British Manufacturers of Permanent Way

By E M Bate, Version 2, April 2020

Introduction

This article compiles information about British (including Irish) companies that manufactured railway permanent way and permanent way materials.

This article covers ordinary rail chairs, switch and crossing rail chairs, rails and turntables. It does not include timber sleeper importers/dealers, nor cast-iron tunnel segment manufacturers.

It will need to be expanded to include steel sleeper companies and flat-bottom rail fixings companies.

For snapshots of old maps of the manufacturing works see "British Manufacturers Maps".

Abbreviations on Castings etc

This table lists manufacturers marks used on rail chairs etc.

Marking	Manufacturer	Dates seen	Railway companies
AFC, AFCo, AFCLd, AFCoLd, AFCoL	Anderston Foundry Company Ltd	1881 - 1940	LBSCR, LNER, LSWR
C&Co	Cochrane & Company	1931	LNER
GKN, GK&N	Guest, Keen & Nettlefolds	1904 - 1947	GWR, GW&GCJR
GWP&Co	Gilkes, Wilson, Pease & Company	1875	LNWR
HW&Co, HW&CoLd	Head Wrightson & Company Ltd	1899 - 1908	LBSCR, SECDR, SE&CR
JW&Co, JW&Cld	Joseph Williamson & Company	1886 – 1919	SE&CR
NK&Co (unclear, also marked A-D)	? [possibly Watkins Keen and Co. "Watkins and Keen" also traded as PNBC]		GWR (matches a chair marked PN&BCoLd and A/D PATENT)
P&P, P&PLtd	Pease & Partners Ltd	1917 - 1934	SE&CR, LNER, SR
PNBC, PNBCo, PN&BCoLtd	The Patent Nut and Bolt Company	1892	GWR, LSWR
R&G, R&GN	Railway and General Engineering Company Ltd	1908 - 1936	SDJR, LNWR, LMS
SEC	?	1908	GNR
Sn	Swindon works	1914 - 1939	GWR
SP, SP&Co	Smith Patterson and Company Ltd	1896 - 1948	GER, NER, SE&CR, SR
STANTON.H	Stanton Ironworks Ltd	1943	LNER
TBS	Taylor Brothers (Sandiacre) Ltd	1916	SE&CR
TR&S	T Richardson and Sons [probably]	1876	GNR, LECR (Louth & East Coast Rway)
TSB	The Tees Side Bridge and Engineering Works Ltd	1936	LNER
TWWLtd	Thos. W. Ward Ltd.	1967	

Marking	Manufacturer	Dates seen	Railway companies
WP&C, WP&Co	Wilsons, Pease & Company	1881 - 1918	NER, LBSCR, SE&CR, LTSR
YE	Yorkshire Engine Company	1897	NER

Railway Companies which made their own rail chairs

Most railway companies bought their rail chairs from external manufacturers, but some made their own rail chairs in their own workshops. Some railway companies manufactured both ordinary chairs and points and crossings chairs, others only manufactured points and crossings chairs.

The railway companies with their own chair foundries for ordinary chairs were:

Great Northern Railway, at Peterborough. [Hargrave_1991, p.182, note 36]

London and North Western Railway, at Crewe. [Hargrave_1991, p.182, note 36]

Note that LNWR placed overspill orders with private makers, including Anderston Foundry Company. [Hargrave_1991, p.131]

Midland Railway, at Derby. [Hargrave_1991, p.182, note 36]

See IMechE_1898_Midland_Works_Visit which states:

There are two foundries served by four cupolas, two of which are in blast at a time. In the larger foundry, adjoining which is the core stove, locomotive and general work is carried on. **The other foundry is exclusively devoted to making railway chairs, of which about 320 tons are turned out on the average per week**.

See ISI_1910_Midland_Works_Visit which states:

Iron Foundries.—The iron foundries, of which there are two, measure 250 feet by 95 feet and 250 feet by 45 feet respectively. **The smaller foundry is devoted to the production of railway chairs, of which about 14,000 are cast weekly.**

Lancashire and Yorkshire Railway, at Horwich (Lancs.). [Hargrave_1991, p.182, note 36]

Great Central Railway, at Gorton (Lancs.). [Hargrave_1991, p.182, note 36]

The railway companies with their own chair foundries for points and crossings chairs were:

North Eastern Railway, at Gateshead.

Manufactured its own points and crossings. [Hargrave_1991, p.149 and p.192, note 118]

Great Western Railway, at Swindon Works.

Manufactured its own points and crossings. [Hargrave_1991, p.149 and p.192, note 118]
Some GWR ordinary chairs are marked Sn, so the Chair Foundry might have also made ordinary chairs (in addition to many being bought from PNBC and later GKN).
The Swindon Works Foundry was divided into the Iron Foundry, the Brass Foundry and the Chair Foundry. The Chair Foundry manufactured the cast-iron rail chairs of all shapes and sizes used by the Permanent Way Department. [Bryan_2004, p.104] See also http://www.swindonhistoriccastings.co.uk/rail_chairs.html and "GWR Railchair Catalogue" at http://www.swindonhistoriccastings.co.uk/data/ch.pdf

London and South Western Railway, at Eastleigh.

Manufactured its own points and crossings. [Hargrave_1991, p.149 and p.192, note 118]

Southern Railway, at Redbridge Works, Southampton.

From 1924, the Southern Railway manufactured its own switch and crossing rail chairs in a newly-built foundry at Redbridge Works. [Fairman_1988, p.25]

Supply Arrangements for Rail Chairs, Rails etc

During some periods, the companies manufacturing permanent way materials co-operated and colluded to control prices and keep companies profitable. This is examined in detail in Hargrave_1991. This was partly achieved by trade associations including the
"Cast Iron Chair Association" (CICA),
"Switches and Crossings (Export) Association" (SAXA),
and the "Rail Ring". The Rail Ring shared out orders. [Shepherd_2012, p.51]

Rail chair manufacturers could be grouped into:
Scottish (Glasgow & other) firms,
North Eastern firms,
Midland firms.

