Competition and Collusion in the British Railway Track Fittings Industry: the case of the Anderston Foundry, 1800-1960.

Volume 2 of 2

A thesis submitted to the University of Durham for the degree of Doctor of Philosophy

by

James Flanders Hargrave, B.A., D.A.A.
Departments of Economic History and History

1991

VOLUME 2

APPENDICES

TABLE OF CONTENTS
VOLUME 2

Appendix 1: Short Company Histories

Appendix 2: Biographical Notices

Appendix 3: Statistical Tables

List of Tables (Volume 2)

APPENDIX 1

Brief Histories of Anderston's competitors

Many of Anderston's fellow manufacturers shared its obscurity. Most have ceased trading; many have left no records behind them, few anything to compare in depth and quality with Anderston's archives. The brief histories in this appendix are intended to provide a context for the appearance of the various companies in the main text and do not claim to be comprehensive. Unless noted otherwise, the Anderston archives (D/AF) form the basis of the entries.

Much work needs to be done upon the records of Head Wrightson, recently (1988) deposited with the Cleveland Archives in Middlesbrough, upon the records of those companies which were vested in the erstwhile British Steel Corporation and amongst the files of the Registrar of Companies for England and Wales. Published histories of varying quality and scope exist for the larger iron and steel companies. Those by Edgar Jones for G.K.N. and S.D. Chapman for Stanton and Staveley are the most pertinent to this study. Short typescript histories such as Wardell's of Head Wrightson frequently exist, written by insiders of long established firms, but fail to cite sources or provide context and interpretation.

An exploration of the web of business connexions behind most of these companies has not been attempted. It seems that British Hydraulic and Railway and General Engineering possessed networks akin to Anderston's. MacFarlane Strang and Smith Patterson might have done so. Summerson's sought to establish one. Darlington Railway Plant and Foundry, with its lowly directorate, could not have done so.

The external relations of the firms, and the alliances to which they were party, are but international relations rendered

small. Personal friendships and animosities might hinder rational action. Disputes within one cartel could seep into and pollute the workings of another. The domestic politics of a firm could influence its behaviour in the world at large. Whether it is possible to generalise that uniformity of ownership and managerial control was necessary for continued development may be doubted but, as Tolliday has it, structure does influence strategy. Diffuse ownership in tandem with an incompletely independent management produced a tension anything but creative, however, the dictatorship of Young at the Darlington Railway Plant seems as great a hindrance to moving with the times.

EDGAR ALLEN & CO. LTD., Imperial Steel Works, Sheffield.

Formed in 1868, it became one of the dominant firms in the supply of street tramway permanent way. Other products included tool steel, steel castings, and crushing, grinding and drying machinery. Driven by the decline of tramway work from the 1920s, it came to compete for railway points and crossings. It soon took the time honoured path from competition to collusion, becoming one of the smaller members of SAXA. Incorporated as a limited company in 1900, by the 1920s it had a capital of £190000 in ordinary shares, held chiefly by the directors and managers, and £300000 in 5% cumulative preference shares.

Sources: letterheads, 1930s; Stock Exchange Year Book, various editions; D/AF correspondence; W.H.Bett et al., The Tramways of South Yorkshire and Humberside.

BENGAL IRON & STEEL CO. LTD, reconstructed as the BENGAL IRON CO. LTD (1919)

This was established in England with a capital of £150000 to acquire from the Government of India the works of the defunct Porto Novo Company. It obtained some government assistance in its early years but far less than it sought. After reorganization and the acquisition of new ore supplies (c1910) its competitiveness was much improved - previously it had suffered from a bad location and high production costs.

Its absorption into CICA was natural. It was financed, managed and directed by Britons, prominent amongst whom was W.T.MacLellan, chairman and managing director of this company from the 1910s to the 1930s as of his family firm, P.& W.MacLellan of Glasgow. MacLellans include structural iron and steel fabrication, bolts' manufacture and contracting within its range of activities and had subcontracted work to, and cooperated with, Anderston since the 1850s. Various commission payments to it may have represented collusion.

