

Sources for the Study of Harry Brearley and Stainless Steel



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Front cover illustrations (left to right):

Harry Brearley

(Sheffield Local Studies Library: Picture Sheffield S08302)

Extract from visitors guide to British Steel Stainless, Shepcote Lane, Sheffield, c. 1985

(Sheffield Local Studies Library: local pamphlet, vol. 332)

Firth-Vickers Stainless Steels Limited, where Staybrite steels are made, 1960s

(Sheffield Local Studies Library: local pamphlets, vol. 279)

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You can download a copy of this *Study Guide* from www.sheffield.gov.uk/archives

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Introduction

In 1913 Harry Brearley of Sheffield developed what is widely regarded as the first 'rustless' or stainless steel - a product that revolutionised the metallurgy industry and became a major component of the modern world.

In the troubled years immediately before World War One, arms manufacturing increased significantly in the UK, but practical problems were encountered due to erosion (excessive wear) of the internal surfaces of gun barrels. Harry Brearley began to research new steels which could be more resistant to erosion caused by high temperature use. He examined the addition of chromium to steel, which was to lead to the discovery of stainless steel.

Brearley was asked to lead a joint project between two major Sheffield steel suppliers - Thomas Firth & Sons and John Brown & Co.

Sheffield was a major producer of steel armaments in the 1800s and into the 20th century, but it was cutlery production that was the first real and practical beneficiary of the first 'rustless' steel.

Harry Brearley was certainly the pioneer of stainless steel but after he left Brown Firth Research, his successor Dr. W.H. Hatfield went on to develop a stainless steel which even today is probably the widest used alloy of this type. It is referred to as "18/8". This steel also includes nickel.

The Firth-Brearley Stainless Steel Syndicate was established in 1917 by Harry Brearley and Thomas Firth & Sons Limited. It was created to licence the rights to export stainless steel to the United States, Canada, Italy, France and Japan.

Firth-Vickers Stainless Steels Limited was incorporated in October 1934. The new company was formed to acquire the stainless steel interests of Thomas Firth and John Brown Limited and the English Steel Corporation (ESC) who would jointly own the company. Production was centred on Firth's Tinsley Works in Weedon Street, with Firth-Brown also occupying the empty Cyclops Works in Savile Street, Sheffield, where new rolling mills and heat-treatment plant were erected.

This study guide provides information on the large amount of material available within Sheffield Libraries Archives and Information for the study of Harry Brearley and the development and use of stainless steel.

It is not a detailed history of the topic; it merely points the reader who wishes to carry out their own research to what is available within Sheffield Libraries and Archives

Timeline showing key dates

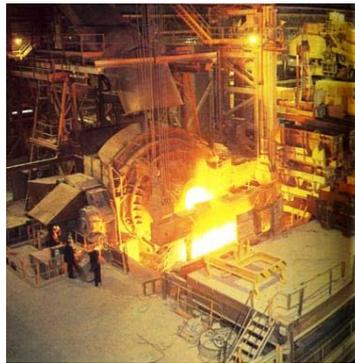
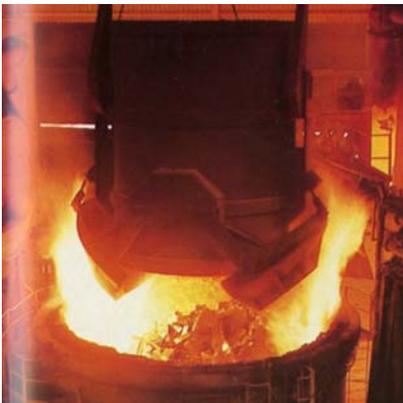
1871	Harry Brearley was born in Sheffield.
1883	He began his career in the steel industry at the age of twelve as a labourer in a local steel works.
1908	Two of Sheffield's principle steelmaking companies innovatively agreed to jointly finance a common research laboratory. Harry Brearley was asked to lead the project.
1912	Brearley was asked by a small arms manufacturer to look into the problem of corrosion affecting their gun barrels which were eroding too quickly.
1913	On 13 Aug 1913 Brearley created high chromium steel. It was called the first 'Rustless Steel'. Probably because he was born in Sheffield (a city famous for cutlery production) he saw the potential for steel that didn't corrode on contact with food associated with acids such as vinegar and fruit juices.
1915	Brearley left Firth Brown Research Laboratories.
1916	Brearley filed a patent in America. USA Patent 1,197,256: Cutlery: (patented 5 Sep 1916). There is no record of him filing in the UK. Differences of opinion between Brearley and Firth Brown caused by Brown Firth not realising the giant leap rustless steel would make in the steel industry and their refusal to apply for patents, caused Brearley to look elsewhere.
1917	Firth-Brearley Stainless Steel Syndicate was established to licence the rights to export stainless steel to the United States, Canada, Italy, France, and Japan.
1920	Brearley was awarded the Iron & Steels Institution Bessemer Gold Medal Award.
1924	Dr. W.H. Hatfield produced the successor to the Brearley rustless steel (18/8 stainless)
1939 - 1940	Brearley awarded the freedom of the City of Sheffield.
1948	Harry Brearley died in Torquay, Devon. He is buried in Sheffield Cathedral.