The Scottish firms included Glasgow firms (James Goodwin and Company until 1895, Thomas Edington and Sons, MacFarlane Strang from 1890, British Hydraulic from 1894), Howie at Kilwinning, Hunters at Ayr, Robert Melvin at Alloa, Rose Street Foundry at Inverness, and (occasionally) Jones and Campbell of Larbert. [Hargrave_1991, p.134-138]

The northern firms included Head Wrightson (HW&Co), Smith Patterson (SP), Anderston (AFC), Wilson Pease (WP&Co, later Pease and Partners), and Thomas Summerson (TSS). [Hargrave_1991, p.131-132]

The Midland companies included Taylor Brothers of Sandiacre (TBS), Railway and General Engineering Company Ltd. in Nottingham (RGN), Joseph Williamson & Company of Wellingborough (JW&Co), South Yorkshire Iron Company of Leeds.

Rail companies tended to establish preferred suppliers who were either local or who could supply to the required delivery points in cost-effective ways (including by rail and by sea coaster). This also enabled the suppliers to only have to keep the patterns required for a small number of different companies. [Hargrave_1991, p.128, p.131]

The "Southern" group of rail chair customers were LSWR, LBSCR, SE&CR, GER. [Hargrave_1991, p.182, note 36] These Southern lines (including the GER) bought chairs from Midland firms and North Eastern firms. [Hargrave_1991, p.128]

The North Eastern Railway bought from Anderston, Head Wrightson, Pease, Summerson, Smith Patterson and some other firms. [Hargrave_1991, p.128]

The Glasgow and South Western Railway bought from Glasgow firms, Howie at Kilwinning, Hunters at Ayr and North Eastern firms. [Hargrave_1991, p.128]

The Highland Railway and Great North of Scotland Railway bought from Rose Street Foundry of Inverness, Scottish firms and North Eastern firms. [Hargrave_1991, p.128]

The North British Railway and the Caledonian Railway bought from local Glasgow firms, Robert Melvin, Howie at Kilwinning, and North Eastern firms including Smith Patterson. [Hargrave_1991, p.128]

Anderston had a special relationship with the Caledonian Railway. [Hargrave_1991, p.131]

Railway and General Engineering Company Ltd. in Nottingham tried to establish special relationships with railways in its area. [Hargrave_1991, p.131]

The Great Western Railway bought chairs from Anderston between 1878 and 1885, but later GWR chairs came from PNBC and GKN. GKN later regarded the GWR as its private preserve. [Hargrave_1991, p.133]

Manufacturers of Rail Chairs and/or Points & Crossings

Anderston Foundry Company Ltd

Port Clarence, Middlesborough

See Hargrave_1991

Bengal Iron and Steel Company Ltd

Member of CICA. See Hargrave_1991, vol.2, p.3

Blackett Hutton.

Blackett Hutton's foundry was in Guisborough, Cleveland, between Providence Street and the the main railway line. The foundry was established in 1861 and made plant and equipment for ironstone mines, including track points. See "British Manufacturers Maps".
[Chapman_2007, p.73]

British Hydraulic Foundry Ltd

Whiteinch, Glasgow

Chair manufacture from early 1890s. Customers were Caledonian Railway and North British Railway. See Hargrave_1991, vol.2, p.6-8

Charles Heard Wild & Parsons

See "C H Wild" (in turntables) and "Wild & Parsons" below

Close (Messrs Close)

Details of company not yet identified

Supplied some chairs to the North Eastern Railway in 1897.
Hargrave_1991 p.133 says that during the 1880s, the CICA experienced competition from outsiders for chairs to be delivered to the North Eastern Railway at York; note 50 on p.184 explains "D/AF 242-251, Quotation books. T. Richardson & Co. to **Messrs. Close**, the Yorkshire Engine Co., and Walkers of Warrington were the principal outsiders. How many of these were makers and how regularly, how many were merchants, and what was the extent of their chair business, is unknown."
Hargrave_1991 p.184 note 51 says "In 1897 (D/AF 246), **Close** took both ordinary and points and crossings chairs for delivery at York" to North Eastern Railway.

Cochrane & Company.

North Ormesby Ironworks, Cargo Fleet, Middlesbrough.

c.1920 Owned the Ormesby Iron Works, adjoining the Cargo Fleet Works, with three large blast furnaces from which molten metal had previously gone to Cargo Fleet. **Cochrane and Co.** produced principally cast-iron pipes, **railway chairs** and large iron castings, in competition with the Derbyshire firms of Sheepbridge, Staveley and Stanton. It owned the Stanghow mines in Cleveland and the Desborough mine in Northamptonshire, as well as the New Brancepeth colliery and coke ovens in Durham.
[https://www.gracesguide.co.uk/Cochrane_and_Co]

See Hargrave_1991, vol.2, p.9-11

(The) Darlington Iron Company

Albert Hill Iron Works, Springfield, Darlington

See Jeans_1875, p.187-192 and https://www.gracesguide.co.uk/Darlington_Iron_Co

Established by William Barningham (and Company Ltd.)

Daniel Macnee (Macnee & Co.)

Rotherham

Details of company not yet identified

Points and Crossings business. It was bought by Anderston and the bulk of the plant and workforce were transferred from Rotherham to Port Clarence. [Hargrave_1991, p.148-9 and notes 116, 117 on p.192]

Darlington Railway Plant and Foundry Ltd.

Entirely new manufacturer established in 1899. It cut prices aggressively to compete with Thomas Summerson and Sons Ltd. [Hargrave_1991, p.150]

See Hargrave_1991, vol.2, p.12-17

Edgar Allen & Company Ltd.

Imperial Steel Works, Sheffield

See Edgar_Allen_1949

Formed 1868. Became a dominant firm in the supply of street tramway permanent way. From 1920 competed for railway points and crossings. Member of SAXA. See Hargrave_1991, vol.2, p.3

Edington('s)

See Thomas Edington and Sons

Fox, Henderson & Co.

Birmingham

Circa 1850 made Switches (and water cranes). [Prior_1983, p.54 & 59]

Gilkes, Wilson, Pease and Company.

Name changed from Gilkes, Wilson, Leatham and Company to Gilkes, Wilson, Pease and Company in 1858 [Jeans_1875, p.89]

Became Wilson, Pease & Company.