The Bengal company was linked to the centres of collusion in the railway chair and iron sleeper businesses. Cartel payments to it were routed via Anderston. Its potential competitiveness was increasingly serious but cooperation prevailed. Without import duties and suffering from high costs and high internal freight rates, Bengal could not expect to drive out imports.

State sponsorship of Tata's Iron and Steel Company (TISCO) immediately before, during and after the Great War created a formidable rival. Tariffs and export bounties favoured TISCO more than Bengal, which was cut off from its former allies. TISCO was

both rival and potential supplier to the Bengal company eg of steel tiebars. Indianisation resulted in Indian registered companies with a rupee capital gaining advantages over British registered companies based in India. From the 1920s Bengal had increasingly to view itself as an Indian enterprise and develop independently of its old framework of connexions.

In the recovery from the world depression, a defensive merger with the Indian Iron and Steel Company, another Anglo-Scottish concern with which it had formed various joint relationships in the 1920s, was consummated, to create the Steel Corporation of Bengal, which, with a rupee capital and an Indian domicile, could expect more just treatment from the Tariff Board. Demand for steel had held up better than that for pig iron during the 1930s - enhancing Tatas' dominance. The new combine's new steel plant began production in 1939 in time to benefit from that wartime demand which had spurred TISCO's growth a generation before.

Sources: ed. D.Kumar et al., Cambridge Economic History of India, vol 2; D.R.Gadgil, The Industrial Evolution of India in Recent Times; The Times, 22 September 1936; Who's Who, 1931; J.R.Hume and M.S.Moss, Workshop of the British Empire; A.Slaven and S.G.Checkland ed., Dictionary of Scottish Business Biography, vol 1; A.K.Bagchi, Private Investment in India, 1900-1939.

BRITISH HYDRAULIC FOUNDRY LTD, Whiteinch, Glasgow.

This was incorporated in 1891 to be an entirely new enterprise on a large scale to exploit the patents of Alley and MacLellan for hydraulic moulding. Its works opened in 1892 on an 11 acre site enjoying a wharf and direct rail access to the Caledonian and North British systems. Its speciality was tunnel segments, which it supplied for the Glasgow Subway, the Central London Railway and the Blackwall Tunnel.

Chair manufacture began in the early 1890s and the firm was soon party to collusive arrangements, its activities being co-ordinated with those of the wider chair cartel through Anderston. It often tendered for iron sleepers for the Indian market, and received commissions, but seems not to have supplied them. Main line customers for chairs were the Caledonian and North British alone. The company was a founder member of CISA but rapidly sought dispensation from commission payments on local enquiries due to the competition of Potter's of Govan and that threatened by MacLaren's (pipe makers of the Eglinton Foundry).

Initially £144000 of the £200000 authorised capital was issued (in £10 shares): £35000 to the patentees; £117000 was paid up. The dominant shareholders were prominent Glasgow business men: Arrol, Cargill (Burmah Oil), Dubs (locomotives), the Neilson family, the Tennants (chemicals) etc. In 1894 there were 111 shareholders, rising to 186 by 1922, but a small number of large holdings predominated. MacLaren the pipe maker invested 1000 in the 1890s.

The first board, alongside local engineers, accountants and merchants, contained Sir Charles Tennant, a reassuring presence

for investors, who had a group of other local industrialists/investors hanging onto his coat tails and forming an influential block in Glasgow's business and investment circles. Tennant was a director of the North British and one of the Neilsons of the Caledonian. It may be supposed that the British Hydraulic was one of the best connected of Anderston's rivals; Whitson, its last chairman, was a director of the Lion Foundry, Kirkintilloch and of the Scottish Iron and Steel Company.