Images from the Sheffield Libraries Archives and Information Collections



Shepcote Lane - the home of British Steel Stainless, c. 1984

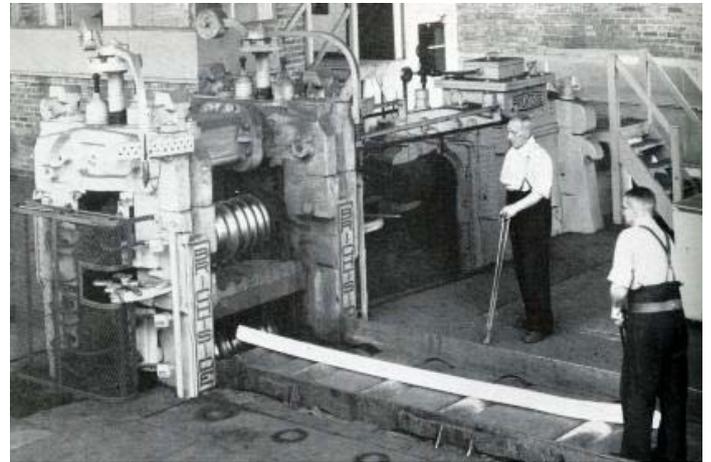
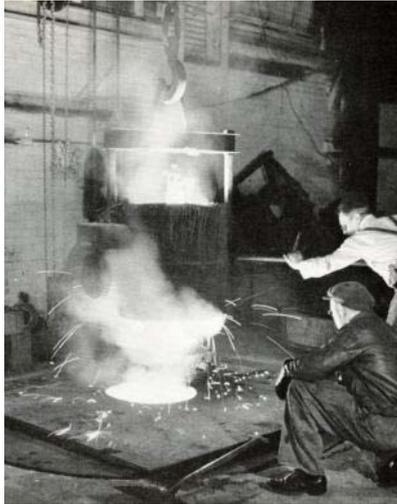
(Sheffield Local Studies Library: local pamphlet 332)



Production processes

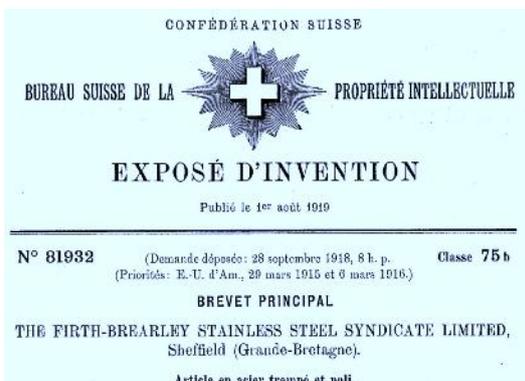
(Sheffield Local Studies Library: local pamphlet 279)





Stainless steel patents for
Austria and Switzerland

(World Metals Index)



List of documents, books, photographs and other items available at Sheffield Libraries, Archives and Information

Newspaper reports, etc.