Goodwin('s)

See James Goodwin and Company

(The) Glasgow Railway Engineering Company Ltd

See Hargrave_1991, vol.2, p.18-19

Guest, Keen & Nettlefolds

Commonly known as GKN

Came from (The) Patent Nut and Bolt Company

See https://www.gracesguide.co.uk/GKN

Head Wrightson and Company Ltd.

See Hargrave_1991, vol.2, p.20-22

Howie

See Robert Howie and Company

Hunter

Ayr

Details of company not yet identified

Even smaller company than Robert Howie of Kilwinning. Supplied Glasgow & South Western Railway. See Hargrave_1991, p.134

Isca Foundry Ltd.

See Hargrave_1991, vol.2, p.24

James Bell

Edinburgh

Circa 1850 made Switches and Crossing for the North British Railway [Prior_1983, p.55]

James Goodwin and Company (later Goodwins, Jardine and Co. Ltd.)

Motherwell, near Glasgow. (Works at Ardrossan, Johnstone and Motherwell)

See https://www.gracesguide.co.uk/James_Goodwin_and_Co
They were Ironfounders, Engineers and Bridge Builders.

Established by 1873.

By December 1889 they had become Goodwins, Jardine and Co. Ltd.
See https://www.gracesguide.co.uk/Goodwins,_Jardine_and_Co

Liquidated in 1895.

Details in "History and Directory of Motherwell, 1899-1900", online at
https://www.electricscotland.com/council/pdf/motherwell.pdf
which includes:

1873, Mar. 21 — First social meeting of employees of Messrs Goodwin &Co.
1880, Nov. 24.— Movable casting, 43 tons weight, successfully accomplished by Messrs Goodwin.
1882, Oct. 12. — Electric light introduced into their works by Messrs James Goodwin & Co.
1886, Feb. 2 .— Transference of Caledonian Permanent Way Shop to Motherwell.
1887, May 7. — Calcutta papers to hand laud the Hooghly Bridge, which had been constructed by Messrs James Goodwin & Co.
1892, May 25 .-— Fire at Messrs Goodwin's works—number of steelworkers said to have interfered with the firemen by standing on the hose. Amount of damage, £400.
1895, Feb. 19 .— Fire at Motherwell Railway Station.
1895, March 6 .— Motherwell Works of Goodwins, Jardine & Co., Limited, in Liquidation, purchased for £13,000 by Mr D. H. Macdonald, C.E., and Mr William Smith, cashier.
1895, April 1.—Goodwin's Works formed into Company to be called the Brandon Bridge Building Co., Ltd.

In January 1888 advertised as Contractors for Railway Plant, including Cast Iron Chairs and Sleepers:

JAMES GOODWIN AND COMPANY,

Ironfounders, Engineers, and Bridge Builders.

CONTRACTORS for RAILWAY PLANT, viz.: Cast Iron Chairs, Sleepers, Tanks, Water Cranes, Axle Boxes, Screw Piles for Bridges, Piers, and Wharfs, Blast Furnace Castings, Ingot Moulds, and every description of Plant for Collieries, Iron Works, &c. Also all kinds of Castings for Engineers and Tool Makers. Manufacturers of Iron and Steel Bridges, Iron Roofing and Buildings, and General Structural Work. (Bridge Works at Motherwell). 2247

Works; Ardrossan, Johnstone, and Motherwell.

Shipping Ports: Ardrossan, Glasgow, Greenock, Leith

In June 1888, advertised as Makers of Cast Iron Sleepers and Cast Iron Chairs:

In Dec 1889, advertised as Makers of Cast Iron Sleepers and Cast Iron Chairs:

They continued as a railway chair manufacturer until 1894. [Hargrave_1991, p.135]

Jones and Campbell Ltd

Torwood Foundry, Foundry Loan, Larbert, Stirling, Scotland

Jones & Campbell was established in 1888 by James Jones and Dermont Campbell. It became a private limited company in 1906 with the registration number SC006316. Their principal business was iron founders and stove manufacturers.

See https://www.gracesguide.co.uk/Jones_and_Campbell
For full details, see archives listed on p.74 of "FALKIRK ARCHIVES. Records of Businesses. Iron foundries and Iron industries Finding Aid", on-line at
https://www.falkirkcommunitytrust.org/media/1759/iron_foundries_and_iron_industries.pdf

The catalogues in the archives show that the main products of Jones and Campbell were cooking ranges and stoves, and some other general castings. Rail chairs were ***not a normal*** advertised product.

Hargraves_1991, p.137, details one occasion in 1908 when "Campbell and Jones of Larbert" underquoted Anderston for a supply of rail chairs to the Caledonian Railway. Anderston were allowed to reduce their tender and the December 1908 order was split into Anderston 6000 tons and Campbell 1000 tons. [Hargraves_1991, p.186, note 68]
Hargraves_1991 has accidentally misnamed "Jones and Campbell Ltd" as "Campbell and Jones" (which did not exist in Larbert).

Joseph Williamson & Company

Midland Foundry, Wellingborough

Seen SE&CR railchairs marked JW&Co in 1912 and 1919.
Chippenham Auction Rooms, Railwayana and Bus related enamel signs, 10 Nov 2017, has lot no. 339 which includes "a cast iron rail chair marked J.W&Co. 1886."
See https://www.gracesguide.co.uk/Joseph_Williamson_and_Co
Mentioned on p.134 of Hargraves_1991 as "Williamson's of Wellingborough".

In July 1916 patented an iron key for railway chairs, as reported on p.61 of "The Engineer", Volume 122, 21 July 1916.

"The Engineer", 2 October 1914, p.331, has Railway Key Locking Device by Joseph Williamson & Company, (Illustrated)

MacFarlane Strang and Company Ltd.

See Hargrave_1991, vol.2, p.25-27

Murray, Workman and Company Ltd.

See Hargrave_1991, vol.2, p.29

(The) Patent Nut and Bolt Company

Chair Foundry at Cwmbran, Monmouthshire.

Commonly known as PNBC.

