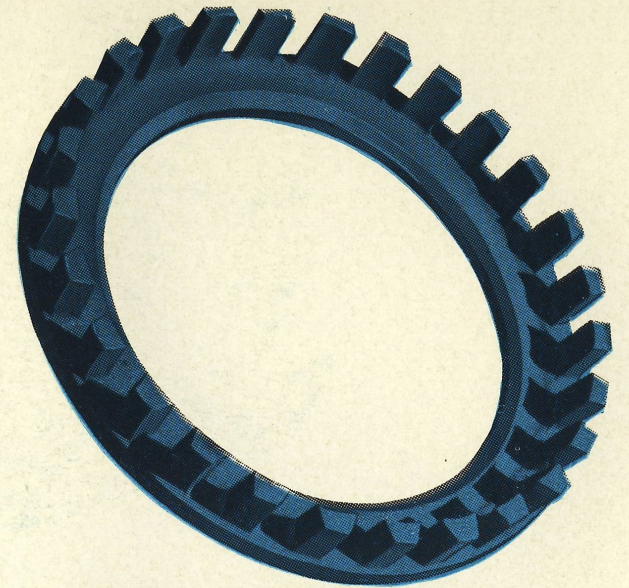
A *cast steel* Condenser Housing, weight 4986 lbs. This is another example where the Company successfully performed a difficult machining operation.



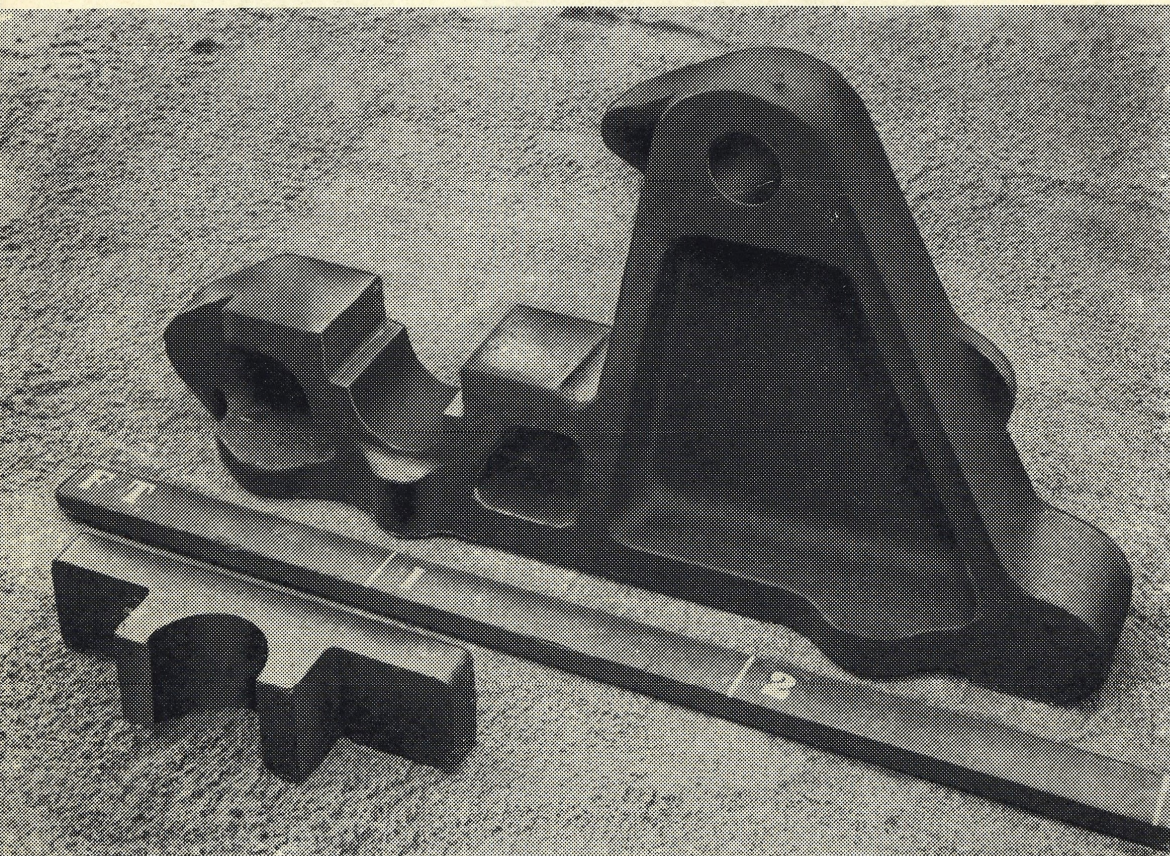


A cast steel Side Frame.