Relevant articles and features appear in local newspapers. The main titles available at Sheffield Local Studies Library for the late 19th century onwards are the *Sheffield Daily Telegraph* and the *Star*.
(*Sheffield Local Studies Library: microfilm*)

A selective card index to the newspapers for part of the 20th century is available
(*Sheffield Local Studies Library: card index and news cuttings microfiche*)

The British Library British Newspapers 1800-1900 website includes over two million pages from 49 national and local newspapers (including the *Sheffield and Rotherham Independent*) (<http://newspapers.bl.uk>)

Archives of some national newspapers are available on the internet, notably *The Times* (<http://archive.timesonline.co.uk>) and *The Guardian* (<http://archive.guardian.co.uk>)

Photographs

Over 45,000 images from the Sheffield Local Studies Library photographic collection are available to search online at www.picturesheffield.com.

Books and Journal Articles by Brearley

Brearley, H., and Fred Ibbotson, *The Analysis of Steelworks Materials* (London, 1902)
(*Sheffield Local Studies Library: 669.1 SST*)

Brearley, Harry, *The Analysis of steel-works materials* (Longmans, 1902)
(*Sheffield Central Library Store: 669.1*)

Brearley, Harry, *The Heat treatment of tool steel: an illustrated description of the physical changes and properties induced in tool steel by heating and cooling operations* (1911, 1916 – 1918)
(*Sheffield Reference and Information Library: 669.102 and Sheffield Local Studies Library: 669.1 SST*)

Die Wärmebehandlung der Werkzeugstahl autorisierte deutsche Bearbeitung der Schrift: the heat treatment of tool steel (Berlin, 1913)
(*Sheffield Local Studies Library: 669.1 SST*)

Brearley, Harry, *Traitement Thermique Des Aciers A Outils: Description Des Proprietes Et Des Changements Physiques Produits Dans L'acier A Outils Par Les Operations De La Chauffe Et Du Refroidissement, Traduit De L'anglais Par P.A. Navant* (Loubat, 1913)
(Sheffield Reference and Information Library: 672.36)

Brearley, Harry, *The Case-hardening of steel: an illustrated exposition of the changes in structure and properties induced in steels by cementation and allied processes* (Longman, 1914 and 1921)
(Sheffield Reference and Information Library: 669.1; also available at Sheffield Local Studies Library 669.1 SST)

Brearley, Harry, *The Testing of Steel: A Paper Read ... on Saturday, 24th March, 1917*
(Sheffield Reference and Information Library: 620.170287)

Brearley, Harry, *Billets for drop forgings: a lecture* (1920)
(Sheffield Central Library Store: 671.24)

Stainless steel and its uses (Firth-Brearley Stainless Steel Syndicate, Ltd., 1921)
(Sheffield Central Library Store: 669.1)

Brearley, Harry, *Errors and limitations of steel making: a lecture delivered on April 7th, 1923 ...to the Associated Technical Societies in Johannesburg, South Africa*
(Sheffield Local Studies Library: PAMP 36)

Brearley, Harry, *Tool steel: a lecture delivered on May 2nd, 1923, to the Associated Technical Societies in Johannesburg, South Africa*
(Sheffield Local Studies Library: PAMP 37)

Brearley, Harry, "Stainless steel: the story of its discovery" reprinted from the *Sheffield Daily Independent*, 2 Feb 1924
(Sheffield Local Studies Library: PAMP 457)

Brearley, Harry, *Declarations of Harry Brearley and David Flather as to the history of stainless steel cutlery* (1931)
(Sheffield Local Studies Library: MP 1122 M)

Brearley, Harry, *Steel-makers* (1933)
(Sheffield Local Studies Library: 669.1 S; also available at Sheffield Central Library Store: 669.1)

Brearley, Harry, *The Story of Ironie* (1938)
(Sheffield Local Studies Library: Local pamphlets, volumes 69 and 137 No. 10 (042 SST))

Brearley, Harry, *Knotted String: Autobiography of a Steel-maker* (Longmans, Green & Co., 1941)
(Sheffield Local Studies Library: B.BREA S; also available at Sheffield Central Library Store: B.BREA)