Joined CICA in 1885/6, withdrew 1901/2, re-admitted in 1903/4. [Hargrave_1991, p.132]

Became Guest, Keen & Nettlefolds

See https://www.gracesguide.co.uk/Patent_Nut_and_Bolt_Co

Patent Shaft and Axletree Company Ltd.

See Hargrave_1991, vol.2, p.30

Pease and Partners Ltd.

Came from Wilsons, Pease and Company.

See Hargrave_1991, vol.2, p.31-33

Railway and General Engineering Company Ltd.

Nottingham.

Was originally John Taylor and Sons Ltd of Nottingham. It expanded in the late 1890s and was reconstructed in 1900 as the Railway and General Engineering Co. Ltd.

See Hargrave_1991, vol.2, p.34-54

Robert Howie and Company

Kilwinning

Fairly small company. Supplied Glasgow & South Western Railway. See Hargrave_1991, p.134

See Hargrave_1991, vol.2, p.23

Robert Melvin Ltd.

Alloa.

Exclusive supplier of points and crossings to the North British Railway. Joined CICA 1906. [Hargrave_1991, p.136]

See Hargrave_1991, vol.2, p.28

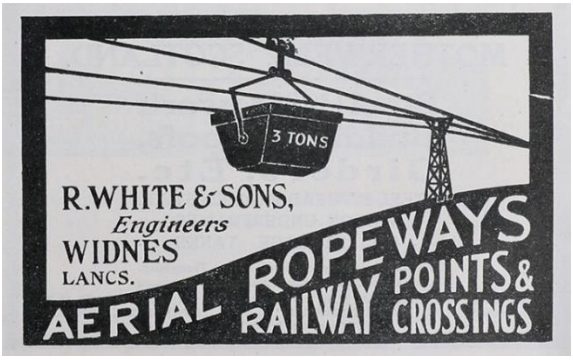
R. White and Sons.

Rd. White & Sons in 1940 advertisement.
R. White & Sons Engineers Ltd in 1955 advertisement.
R. White & Sons (Engineers) Ltd in 1960 advertisement.
Robert White & Sons (Engineers) Ltd. according to Hargrave_1991.

Engineers of Ditton Road, Widnes, Lancashire.

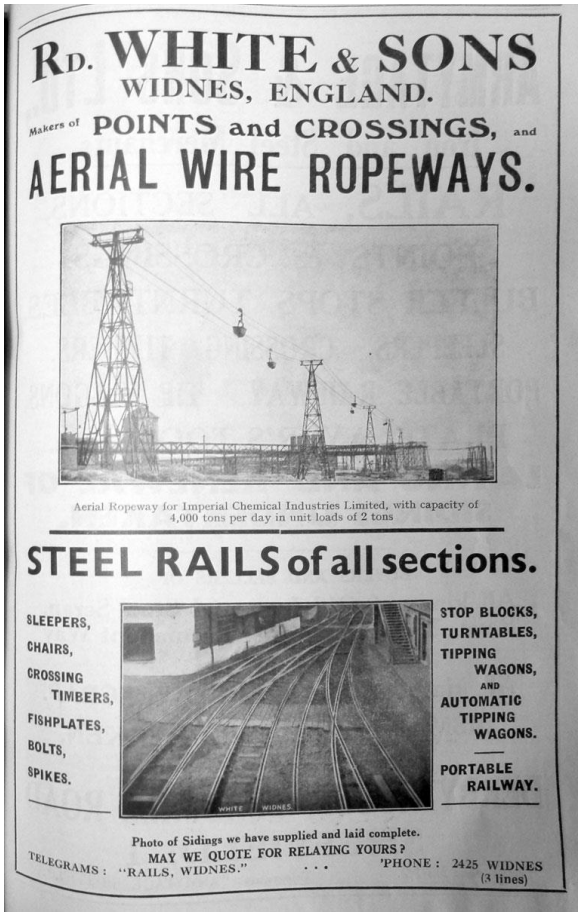
See Hargrave_1991, vol.2, p.76 and https://www.gracesguide.co.uk/R._White_and_Sons
1869 Company founded.
1919 Railway points and crossings and other equipment.
1944 Private company.
1960 Rails, sleepers and everything for sidings etc.
1960 Everything for factory sidings, construction and maintenance. Railway and Aerial ropeways.
1961 Engineers, manufacturing railway track accessories; sidings maintenance and construction; railway points and crossings; aerial wire ropeways and pressure vessels. 250 employees.

August 1899



December 1929

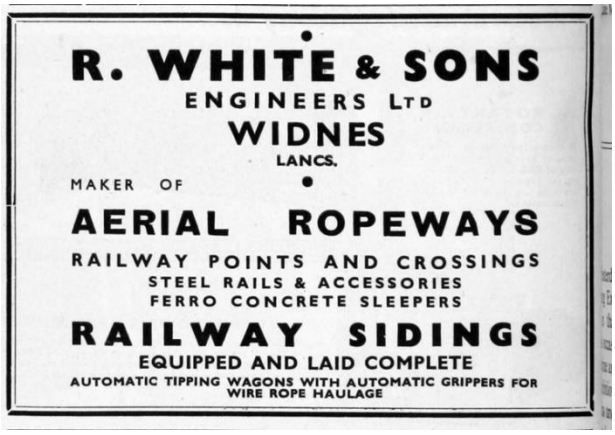
1918



1940

1960

1960



1955

1970

Rose Street Foundry

Inverness

Supplied Highland Railway and Great North of Scotland Railway, and had an arrangement with Anderston Foundry Company. [Hargrave_1991, p.134]

See Hargrave_1991, vol.2, p.55

Sheepbridge Coal and Iron Company

Sheepbridge Iron Works, Chesterfield

See https://www.gracesguide.co.uk/Sheepbridge_Coal_and_Iron_Co

Purchased Sheepbridge Ironworks in 1864, comprising blast furnaces, foundries and a forge. Are known to have made cast iron tunnel segments. [Hargrave_1991, p.144]
But whether they made any or many rail chairs is unknown.

Smith Patterson and Company Ltd.

See Hargrave_1991, vol.2, p.56-58

South Yorkshire Iron Company.

Leeds.