Nevertheless, the business was not successful: in1899 capital was written down from £117000 to less than £30000, that of the patentees being largely cancelled, and a further call on the shares made to bring £27000 into the business. On a capital which remained at £57-58000, regular dividends of 10%-20% were paid after 1907, to the amazement of Dawson as he contemplated Anderston's state.

In the 1890s, aside from the Alleys and MacLellans, the principal shareholders were Tennant (1000 shares), the Neilsons (900), the Dubs family (450) and A.S.McClelland (600), a prominent Glasgow accountant and an original director. By the 1900s, the five directors, various managers and the abovementioned four held half the shares. Alex Whitson, an iron merchant and director, built up his stake from 100 shares in 1895 to over 1300, gradually becoming the leading force in the business. In October 1918 he engineered the removal of three directors and their replacement by two directors of the neighbouring Barclay Curle shipyard and by another member of his own family.

Post war euphoria induced a 40% capital bonus for the shareholders (1919) but dividends collapsed as the chair market became highly competitive. British Hydraulic's prices tendered for chairs

became erratic: it was keen to cut prices but, handicapped by the higher manufacturing costs it shared with all Scottish makers, could not cut far enough to secure work and make a profit. It continued to use its residual influence with the North British stores department. The railway grouping and competition for segments' business threatened. Whitson, as largest shareholder (14.5%) and chairman, guided the firm to a timely liquidation. Barclay Curle was a willing purchaser of the site for £30000 and Cochrane's of various machinery.

Sources; Dictionary of Scottish Business Biography, vol 1, p287 - article on Tennant; Stock Exchange Year Book, various editions; British Association Handbook, The Industries of Glasgow and the West of Scotland (1901); Scottish Record Office, BT2/2145; D/AF 494 and D/AF passim.

COCHRANE AND COMPANY LTD, Ormesby, Middlesbrough.

A.B.Cochrane, member of a Staffordshire iron family, acquired a 30 acre site at Ormesby in the 1850s, with rail access, a river frontage and wharf. He integrated backwards into collieries at New Brancepeth, an ironstone mine and limestone quarries and forwards into ironfounding. The firm's blast furnaces were the largest in the area in 1889; a few years later its capital was £318500, rising to £400000 by 1918.

The chief product of the foundry was iron piping for which its capacity was 80000tons pa. Telegraph pole bases, girders and other such items were made. In 1908, after initial reluctance, and in company with the family's Staffordshire firm, it joined CIPA. Later, with Stanton, Staveley, MacLaren's and MacFarlane Strang, it formed CIPA's export section.

In 1920 the Furness/Cargo Fleet/South Durham steel group acquired Cochranes in the merger mania of that time and recruited A.N.McQuistan from MacFarlane Strang as managing director. Using his knowledge, experience and contacts in Scotland, he diversified Cochranes into chair making where its cut price competition, much of it directed at Scottish railways helped destroy CICA. Its poaching a large segments contract from Stanton and CISA, helping to destroy that association, kept Cochranes busy, day and night, for three to four years. The firm's financial problems (£82000 profit in 1918, £2000 loss in 1921, £14000 profits, 1922-23), the breaking up of CIPA by Stanton and that company's acquisition of the patents for the Delavaud spun pipe technology (1919) provided the incentive to broaden the business: future prospects for its pipes were poor; to wreck Stanton's seg-

ment orders was due recompense.

Stanton purchased Cochranes' foundry business in 1933, forming Cochrane's (Middlesbrough Foundry) Ltd to run it. As trade revived Stanton was mopping up pipe makers who might prove to have nuisance value. Cochranes was no longer a serious competitor: its infringement of Stanton's patents had brought litigation which it lost but its site was well placed, it had useful manufacturing rights, and a Belgian rival was courting it. In the subsequent rationalisation segment making was transferred to Stanton, although Cochranes was nominally a member of the revived, Stanton-dominated CISA. The blast furnaces were demolished in 1937. Ingot moulds and general castings continued. Chair making had largely ceased in the early 1930s as the market constricted further. Cochranes spoiled the chair business for others who, having acquired price-cutting habits, spoiled it for Cochranes as well. In the 1920s the northern chairmakers, all of them members of CISA, had spurned offers by Cochranes to negotiate in dudgeon at its behaviour in both businesses. Cochranes resumed chairmaking in 1940 and ceased in the 1950s.