Brearley, Harry, 'vocational education' in *British Steelmaker*, vol. 10, 1944
(*Sheffield Local Studies Library*: 669.1 SSTQ)

Brearley, H., *Earning a Living* (1946)
(*Sheffield Local Studies Library* 823 B74 SST)

Brearley, Harry, *Talks about steelmaking*, 1946
(*Sheffield Reference and Information Library*: 669.1; also available at *Sheffield Local Studies Library*: 669.1 SST; also in *British Steelmaker, 1945 - 1948*, *Sheffield Local Studies Library* 669.1 SQ)

Brearley, Harry, *Harry Brearley Stainless Pioneer: Autobiographical Notes* (British Steel Stainless in Conjunction with Kelham Island Industrial Museum, 1989-1991)
(*Sheffield Central Lending Library and various community libraries*: B.BREA; also available at *Sheffield Local Studies Library*: B.BREA S and *Sheffield Archives*: BRE/BIOG)

Books and Journal Articles about Brearley

Beeley, P. R. and P. J. Beeley (eds.), 'Knotted String' in *Steelmakers and Knotted String* by Harry Brearley (1995)
(*Sheffield Local Studies Library*: 669.1 SST)

Barraclough, K., 'The early History of Stainless Steel' in *The Cutting Edge*, Spring 1989 (pages 5-14)
(*Sheffield Local Studies Library*: 380.5 S)

Barraclough, K., *Sheffield and the development of stainless steel* reprinted from *Ironmaking and Steelmaking*, volume 16, number 4, 1989
(*Sheffield Local Studies Library*: Local pamphlets, vol. 63 (042 SQ) and MP 6976 M)

Smurthwaite, Diana, *The History and Development of Stainless Steelmaking, 1766 - 1930* [1980s]
(*Sheffield Local Studies Library*: 669.1 SQ)

Tweedale, Geoffrey, *Giants of Sheffield Steel: the men who made Sheffield the steel capital of the world*, (Sheffield City Libraries, 1986)
(*Sheffield Local Studies Library*: 923.842 S; also available at *Sheffield Archives*: BIOG 14)

Tweedale, Geoffrey, *Steel City* (Oxford University Press, 1995)
(*Sheffield Local Studies Library*: 338.4 S)

Zapffe, Carl A., "Who discovered stainless steel?" from *The Iron Age*, 14 Oct 1948
(*Sheffield Local Studies Library*: MP 3444 M)

Sheffield City Council minutes recording the Presentation of Honorary Freedom of the City of Sheffield to Brearley, 1939 - 1940
(*Sheffield Archives: CA-MIN/77 page 762*)

Sheffield City Council, special meeting of the City Council to admit ... Harry Brearley to be honorary freeman of the city, [1939]
(*Sheffield Local Studies Library: Local Pamphlets, vol. 138 no. 24 (042 S)*)

The autobiography of the working class: An annotated critical bibliography, vol. I 1790 - 1900, vol. II 1900 - 1945 and vol. III 1790 - 1945 supplement (Harvester Press, [1984 - 1989])
(*Sheffield Local Studies Library: 016.920 SQ*)

The late Harry Brearley in *British Steelmaker*, vol. 14, 1948
(*Sheffield Local Studies Library: 669.1 STQ*)

Note on the discovery of stainless steel and Harry Brearley's fairy tale version of the discovery, the *Telegraph and Independent*, 2 Dec 1938
(*Sheffield Local Studies Library: newspaper cuttings relating to Sheffield, vol. 45 942.74 S microfilm*)

Newspaper cuttings relating to the life of Harry Brearley
(*Sheffield Local Studies Library: MP 557 L*)

Details of the discovery of stainless steel in *Stocksbridge Gazette*, 19 Sep 1988 (pages 4-5)
(*Sheffield Local Studies Library: 052.74 SF*)

Harry Brearley Centenary: a Business extra special (*Sheffield Telegraph*, 18 Feb 1971)
(*Sheffield Local Studies Library: MP 527 VL*)