Details of company not yet identified

Supplied Great Eastern Railway [Hargrave_1991, p.134]

Reference in “The Police Gazette”, 28 June 1876 and 3 July 1876:

— Bm- street, June 28. In custody at High Wycomb, Bucks, on a charge of felony, and remanded until the lst proximo : JAMES SAXTON, of English- street, Hull, iron dresser, 34 years of age, 5 feet 5i inches high, brown hair, grey eyes, sandy moustache, whiskers shaved off, and dark complexion; dressed in a billycock hat, white slop, dark vest and trousers, and Militia boots and shirt; states that he has just left the 2nd Cheshire Militia lying at Macclesfield, and has been working for the **South Yorkshire Iron Company, Blackbourn Meadow, near Sheffield** ; and that he left there in Whitsun week, and called at Swindon and Reading for work. Information to be given to Superintendent Davis, High Wycomb, Bucks.

Stanton Ironworks Ltd.

See Hargrave_1991, vol.2, p.59-60

Staveley Coal and Iron Company

Staveley, Hollingwood, near Chesterfield

See https://www.gracesguide.co.uk/Staveley_Coal_and_Iron_Co

Became a public limited company in 1863-4, when the ironworks was producing 20,000 tons of iron castings per year. Major production was iron pipes. In 1894 cast iron production was 700,000 tons/year.
Are known to have made cast iron tunnel segments. [Hargrave_1991, p.144]
But whether they made any or many rail chairs is unknown.

Taylor Brothers (Sandiacre) Ltd.

Midland Foundry, Sandiacre, Nottingham.

Main products were switches and crossings and railway chairs. See Hargrave_1991, vol.2., p.67-69 and Taylor_Bros_1958.

(The) Tees Side Bridge and Engineering Works Ltd.

See Hargrave_1991, vol.2, p.70-75

Thomas Edington and Sons

Phoenix Iron Works, Glasgow

See https://www.gracesguide.co.uk/Thomas_Edington_and_Sons
The Phoenix Foundry opened circa 1797. In 1840-41 they built 4 locomotives for the Glasgow, Paisley, Kilmarnock and Ayr Railway.
In 1862 they exhibited railway chairs and sleepers at the London Exhibition.
https://www.gracesguide.co.uk/1862_London_Exhibition:_Catalogue:_Class_V.:_Thomas_Edington_and_Sons

They continued as a railway chair manufacturer until the 1890s. [Hargrave_1991, p.135]

Thomas Summerson & Sons Ltd.

Albert Hill Foundry, Darlington

"Manufacturers of Switches and Crossings of Every Description"
[Summerson_1904]

"Railway Plant Manufacturers", "Steel & Iron Founders", "Specialists in Railway Track Equipment", "Manufacturers of Switches & Crossings", "Buffer Stops & Turntables", "Platelayers' Tools", "Contractors for railway sidings"
[Summerson_1924]

Main business was points and crossings. Full details and business history in Hargrave_1991, vol.2., p.61-66.

Thos. W. Ward Ltd.

Albion Works, Sheffield.

Thos W Ward Railway Sidings Division supplies new and re-usable rails and switches, crossings, turnouts, buffer stops. Includes "Standard and Special Pattern Chairs", "Rail and Chair Fastenings", "Lever Boxes", "Lever Connecting Rods etc", "Re-railing Ramps", "Buffer Stops", "Wheel Stops", "Platelayers' Tools", "Turntables".
[TW_Ward_1964]

T. Richardson & Co. or T. Richardson and Sons

Details of company not yet confirmed

This could be T. Richardson and Sons of Castle Eden Foundry, Hartlepool, County Durham, founded by Thomas Richardson.
See https://www.gracesguide.co.uk/T._Richardson_and_Sons

Company name was T. Richardson and Sons from 1847 to 1900, then became Richardsons, Westgarth and Co. T. Richardson and Sons might be TR&S marked on chairs made in 1876 for Great Northern Railway (GNR) and Louth and East Coast Railway (LECR).

https://www.gracesguide.co.uk/1893_Institution_of_Mechanical_Engineers:_Visits_to_Works reports visit to

MESSRS. T. RICHARDSON AND SONS, HARTLEPOOL ENGINE WORKS, HARTLEPOOL.

T. Richardson and Sons

Situated at G, Plate 58, the works consist of engine-building shops, iron and brass foundries, forge, boiler shops, and all the usual departments necessary for the construction of marine engines and boilers. **The iron foundry** has a capacity for making all the machinery and other metal castings required in the engine works, **besides supplying a large outside trade,** the total output being about 400 tons monthly when the works are in full swing. The buildings consist of three spans of 53 feet, 43 feet, and 33 feet, the total length being 350 feet. The forge has a capacity for making 200 tons of forgings monthly; and besides all the heavy forgings and shaftings for the engines made in the works, a large outside demand is also supplied. The boiler department consists of two shops, one having two spans of 55 feet and 43 feet and a length of 270 feet, the other having two spans of 45 feet each and a length of 142 feet.

T. Richardson and Sons probably made some rail chairs, and quoted or supplied to the NER in the 1880s or 1890s. (although the reference is to T. Richardson and Co., not to T. Richardson and Sons).
Hargrave_1991 p.133 says that during the 1880s, the CICA experienced competition from outsiders for chairs to be delivered to the North Eastern Railway at York; note 50 on p.184 explains "D/AF 242-251, Quotation books. **T. Richardson & Co.** to Messrs. Close, the Yorkshire Engine Co., and Walkers of Warrington were the principal outsiders. How many of these were makers and how regularly, how many were merchants, and what was the extent of their chair business, is unknown."

Walkers

Warrington

Details of company not yet identified

Probably made some rail chairs, and quoted or supplied to the NER in the 1880s or 1890s. Hargrave_1991 p.133 says that during the 1880s, the CICA experienced competition from outsiders for chairs to be delivered to the North Eastern Railway at York; note 50 on p.184 explains "D/AF 242-251, Quotation books. T. Richardson & Co. to Messrs. Close, the Yorkshire Engine Co., and **Walkers of Warrington** were the principal outsiders. How many of these were makers and how regularly, how many were merchants, and what was the extent of their chair business, is unknown."