When Stanton took over the firm's weekly capacity was 2140 tons of pipes, 1000 tons of segments, c90 tons of other work, 168000 tons pa with 900 employees. The plant was working far below capacity. McQuistan's success, temporary though it was, was rewarded by promotion into the Furness group hierarchy. True revival came with the revival of the iron pipe business: Stanton invested £68000 in new Delavaud plant at Ormesby (1936).

TABLE A1.1 Production by Cochrane's. (tons)

	Pipes	Segments	Ingot Moulds	Chairs	Other	Total
1934	29710	4061	0	0	531	34302
1935	36604	0	0	0	1621	38225
1936	52253	0	0	0	2243	54496
1937	52657	0	0	0	2901	55558
1938	54323	0	0	0	1802	56125
1940	40330	0	3203	616	939	45088
1947	70527	0	3090	5161	99	78877
1948	87305	0	2590	5479	58	95432

Source: BSC1107/1/9.

Sources: British Steel Northern Regional Records Centre, BSC/1107/1/1-9; S.D.Chapman, Stanton and Staveley; D/AF correspondence with "Chairmakers" and with Cochrane, Stanton, CISA etc; F.Jewit, "The Birth and Early History of a Middlesbrough Ironworks" Cleveland and Teesside Local History Society, Journal No.30, 1975/76.

DARLINGTON RAILWAY PLANT & FOUNDRY CO. LTD, Bank Top, Darlington

Formed in 1899 as a points and crossings maker and ironfounder to take over a plant in Darlington's engineering quarter which had been used for the manufacture of other products, this was enterprise on a modest scale. An initial capital of £3000 ordinary shares, £5000 6% cumulative preference shares, and £5000 4.5% debentures had increased by 1910 to £7000 in ordinary shares and £13000 in preference shares. The debentures had been redeemed.

The ordinary shares were narrowly held, with the directors able to veto transfers; the preference shares were held by the butchers and bakers of Darlington, whose Quaker commercial aristocracy is almost wholly absent from the list, in amounts commonly of £250 or less. The directors, whose families held (1904) 4337 of 6000 ordinary shares and 716 of 9577 preference ones, were solid small town business men: a jeweller, a commercial manager, the secretary of a local coal company, and this company's two principal managers. T Metcalfe, a Darlington decorator and later a director, was the principal outside shareholder (350 ordinary; 1554 preference).

In scale and lack of connexion the firm is the complete antithesis of Anderston; in the denomination and holding of its shares, it is completely unlike the various Glasgow firms. Land, buildings and plant were valued at £11500 (1908); the managing director was paid £300pa. Extra capital was raised from the disfranchised preference holders or in private loans from the directors as required.

Darlington Plant established itself by undercutting existing manufacturers whose healthy profits in the later 1890s might have

lured it into the business. Its actions frustrated the formation of a cartel in 1910 and provoked retaliatory price cutting by its neighbour, the ever keen Summerson and Sons. Some local arrangements between the northern firms had come about, however, before Darlington Plant settled happily into SAXA in the 1920s, where it enjoyed the second largest allocation equally with Summerson's. Profits had tumbled, as at Anderston, from £3300 (1909/10) to £1800 (1911/12) causing the dividend to be halved to 10%. A revival was underway during 1913 and 1914. Perhaps the shock of competition helped modify the company's attitude to collusion.