Biographical article on the centenary of his birth in *Quality of Sheffield*, vol. 18 no. 3 Mar 1971 (pages 32-33)
(*Sheffield Local Studies Library: 380 SQ*)

Biographical notes on the Golden Jubilee of Brearley's invention of stainless steel in *Quality of Sheffield*, vol. 10 no. 9 Sep 1963 (pages 29-31)
(*Sheffield Local Studies Library: 380 SQ*)

Portrait and note in Sauveur, Albert, *Metallurgical Reminiscences*, 1937
(*Sheffield Local Studies Library: 669 SST*)

Short biographical article in *Unisteel*, no. 109, Jun 1965 (page 5)
(*Sheffield Local Studies Library: 052.51 SF*)

Brief biographical details in *Contact*, Mar - Apr 1989 (pages 10-11)
(*Sheffield Local Studies Library: 283.4274 S*)

The 50 year anniversary of stainless steel knives in *Engineering*, 16 Aug 1963 (page 201)

(*Sheffield Local Studies Library: 620.5 STF*)

The inaugural Harry Brearley memorial conference, 28th September, 1988 [at the Cutlers Hall, Sheffield] (British Steel Stainless, 1988)

(*Sheffield Local Studies Library: MP 4119 S*)

BSC Stainless: Shepcote Lane visitors guide (British Steel Corporation Stainless, c. 1984)

(*Sheffield Local Studies Library: local pamphlets, vol. 332 no. 8*)

“News from Industry: BSC Stainless celebrates 75th anniversary of stainless” taken from *Ironmaking and Steelmaking*, 1988, vol. 5, no. 4

(*Sheffield Local Studies Library: MP 5219 M*)

“Harry Brearley – Entrepreneur” taken from *Steel Times*, November 1988

(*Sheffield Local Studies Library: MP 5218 M*)

“Stainless Steel 1913 - 1988: 75 years of development” taken from *Joining and Materials*, August 1988

(*Sheffield Local Studies Library: MP 5217 M*)

1913-1988: 75 Years of Stainless Steel (British Steel plc., 1988)

(*Sheffield Reference and Information Library: 338.47[6691]; also available in Sheffield Local Studies Library: 669.1 SQ*)

“The story of stainless steel” taken from *Leeds Journal*, August/September 1988

(*Sheffield Local Studies Library: MP 5215 M*)

Fifty years of stainless steel (Frank O'Shanohun Associates Ltd., 1963)

(*Sheffield Local Studies Library: MP 5216 M*)

Obituaries of Sheffield steelmakers: A-F

(*Sheffield Local Studies Library: 920.042 SF*)

Account of the opening of an envelope left by Brearley which was not to be opened until 1960 in *Quality of Sheffield*, vol. 7 no. 8, Aug 1960

(*Sheffield Local Studies Library: 380 SQ*)

Illustrated article on the stainless steel sundial commemorating Harry Brearley in the East End Park in *News (City of Sheffield)*, Oct 1991 (page 5)

(*Sheffield Local Studies Library: 324.42 SF*)

Stainless steel

USA Patent 1,197,256: Patented 5 Sep 1916

A patent granted to Harry Brearley on his claim to achieve 'a useful improvement to cutlery'. With the addition of controlled amounts of chromium and carbon a rustless and non-staining steel had been achieved.

(Sheffield Reference and Information Library: World Metals Index)

See also American Stainless Steel Company V Ludlum Steel Company: Opinion of the USA Circuit Court of Appeals: April 1923. (Haynes Patent No. 1,299,404 and Brearley Patent No. 1.197,256. A law tribunal was formed to discuss the merits of each patent. Each applicant claiming preference.

(Sheffield Reference and Information Library: World Metals Index)

A search of the Sheffield Library and Archive catalogues for the term 'stainless steel' reveals over 150 books, magazines, journals and videos, etc. Listed below is a sample, mainly consisting of Sheffield based material:

Firth-Brearley Stainless Steel Syndicate Limited, Stainless Steel Licensors, Sheffield - reports, 1918, 1921, 1922 and 1934 - 1971

(Sheffield Archives: X306/1/2/3/2)

Firth-Brearley Stainless Steel Syndicate, Stainless Steel Licensors, Sheffield, corporate and management records; legal records; financial records; employment records; promotional material, 1916 - 1952. Includes reference to marketing and patents in the USA, Germany, Italy, Spain and Japan, etc.