Wild & Parson (Charles Heard Wild & Parsons)

See also C. H. Wild in Turntables

Circa 1850 made Switches and Crossing [Prior_1983, p.54]

Circa 1865 made Switch and Crossing [Prior_1983, p.72]

William Barningham and Company Ltd.

Pendleton Iron Works, Manchester

Made switches & crossings, remanufactured rail. Made 4,000 tons of rails and 2,000 tons of chairs for LYR. See Jeans_1875, p.187-192 and https://www.gracesguide.co.uk/William_Barningham

Established (The) Darlington Iron Company.

Wilsons, Pease and Company.

Came from Gilkes, Wilson, Pease & Company.

Became Pease and Partners Ltd.

Yorkshire Engine Company.

Sheffield.

Made rail chairs for the North Eastern Railway, dated 1897 and marked "YE". But this is not mentioned in Vernon_2008.
The YEC did make rack rails; see list below for rail manufacturers.
Confirmation that the YEC made rail chairs for the NER is:
Hargrave_1991 p.133 says that during the 1880s, the CICA experienced competition from outsiders for chairs to be delivered to the North Eastern Railway at York; note 50 on p.184 explains "D/AF 242-251, Quotation books. T. Richardson & Co. to Messrs. Close, the **Yorkshire Engine Co.**, and Walkers of Warrington were the principal outsiders. How many of these were makers and how regularly, how many were merchants, and what was the extent of their chair business, is unknown."

Rail Manufacturers

Cargo Fleet.

Embossed on rails made at Cargo Fleet Iron Works, in Cleveland (South Teeside). The works was about 1½ miles East of Middlesbrough Station, on the South side of the Middlesbrough to Saltburn railway. See "British Manufacturers Maps".
[Chapman_2007, p.51]

Charles Cammell and Co. Ltd.

See Yorkshire Engine Company.

Moved from Dronfield, near Sheffield, to West Cumberland in 1883 [Hargrave_1991, p.148]

Dorman Long.

Embossed on rails made at Dorman Long's Acklam Iron Works, in Cleveland (South Teeside). The works was about 1 mile North-West of Middlesbrough Station, connected to the Old Town Branch by the Acklam Branch. See "British Manufacturers Maps".
[Chapman_2007, p.40, p.51]

Ebbw Vale

South Wales

Details of company not yet added

Supplied rails to Anderston [Hargrave_1991, p.148 and note 111 on p.191]

Moss Bay

West Cumberland

Details of company not yet identified

Supplied rails to Anderston [Hargrave_1991, p.148 and note 111 on p.191]

Skinningrove.

See Shepherd_2012.
Embossed on rails made at Skinningrove Works, in Cleveland. South-east of Saltburn, on the Saltburn to Brotton to Skinningrove to Whitby railway. See "British Manufacturers Maps".
[Chapman_2007, p.51]

Yorkshire Engine Company.

Sheffield.

The Yorkshire Engine Company (YEC) built industrial locomotives, but also offered a range of engineering services, including production of iron and brass castings. Between 1895 and 1905, the YEC made rack rails for mountain railways. The rails were rolled and cut to lengths, of typically 12ft or 15ft, by Charles Cammell. The YEC cut the teeth in the rails and assembled the track work. The YEC supplied the Snowdon Mountain Railway in 1895, the Mount Morgan Railway in Australia in 1897, the Nilghri rack railway in India in 1898 and a Japanese railway in 1905. (The tooth cutting machine was later found useful in the 1939-45 war.) [Vernon_2008, p.46-47, p.79, IRR_1971, Harley_1976]

Turntable Manufacturers

Edward Woods

London

Circa 1850 made turntables for Carriages and Wagons [Prior_1983, p.56]

Lloyds Foster & Co.

Wednesbury

Circa 1850 made turntable for Engine and Tender [Prior_1983, p.56]

C. H. Wild (Charles Heard Wild)

London

See also Wild & Parson (in Rail Chairs)

Circa 1850 made turntables for Carriages and Wagons [Prior_1983, p.56]

References

Grace's Guide is an on-line reference source, at www.gracesguide.co.uk, which is all about industry and manufacturing. Grace's Guide is the leading source of historical information on industry and manufacturing in Britain. The web publication contains 139,152 pages of information and 225,364 images on early companies, their products and the people who designed and built them. It includes pages for many companies, copies of advertisements detailing product ranges, details taken from letter-heads, and complete digitized copies of gazetteers and exhibition catalogues. For example, it includes full text of:
"1851 Great Exhibition Official Catalogue" at
https://www.gracesguide.co.uk/1851_Great_Exhibition:_Official_Catalogue
"1862 London Exhibition Catalogue" at
https://www.gracesguide.co.uk/1862_London_Exhibition:_Catalogue
"1914 Who's Who in Business" at
https://www.gracesguide.co.uk/1914_Who%27s_Who_in_Business
"1922 Who's Who in Engineering" at
https://www.gracesguide.co.uk/1922_Who%27s_Who_in_Engineering
Grace's Guide has a good search facility to locate subjects and companies of interest.

Benham_2008

"An Illustrated History of the North Yorkshire Moors Railway". By Philip Benham. OPC, Ian Allan Publishing, 2008. ISBN 978-0-86093-622-0

Bryan_2004

"All in a Day's Work: Life on the GWR". By Tim Bryan. Ian Allan Publishing, 2004. ISBN 0-7110-2964-4

Chapman_2007

"Cleveland and Whitby. Railway Memories no. 18." By Stephen Chapman. Bellcode Books, 2007. ISBN 9781871233.

Edgar_Allen_B&W

"Trackwork. Studies in Black & White" sales brochure of 8.5" by 11.5" illustrations of components and layouts, by Edgar Allen & Co. Limited. Undated.

Edgar_Allen_1949

"Edgar Allen Trackwork" technical handbook, by Edgar Allen & Co. Limited. Dated March 1949 by print run printers note "1,000/3/49" at foot of p.205

Fairman_1988

"Making Tracks", By J R Fairman. Kingfisher Railway Productions, 1988. ISBN 0-946184-57-7.