Post-war euphoria caused the ordinary share capital to be increased six-fold to £42000 by capitalising reserves and writing £20000 of goodwill into the accounts. The return on the un-watered capital was 60%; the preference shares received bonus dividends; the higher employees, bonuses to their salaries. The insiders reaped their rewards whilst working capital was supplied, throughout the 1920s, by bank overdrafts of £30000-45000. Young, managing director from the outset, in effect ran the business; the board received monthly reports but otherwise kept out of things. The families of seven current or former directors, plus one long term outside holder, owned 99% of ordinary and 64% of preference shares by the mid 1920s. Their holdings had accumulated gradually and the more they did so, the less was the incentive to reduce their control by replacing debt with equity.

Switches and crossings were supplied to the usual export markets: India, South America and South Africa. At home, sales of axle boxes, and locomotive, carriage and wagon castings, to the LNER formed the staple business. With some view to diversification into the domestic iron castings market, £3000 was invested in

shares of Edward Sisterson's, a Newcastle merchant firm.

Profits peaked at £16000pa in 1922/3-1924/5; from 1929 they collapsed. Losses of £4000pa from 1930/1-1934/5 provoked continued pressure from the company's bankers. Export work had all but disappeared for SAXA members; the LNER, suffering financial problems and diminished traffics, cut back its orders. Dividends ceased in 1928/9; depreciation and directors' fees followed them into oblivion as belated attempts were made to drain the water from the balance sheet. Salaries, overheads and staff numbers were cut. The directors lent £8750 from their own pockets to appease the bank and keep the firm afloat. The perilous seas of competition were eschewed by the now more mature company in favour of its berth in the SAXA lifeboat.

In 1934 Young, and his son the works manager, were forced out. Reorganisation saved a further £800-900pa in management salaries; the directors lent another £1000. How far the ensuing return of the company to profit was due to the general revival of trade and how much to the result of its own actions is unclear. The bank was mollified and the board strengthened. The not very new regime - the new works manager was an internal appointee, the son of one of his predecessors - sought to distance itself from the past. Team spirit replaced "a dictator" and unsatisfactory employees were removed. New customers were sought locally amongst firms which had previously eschewed this company's products. The LNER was placated in respect of inferior work. These same directors had acquiesced in Young's dictatorship as long as the company was doing well. Their new found zeal points to their past delinquency.

Although the survival of the company had been assured, its

direction was uncertain. From October 1936, negotiations proceeded with the Thomas W.Ward group, an iron and engineering conglomerate based in Sheffield. In March 1938 these were concluded with Wards' refinancing the company and strengthening its management and board. Assets were valued at £76500 and the ordinary shares written down by 75% and the preference dividends and arrears reduced. The old directors took shares in place of their loans; the bank took £25000 cash for its £35000 claim. Ward's held a debenture for £15000 and just under half the ordinary (voting) shares. Darlington traded immediate profits for future security. Operating profits advanced from £1100 in 1935/6 to £12700 in 1939/40 when the ordinary shares received a 10% dividend.

In the 1950s, when the firm employed 200-300 men, its products were much as before: brake blocks, buffers, axleboxes, fishplates and manhole covers complementing the locomotive castings and points and crossings which were the heart of the business. Rationalisation of products within the Ward's group was possible following its purchase of Railway and General Engineering in 1957. Through competitive pricing, close financial control and mechanisation of the foundry, the company survived into the 1970s. Latterly the coal and steel industries were its principal customers.

Darlington remained a member of SAXA until April 1962, shortly before Anderston's extinction; it had declined to join CICA in 1958 when that association was struggling and Darlington's production of points and crossings chairs had little to contribute.

In its modest beginnings and dominance by small businessmen, this firm contrasted markedly with Anderston. Darlington was to join an iron based conglomerate whereas Anderston emerged from

one. Anderston was spared the difficult decisions which Darlington had to face in the 1930s. Darlington shewed the folly of insiders over rewarding themselves, of the inflated capital and dividends of the 1920s, of reliance on borrowed money, but also the virtues of close ownership and control as the directors exhibited more loyalty than financial sense and threw good money after bad to see the firm through the 1930s. Their willingness arose from their predominant ownership of the firm's shares; the need from the smallness of the firm's share capital, which was the means of maintaining their predominance.