(Sheffield Archives: X318)

Firth-Vickers Stainless Steels Limited, Steel Manufacturers, Sheffield, corporate and management records; legal records; financial records; employment records; promotional Material, 1916 - 1952

(Sheffield Archives: X325)

Firth-Vickers Stainless Steels Limited, rust, acid and heat resisting steels, 1948

(Sheffield Local Studies Library: 669.961 SST)

Firth-Vickers Stainless Steels Limited, Stainless steel in architecture, 1963

(Sheffield Local Studies Library: 721.21 SSTQ)

Firth-Vickers Stainless Steels Limited, *Staybrite Chronicle*, 1956 - 1972

(Sheffield Local Studies Library: 052.74 S)

Firth-Vickers Stainless Steels Limited, *Enchiridion*, 1950 - 1966

(Enchiridion is Latin for a small manual or handbook)

(Sheffield Local Studies Library: 052.74 SS)

Firth-Vickers Stainless Steels Limited, where Staybrite steels are made, 1960s

(Sheffield Local Studies Library: local pamphlets, vol. 279 no. 4 042 S)

Thomas Firth and Sons Ltd., *the Development of 'Staybrite Steel', its properties and uses, being a text book of data collected from investigations in the research laboratories and in the works of Thomas Firth and Sons Ltd.*, 1930
(Sheffield Local Studies Library: 672 SST and 669.1 SST)

Thomas Firth and John Brown Ltd., *The Staybrite Book: published for the Daily Mail Ideal Homes Exhibition*, 1934
(Sheffield Local Studies Library: 672 SQ)

Sheffield Stainless Steel Manufacturers Association, correspondence and papers, 1933 - 1941
(Sheffield Archives: X306/1/7/3/5)

Agreements, correspondence and papers with Firth-Brearley Stainless Steel Syndicate Limited, Stainless Steel Licensors, Sheffield, 1916 - 1957
(Sheffield Archives: X306/2/3/3/3)

For archives of other Sheffield steel companies that were involved in the production and use of stainless steel see <http://www.sheffield.gov.uk/libraries/archives-and-local-studies/what-collections-do-we-have/steel-records>
and for cutlery firms see <http://www.sheffield.gov.uk/libraries/archives-and-local-studies/what-collections-do-we-have/cutlery>

Avesta Sheffield *Evolution of Stainless Steel (a short film) (video)*
(Sheffield Local Studies Library: VID 120)

Whenever it's a question of stainless steel (1996) (video)
(Sheffield Local Studies Library: VID 26)

Beddoes, Jonathan, *Introduction to stainless steels* (ASM, 1999)
(Sheffield Reference and Information Library: 669.142)

Burgan, B. A., *Concise Guide to the Structural Design of Stainless Steel* (Steel Construction Institute, 1993)
(Sheffield Central Library Store: 691.7 Q)

Cobb, Harold M., *The history of stainless steel* (ASM International, 2010)
(Sheffield Reference and Information Library: 620.17)

Nisbett, Edward G., *Steel Forgings: A Symposium Sponsored by ASTM Committee A-1 on Steel, Stainless Steel and Related Alloys*, 1986
(Sheffield Central Library Store: 672.332)

The official opening of the Trade Centre (British Steel Stainless, 1992)
(Sheffield Local Studies Library: PAMP 159 SQ)

Materials fact sheets; Section A; stainless and high alloy Cr-Ni steels - general
(Castings Technology International, 1993)
(Sheffield Reference and Information Library: 672.25 SQ)

Stainless Steels '84: Proceedings of the Conference Sponsored and Organised Jointly by Chalmers University of Technology and Jernkontoret (Sweden) with the Metals Society (UK), Held at Chalmers University of Technology, Goteborg, on 3-4 September 1984 (Institute of Metals, 1985)
(Sheffield Reference and Information Library: 669.142[09])