Hargrave_1991

"Competition and Collusion in the British railway Track Fittings Industry: the case of the Anderston Foundry, 1800-1960", Durham University Ph.D, by James Flanders Hargrave, 1991. This thesis is on-line at http://etheses.dur.ac.uk/1484/ from where both volume 1 (26MB pdf) and volume 2 (7MB pdf) can be read and downloaded.

Harley_1976

Article about YEC including rack rail cutting, by C B Harley on p.73 of SLS Journal, March 1976.

IMechE_1898_Midland_Works_Visit

Graces Guide includes reports of visits to works by Institution of Mechanical Engineers. https://www.gracesguide.co.uk/1898_Institution_of_Mechanical_Engineers:_Visits_to_Works has report of 1898 visit to Midland Locomotive works at Derby which states:

MIDLAND RAILWAY LOCOMOTIVE WORKS, DERBY.

Derby Works

The Locomotive Works of the Midland Railway at Derby occupy an area of 80 acres, of which 20 acres are covered by buildings, Plate 96. On the average about 25 new engines arc turned out annually, 100 are rebuilt with new boilers, and 900 undergo heavy repairs. The machinery is driven by 23 stationary engines. The works comprise general offices, stores, forge and smithy, iron and brass foundries; boiler, wheel, spring, coppersmiths' and tinsmiths' shops; machine and erecting shops; tender, millwrights' and paint shops; running sheds, chemical laboratory, test offices, photographic room, Ac.; also three large mess-rooms, which can accommodate 2,000 men.
The forge and smithy contain fifty fires, and eight steam-hammers ranging from 7 cwts. to 7 tons. The largest hammer forges the scrap iron and steel collected in the works, into uses for connecting rods, crossheads, &c., at the rate of 10 or 11 tons per week. Other hammers are largely used for stamping draw-bar hooks, crank pins, and similar work. A smaller smithy with twenty-one fires is chiefly devoted to repairs.
In the spring shop are furnaces for heating plates of springs, and machines for punching, shearing, nibbing, and slotting them, and two hydraulic spring-testing machines. There is also a powerful hydraulic machine for pulling off spring buckles.
There are two foundries served by four cupolas, two of which are in blast at a time. In the larger foundry, adjoining which is the core stove, locomotive and general work is carried on. **The other foundry is exclusively devoted to making railway chairs, of which about 320 tons are turned out on the average per week**. Brake-blocks and fire-bars, for which there is a large demand, are moulded in special machines. In the brass foundry are twenty-four furnaces, and about 10 tons of castings are made per week. The castings are cleaned by the steam and sand blast. The wheel and axle shop contains powerful machines for turning wheels, tires, and axles, and for slotting cranks, Ac. Hydraulic presses, capable of exerting a pressure of 500 tons, are used for fixing wheels on their axles and pulling them off.
In the boiler shop about 80 boilers and tender tanks are usually under construction at a time, with 500 men and boys at work on them. The flanging of boiler plates is clone by a large hydraulic press, and the plates are heated in gas-fired furnaces. There are two steam riveters and several fixed and portable hydraulic riveters in the shop; and the seams of the boilers are caulked by pneumatic fullering tools. All mountings are fixed on the boilers, and they are finished in every respect, and tested under hydraulic and steam pressure, before leaving the shop. The machine, fitting, erecting, and paint shops are all under one roof. They form a lofty well-lighted block of buildings about 450 feet square, and contain 600 machines driven by two vertical high-pressure wall engines. Walking

cranes lift the forgings and castings on and off the machines. Amongst the most powerful machines are those for slotting and drilling engine and tender frame-plates; seven or eight plates can be dealt with on each machine at a time. A most complete apparatus is provided for testing and adjusting steam and vacuum gauges, brake valves, injectors and ejectors, and the valves connected with the warming of the passenger trains. The erecting shop accommodates 108 locomotives. Six 25-ton overhead travelling cranes worked by endless ropes are employed. Two of these working together will readily lift an engine, and carry it to any part of the shop where it may be required. Some of the newly- designed piston-valve engines are now under construction in this shop. The paint shop holds 40 engines, and 600 or 700 newly- painted engines are turned out annually.
There are four running sheds at Derby, in which 150 locomotives are stabled; the largest holds 45 engines, which stand on 48 pits ranged round two turntables. The coaling stage is of modern design. The cost of lifting a ton of coal on an engine is now about 2d., as compared with 4d., the price formerly paid. A break-down train and steam fire-engine are always kept in readiness to be despatched where required at a moment's notice. The water used in the works and that supplied to the locomotives is pumped from the River Derwent, and subjected to a softening process in apparatus capable of treating 30,000 gallons per hour, page 418. There are now 2,528 locomotives on the Midland Railway, and 15,500 men are employed in the locomotive department. the locomotive engineer is Mr. Samuel W. Johnson, President of the Institution.

IRR_1971

Industrial Railway Record, February 1971, p.21, Snowdon Rack Railway; board minutes and drawing office order book. On-line at https://www.irsociety.co.uk/Archives/35/For_the_record.htm which states:

"Snowdon Mountain Rack Railway. – Messrs. Richard White and Sons, of Widnes, have secured the sub-contract for the whole of the permanent way material for this railway from Messrs. Holme & King, the chief contractors. As this will be the first rack-railway built in this country, some interest attaches to its construction." ("The Railway Engineer," May 1895. – The late O.J. Morris does not mention either of these contractors in his booklet, "The Snowdon Mountain Railway" (Ian Allan Ltd. 1960). and states that Richard Cammell & Co. agreed to produce the rack rail. The truth of the matter is that the Sheffield works of Charles Cammell & Co Ltd rolled the rack bars which had to be cut to size whilst still hot. Cammell's Workington plant made the fishplates (and probably also the running rails), and the Ebbw Vale Steel, Iron & Coal Co Ltd rolled the steel sleepers. The Yorkshire Engine Co Ltd, Sheffield, cut the teeth in the rack bars, and also assembled the trackwork. None had been laid by 11th June 1895 (according to YE records) even though the first sod had been cut on 15th December 1894, but the "first 2 arches of the lower viaduct are nearly turned & the remainder will now proceed very fast as all four are finished on the upper viaduct. I believe the locomotives are expected Immediately." it may not be generally known that Cammell and YE also supplied the rack rail for the Nilghiri Railway (India) in 1893/94, and the Mount Morgan Railway (Australia) in 1897. – KPP)