From nothing the company had expanded so that its works were of comparable value to Anderston's by 1939. Anderston, however, enjoyed large reserves and investments and had over-depreciated its works and plant. Darlington had reached its position by overtrading on a narrow capital base. Post-war, Darlington advanced further towards Anderston: its capital and reserves of £374500 at 30 June 1963 were only £100000 less than those of Anderston before the onset of the latter's collapse.

Sources: Sheffield Record Office, minutes and accounts of the Darlington Railway Plant and Foundry Co.Ltd., TW216-248; Durham County Council, Planning Department, Index of businesses, c1957-59; D/AF passim; Darlington Trade Directories and Darlington Official Guides, various editions; G.A.North, Teesside's Economic Heritage; Stock Exchange Year Book, various editions.

TABLE A1.2 DARLINGTON RAILWAY PLANT, SALES AND PROFITS.

	Gross profits (£)	Net profits (£)	Sales (£)	Ordinary Dividend %
7.1902-6.1903	4004	n/a	45929	n/a
7.1903-6.1904	5734	n/a	50629	n/a
7.1904-6.1905	5860	2381	53396	n/a
7.1905-6.1906	6285	2410	60687	n/a
7.1906-4.1907	5602	2243	50867	n/a
5.1907-4.1908	7642	3422	62564	n/a
5.1908-4.1909	6653	2693	48679	n/a
5.1909-4.1910	7726	3303	60143	n/a
5.1910-4.1911	7494	2470	72233	20
5.1911-4.1912	6042	1784	73889	10
5.1912-4.1913	8617	2626	88309	10
5.1913-4.1914	11593	5711	95279	20
5.1914-4.1915	14650	8022	96065	20
5.1915-4.1916	12336	5378	90817	20
5.1916-4.1917	11480	3689	93479	20
5.1917-4.1918	13368	4317	104604	20
5.1918-4.1919	16806	6926	126693	20
5.1919-4.1920	16766	4002	164499	6
5.1920-4.1921	19679	4268	264058	9
5.1921-4.1922	n/a	8042	194096	10
5.1922-4.1923	n/a	16571	115770	10
5.1923-4.1924	n/a	15125	150663	10
5.1924-4.1925	n/a	16363	159836	10
5.1925-4.1926	n/a	13564	n/a	10
5.1926-4.1927	n/a	2285	n/a	10
5.1927-4.1928	n/a	9163	n/a	10
5.1928-4.1929	n/a	1082	n/a	0
5.1929-4.1930	n/a	1048	n/a	0
5.1930-4.1931	n/a	-3150	n/a	0
5.1931-4.1932	n/a	-6072	n/a	0
5.1932-4.1933	n/a	-3720	n/a	0
5.1933-4.1934	n/a	-4001	n/a	0
5.1934-4.1935	-787	-2844	n/a	0
5.1935-4.1936	1108	-757	n/a	0
5.1936-4.1937	3291	1442	n/a	0
5.1937-4.1938	n/a	4326	n/a	0
5.1938-4.1939	n/a	7281	n/a	7.5
5.1939-4.1940	n/a	12705	n/a	10

Notes: dividends paid tax free to 1922. 3% bonus paid on preference shares, 1914-1922 inclusive. No preference dividends paid, 1930/1-1937/8. No directors fees from 1929/30-1935/6. No depreciation, 1928/9-1937/8. Dividends from 1919/20 are on new capital (multiply by six to convert to comparable figures on original capital). Dividends from 1938/9 are on reduced capital. In 1928/29 -1929/30, £12500 was written off goodwill and £2000 off investments. NET PROFIT is net of management charges, interest, depreciation etc.