Shining out: reflecting the history of stainless steel rolling at Shepcote Lane, 1948-2006
(Sheffield Local Studies Library: 338.4 SQ; also available at Central Lending and various community libraries: 338.476691)

Practical guidelines for the fabrication of duplex stainless steels (International Molybdenum Association, 1999)
(Sheffield Central Library Store: 669.142 Q)

Stainless steels (American Institute of Mining, Metallurgical and Petroleum Engineers. Iron and Steel Society, 1999)
(Sheffield Reference and Information Library: 602.18 Q)

Stainless Steel International Survey and Directory (Metal Bulletin Publication, 1985)
(Sheffield Reference and Information Library: 338.47[6691] Q)

Iron and Steel Quality Standards. 5, Stainless and Other High-alloy Steels (Din Deutsches Institut Fur Normung, 1993, 1998)
(Sheffield Reference and Information Library: 620.18)

Stainless technology [a technical news sheet from BSC Stainless] (British Steel Corporation. Stainless Steels Division, 1987)
(Sheffield Local Studies Library: MP 3123 M)

Baddoo, Nancy R., *Architects' guide to stainless steel* (Steel Construction Institute, 1997)
(Sheffield Central Library Store: 721.0447142 Q)

Gunn, Robert N., *Duplex stainless steels: microstructure, properties and applications* (Woodhead publishing, 1997)
(Sheffield Reference and Information Library: 669.142)

Hatfield, W.H., *The New Rustless Steel* (1925)
(Sheffield Reference and Information Library: 669.1; also available at Sheffield Local Studies Library: local pamphlets vol. 78 no. 9 042 S)

Hatfield, W.H., *Modern Developments in Steels Resistant to Corrosion* (Institution of Engineering Inspection, 1925)
(Sheffield Reference and Information Library: 669.142[09])

Hatfield, W. H., *Rustless steels as applied to automobiles and aircraft* (1931)
(Sheffield Reference and Information Library: 669.1)

- Hoogovens Groep by Buizen and Pijpen (1983)
(Sheffield Reference and Information Library: 620.08 Q)
- Marshall, P., *Austenitic Stainless Steels: microstructure and mechanical properties* (Elsevier Applied Science, 1984)
(Sheffield Reference and Information Library: 669.142[09])
- Nakahara, Masao, *Preventing Stress Corrosion Cracking of Austenitic Stainless Steels in Chemical Plants* (Nickel Development Institute, 1980s)
(Sheffield Reference and Information Library: 620.176 Q)
- Schillmoller, C. M., *Selection and Use of Stainless Steels and Nickel-bearing Alloys in Nitric Acid* (Chemical Engineering World, 1995/6)
(Sheffield Reference and Information Library: 620.1723 Q)
- Schillmoller, C. M., *Selection and Use of Stainless Steels and Nickel-bearing Alloys in Organic Acids* (NiDI Publication, 1992)
(Sheffield Reference and Information Library: 620.1723 Q)
- Truman, J. E., and B. Crawshaw, *Some recent developments in stainless steels in the UK* (Iron and Steel Institute, 20th cent)
(Sheffield Local Studies Library: MP 1804 M)
- Zapffe, Carl A., *Who discovered stainless steel?*, 1948
(Sheffield Local Studies Library: MP 3444 M)
- Stainless steel directories / databooks, 2001 - 2010*
(Sheffield Reference and Information Library: 669.142))
- Stainless Steels for Machining* (American Iron and Steel Institute. Committee of Stainless Steel Producers, 1985)
(Sheffield Reference and Information Library: 669.142[09] Q)
- Nickel in stainless steel: the nickel advantage* (Nickel Institute, 2008)
(Sheffield Reference and Information Library: 620.17 Q)
- Design Manual for Structural Stainless Steel*, Sponsored by Nickel Development Institute on Behalf of European Stainless Steel Development and Information Group (Nickel Development Institute, 1994)
(Sheffield Reference and Information Library: 691.7 Q; also available at Sheffield Central Library Store: 691.7 Q)
- The Stainless Steels* (Nickel Development Institute, 1993)
(Sheffield Reference and Information Library: 620.13)
- Guidelines for the Welded Fabrication of Nickel-containing Stainless Steels for Corrosion Resistant Services* (Nickel Development Institute, 1992)
(Sheffield Central Library Store: 673.733252)