On the right
is an
illustration of
a *cast steel*
Bed Ring
made for
W. S. Barron
& *Son Ltd.*,
weight 39 lbs.

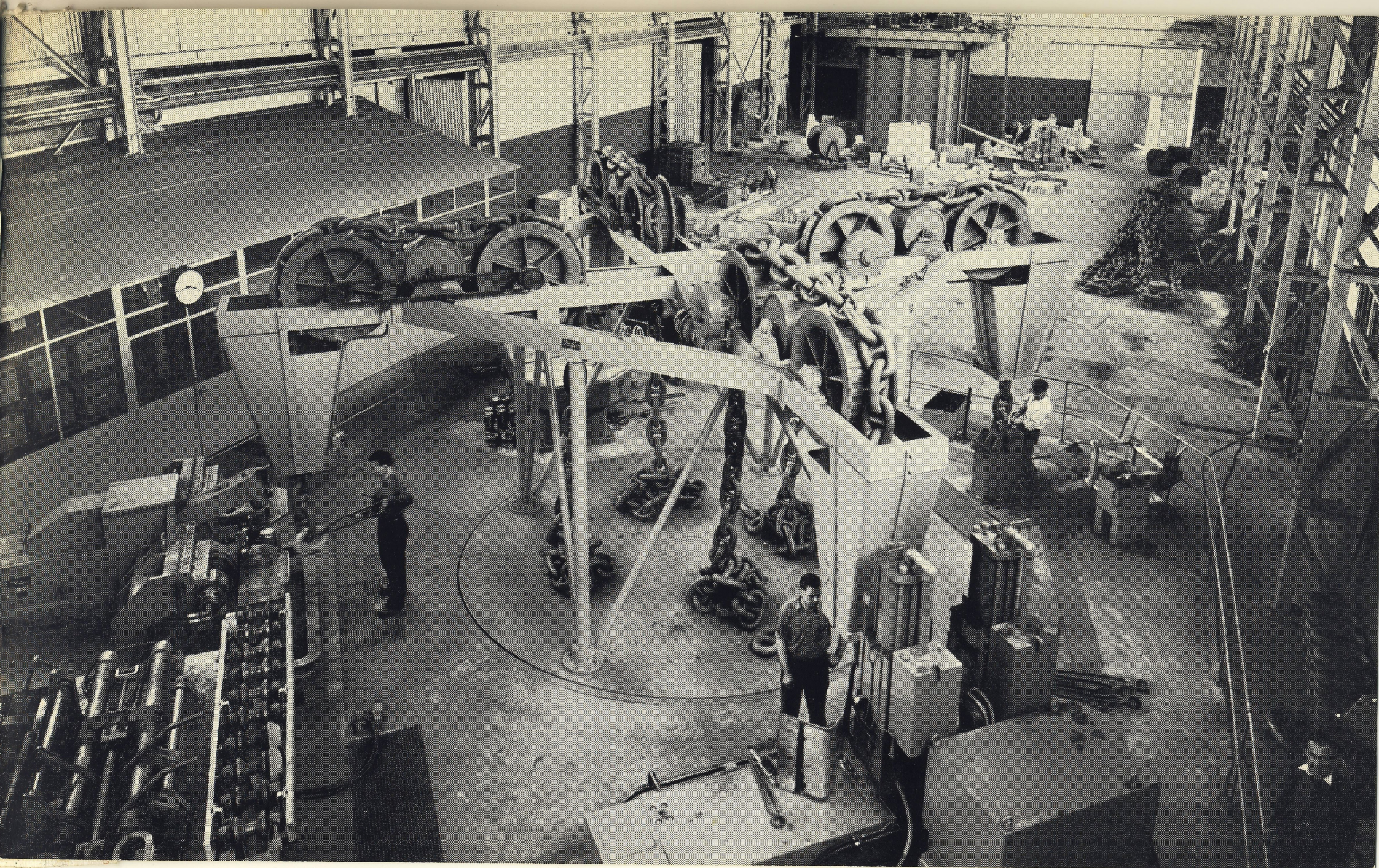


The *cast steel*
Kep Bracket
on the left
weighs
120 lbs. and
is made to
B.S.S.
592/A.



On the left is shown a *cast steel Kep Bracket*, which is for use in Colliery Gear and weighs 201 lbs.

The photograph on the opposite page shows the automatic Chainmaking Plant installed at the Pontypridd Works of Brown, Lenox & Co. Ltd., upon which BLaCO electric flash butt welded steel chain cable is manufactured.





BROWN, LENOX & CO. LTD., PONTYPRIDD, GLAMORGAN. TEL: PONTYPRIDD 3261-4

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