Source: annual reports and published accounts, and private ledger, 1902-25 of the Darlington Railway Plant and Foundry, TW239.

THE GLASGOW RAILWAY ENGINEERING CO. LTD., Govan.

A private limited company formed in March 1901 to take over Dugald Drummond and Son and the Glasgow Railway Engineering Company, the two enterprises established by Dugald Drummond, the former mechanical engineer of the North British and Caledonian railways, to make railway wheels, axles, wagon frames and other ancillaries.

Sir William Lorimer (d1922), managing partner in Dubs and Company, the locomotive builders and subsequently chairman of the North British Locomotive Company was, with 10% of the initial share capital of £20000, the only outside shareholder. Capital was increased to £30000 in 1908 and doubled by a bonus issue in 1919. Lorimer's holding was sold after his death.

Lorimer, a director since 1905, succeeded Dugald Drummond as chairman in 1912. He was a valuable contact to have: director of the Glasgow and South Western Railway, of a bank and various financial institutions, and a pillar of the Steel Company of Scotland. His involvement with Drummond presumably arose through the latter's career in Glasgow - Drummond now worked for the London and South Western Railway - as did that of J.C.Bunten and Sir James King, both directors of the Caledonian. These three, together with Daniel Macnee's executors, were the principal holders of £26000 of debentures raised by this company in 1901 to fund the debts of the two partnerships. Macnee had acted as the firm's London agent; his Glasgow connexions and his axle box patents formed a natural basis for this. Blair, of Davidson and Syme, was legal adviser in attendance at the limited company's first meeting and trustee for the debentures until their redemption in 1908.

In May 1931, as a result of the depression, the company's capital was written down by half. Sir James Lithgow, the industrialist, bought control in February 1934 (although the Drummonds retained a diminishing shareholding until April 1938) and ran the company as a subsidiary of William Beardmore's. It ceased trading in 1959.

The prevalence of cartels in all aspects of the railway supply industry is evidenced by the existence of the Railway Wheel and Axle Manufacturers' Association. (Minute of 14.3.1905)

Sources: Dictionary of Scottish Business Biography, vol 1, pp113-115; Registrar of Companies, Edinburgh, SC4815; Glasgow University Archives, UGD100/3/2/1 and 100/3/3/1, minutes and share register; Scottish Record Office, GD282/12/129 and 282/12/240.

HEAD, WRIGHTSON & CO.LTD., Teesdale Ironworks, Thornaby.

The firm was formed in 1859 to take over an ironworks established in 1839. Railway castings and metal window sashes were its principal products. Expansion was rapid: the site had increased from one acre to five by 1865, and to fifteen by 1890 when the company was incorporated.

(Sir) Thomas Wrightson, a cousin of Lord Armstrong, joined the firm in the 1860s and became its principal figure for the generation until his death in 1921. He was a leading public figure in the locality and a director of steel and coal companies. His family continued to be well represented on the board until the 1960s whereas the Heads withdrew like their equivalents at Anderston.

The initial capital of the limited company was £210000, plus £150000 in debentures; £170000 was raised in preference shares during the 1900s. From an early date the firm was larger and more broadly based than Anderston. Subsequent developments magnified the contrast. By the early twentieth century it had acquired the Stockton Forge and the Egglescliffe Foundry, established a subsidiary in South Africa, diversified into dock, harbour and bridge work and the manufacture of blast furnaces and other industrial plant and machinery. Post 1945 it overshadowed Anderston completely: its ordinary share capital, increased by bonus issues after 1949, was £2.66m in 1963. In the 1950s, 4000 employees were spread over a 78 acre site, whilst its South African branch plant employed a further 1000.