ISI_1910_Midland_Works_Visit

Graces Guide includes reports of visits to works by Iron and Steel Institute. https://www.gracesguide.co.uk/1910_Iron_and_Steel_Institute:_Visits_to_Works has report of 1910 visit to Midland Railway Works at Derby which states:

MIDLAND RAILWAY WORKS AT DERBY.
Derby Works

Nearly two hundred members of the Iron and Steel Institute visited Derby on the afternoon of Tuesday, September 27, for the purpose of making an inspection of the locomotive and carriage and wagon shops of the Company.
…
LOCOMOTIVE WORKS.
The Locomotive Works of the Midland Railway are situated at Derby, and lie on the east side of the Company's station. Access to the Chief Mechanical Engineer's Offices is by the overhead footbridge leading from the various platforms in the, station, whilst there are three entrances to the works for workmen at different points. The works cover an area of 80 acres, 20 acres of which represent the workshops (including the General Stores), which are roofed in. The workshops in 1844 (locomotive and carriage works being then combined) covered 81 acres of ground, on which stood 24 acres of buildings.
…
Shops.
Pattern Shop.—The pattern shop measures 180 feet by 42 feet. Here all pattern work for cylinders, wheels, &c., in connection with the locomotives is made. The wood-working machinery employed includes planing, boring, sawing, moulding machines, lathes, and a wood-worker.
Iron Foundries.—The iron foundries, of which there are two, measure 250 feet by 95 feet and 250 feet by 45 feet respectively. **The smaller foundry is devoted to the production of railway chairs, of which about 14,000 are cast weekly.** The other foundry is strictly for locomotive work, and castings used in connection with the machine department of the line.
Altogether there are four cupolas, two for each foundry, with a production of up to 600 tons per week.
…

Jeans_1875

"Pioneers of the Cleveland Iron Trade" by J S Jeans, 1875

Prior_1983

"19th Century Railway Drawings in 4mm Scale", by Alan Prior, pub. David & Charles, 1983, ISBN 0-7153-8006-0

Shepherd_2012

"Skinningrove Iron and Steel Works. Its History, Railways and Locomotives". By Cliff Shepherd. Industrial Railway Society, 2012. ISBN 978-1-901556-80-3

Summerson_1904

"Platelayers' Guide" by Thomas Summerson & Sons, Ltd, 5th edition, 1904

Summerson_1924

"Platelayers' Guide" by Thomas Summerson & Sons, Ltd, 6th edition, 1924

Summerson_1954

"Summersons Platelayers Guide" by Thos. Summerson & Sons, Ltd, 7th edition, 1954

Summerson_1955

"The Summerson Book of railway Sidings" sales brochure by Thomas Summerson & Sons, Ltd, undated, circa 1955.

Taylor_Bros_1958

"100 Years of Permanent Way Manufacture, The Centenary of taylor Brothers (sandiacre) Limited" by C J Allen, 1958

Vernon_2008

"Yorkshire Engine Company. Sheffield's Locomotive Manufacturer". By Tony Vernon. The History Press, 2008. ISBN 978-0-7524-4530-4

TW_Ward_1964

"Rails and Rail Accessories" sales booklet by Thos. W. Ward Ltd, 1964

Notes on Sources etc not yet put in this article

1. It would be useful for each of the companies listed above to include the date range of operations, eg Founded 1875, Closed 1915.
2. Many of the above companies, eg. Smith Patterson, Head Wrightson, Anderston, need to have brief details of their activities and dates added from details given in Hargrave_1991.
3. The London Gazette, 20 Nov 1866, online at www.gazettes-online.co.uk/issues/23187/pages/6166/page.pdf includes possible p.way companies, G E Dering, Economic Permanent Way Company, R Richardson
4. Messrs Ransome & May are in 1849 paper on SER chairs and p.59 of ICE 1857 discussions
5. "Permanent Way Company" is on p.34 of ICE 1857
6. Prior_1983 has water crane by Ransomes & Sims (outside scope of old p.way)
7. Search "Railway chairs" in Graces Guide gives lots of good data to add to here, including things from the 1851 Great Exhibition.
8. Benham_2009 includes suppliers for Whitby & Pickering Railway in 1830s, including Capponfield Ironworks, Bradley and Foster, Nantyglo Ironworks, Bedlington Ironworks. These have not yet been included in manufacturers above.
9. Fairman_1988 has details not yet in list above. Includes p.6 Rhymney Iron Co., West Cumberland Iron and Steel Co. and p.8 Ebbw Vale Co. Ltd.

10. Shepherd_2012 includes much detail of rail manufacturers not yet included in list above. Includes mention of (1933) United Steel Companies Ltd and Barrow Hematite Steel Co. Ltd.
11. Graces Guide includes lists of advertisers in "Engineering" by category. One category is Permanent Way. See for example https://www.gracesguide.co.uk/Engineering_1893_Jan-Jun:_Index:_Directory_of_Advertisers The advertisers for permanent way include Anderstons, Thomas Summerson, Isca Foundry and also Kerr Dick, W O Bagnall, John Birch, Bolling. Advertiser lists of other dates are also on Graces Guide.
12. "Official Catalogue of the Industrial Department" of the 1862 International Exhibition includes within Class 5, "Locomotive Engines and Carriages", many companies exhibiting railway chairs etc.
    Book can be searched at Google books.
    Book is https://www.cambridge.org/gb/academic/subjects/history/history-science-and-technology/official-catalogue-industrial-department?format=PB&isbn=9781108067157
    eg. On p.21
    1284 Ordish & Le Feuvre – Railway chairs and sleepers
    1288 Permanent Way Co – Rail joints and preserved timber for sleepers
    1300 W Simons & Co, Renfrew – Railway chairs, sleepers etc.
    1309 F Wise – Ramie's railway chairs, without wedge or bolt
13. Companies making fasteners for flat-bottom rail, such as Pandrol, Elastic Rail Spike, and Mills clips are not yet included.