Guide to stainless steel specifications (British Stainless Steel Association, 2003)
(Sheffield Reference and Information Library: 602.18)

Stainless Steel Castings: A Symposium ... Bal Harbour, Florida, 1980
(Sheffield Central Library Store: 620.17)

Stainless Steel Products Manual 1983 Edition (GB Stainless Ltd., 1983)
(Sheffield Reference and Information Library: 620.08)

Niederau, H. J., *Properties and Uses of 16cr-5ni Cast and Wrought Stainless Steel*
(Sheffield Central Library Store: 620.17 Q)

Welded Stainless Steel Tubular Products Handbook (American Iron and Steel Institute. Committee of Stainless Welded Tubular Products Producers, 1983)
(Sheffield Reference and Information Library: 672.83 Q)

Stainless solutions for a sustainable future: the British Stainless Steel Association conference (British Stainless Steel Association, 2003)
(Sheffield Local Studies Library: MP 5951 M)

CASTI handbook of stainless steels & nickel alloys (2002)
(Sheffield Central Library Store: 620.16)

Fifty years of stainless steel (Frank O'Shanohun Associates Ltd., 1963)
(Sheffield Local Studies Library: MP 5216 M)

News from Industry: BSC Stainless celebrates 75th anniversary of stainless, 1988
(Sheffield Local Studies Library: MP 5219 M)

An introductory guide to stainless steel (Stainless Steel Advisory Centre, 1980s)
(Sheffield Local Studies Library: PAMP 174 SQ)

Stainless steel: the complete material (Stainless Steel Advisory Centre, 1980s?)
(Sheffield Local Studies Library: PAMP 32/1 SQ)

The story of stainless steel (Firth-Vickers Stainless Steels Ltd. 20th cent.)
(Sheffield Local Studies Library: MP 3246 M)

Library, Archive and Museum Collections Held Elsewhere

There are some references to Brearley in the Hadfields steel collection at Kelham Island Industrial Museum (Sheffield Industrial Museum Trust) (ref. MNHD)

www.simt.co.uk/kelham-island-museum/collections

The Cutlers Company of Hallamshire also hold documentary items and artefacts relating to Brearley and stainless steel www.cutlers-hallamshire.org.uk

The Access to Archives online database (A2A) contains catalogues describing archives held locally in England and Wales www.nationalarchives.gov.uk/a2a

The Archives Hub contains catalogues describing archives held in universities and colleges in the UK www.archiveshub.ac.uk/mar04.shtml

The National Archives (TNA) holds records of central government departments and agencies. You can search the TNA catalogue online at

www.nationalarchives.gov.uk.

Oxford Dictionary of National Biography entry:

<http://www.oxforddnb.com/view/article/37221?docPos=1>

The **World Metal Index** (WMI), part of Sheffield Libraries Archives and Information is the key to a unique collection of standards and specifications, trade literature and technical journals on both ferrous and non-ferrous metal. Over 200,000 individual metal grades are included, both current and historical.

WMI services include:

- Access to metals and suppliers information
- Help from information and technical staff at WMI and Namtec (National Metals Technology Centre)
- Access to additional information resources and services from WMI
- Assistance in searching the WMI database
- Technical support and consultancy from NAMTEC
- Technical helpdesk support for the online website and database from NAMTEC

Sheffield Archives and **Sheffield Local Studies Library** services collect and preserve original records and printed material relating to Sheffield and the surrounding area.

The information dates from the 12th century to the present and relates to Sheffield, South Yorkshire and north Derbyshire.

Included are extensive collections of books • pamphlets • photographs • church registers • newspapers • census records • minutes • diaries • films • maps • deeds • records from schools • hospitals • businesses and charities • family estates • personal papers etc

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