Anderston may have had the upper hand in the pre-1914 chair business but thereafter Head Wrightson predominated. Just as Anderston had been its subcontractor for segments since the 1890s

so it was in 1943 for various parts for the Mulberry Harbour. Head Wrightson could face the loss of its chair business in the 1950s with equanimity. Unlike Anderston, which it declined to rescue, it had other, more modern, irons in the fire. The one company rested upon its range of products of the 1890s: the other was continually diversifying and thereby avoided an over commitment to railway business. In 1917 Heads began to manufacture steel castings using an electric arc furnace; later a further steel foundry was acquired. Highly specialised engineering knowledge, a wide spread of products and an international reputation helped it through the inter-wars depression. After 1945, staples such as designing iron and steel plant for both home and export markets boomed as the steel industry expanded and re-equipped. With Whessoe and Ashmore Benson Pease, Head Wrightson formed the dominating triumvirate of heavy engineering on Teesside. The three firms used their reserves of expertise to enter new markets, participating in the Nuclear Power Group to work on power stations.

Heads was a suitably dynamic training ground for J.B.Peat who, as dictator of Tees Side Bridge and Engineering in the 1920s, inflicted severe damage on Head Wrightson's chair business. A virulent personal animosity characterised Head Wrightson's response, hastening the end of CICA of which it was acting as secretary. Heads then relished the opportunity to repay Peat's price cutting in kind. Anderston, complacently, felt that Head Wrightson got its just deserts: ordinary dividends ceased in the late 1920s and preference ones in the early 1930s. Thereafter its performance outstripped that of Anderston: dividends of 5%-10% (1936-49) rose over the next decade to 90% on the original ordinary capital. In 1932 the value of shareholders' funds was £632000 (including a

reserve of £100000) - a considerable margin over issued capital. Unlike Anderston, Heads retained capital within the business and used it for the business.

Sources: Cleveland Archives, Middlesbrough, Head Wrightson papers, especially "A Brief History of Head Wrightson and Co. Ltd, 1859-1952, typescript by John W.Wardell; D/AF passim; Stock Exchange Year Book, various editions; G.A.North, Teesside's Economic Heritage.

ROBERT HOWIE & CO.(IRONFOUNDERS) LTD, Kilwinning, Ayrshire.

A small foundry, in existence from the 1890s or earlier, and dominated by its eponymous proprietor until after the Second World War. Its chairmaking had been limited largely to supplying its local railway, the Glasgow and South Western, thereby insulating other makers from Howie's low and inconsistent pricing. The spectre of Hunter's of Ayr, a firm with a special link to the G&SWR's officials, kept Howie in line. After the 1923 railway grouping Howie's actions could not be contained and he disrupted the arrangements of LMS chair orders from time to time until 1939.

Post war only some 20-30 men were employed chairmaking with an annual capacity of 1200-1300 tons. The business was incorporated in 1959 with control soon passing to the McLuckie family, managers in the business. The Clydesdale Bank was granted a floating charge in April 1965: liquidation followed eighteen months later. Only £28426 of the estimated assets of £33548 were recovered. Preferential creditors received 68% of their claims; unsecured creditors for £44208, the balance of the floating charge, and capital of £59774 were lost. It is uncertain whether Howie was a casualty of the declining demand for chairs or whether, as a small non-specialist foundry, it had fallen to low cost mass production from mechanised competitors.

Sources: Registrar of Companies, Edinburgh, SC34173; D/AF passim, particularly CICA files and chairmakers' correspondence; Piggott's Directory of Scotland, 1890.

ISCA FOUNDRY LIMITED, Mill Parade, Newport, Monmouthshire

In business before 1893. A.H.Laybourne, patentee of various track fittings, and managing director from the 1900s, was succeeded by his nephew A.V.Laybourne Pilliner during the 1920s. Pilliner served until the late 1950s, to give the business continuity through a well entrenched managerial dynasty similar to the Harveys. In 1958 Isca was taken over by Grant Lyon of Scunthorpe, permanent way contractors, who closed the works during the early 1960s.

The company was a loyal member of SAXA, unique in being permitted to take home and export work. Its special interest in supplying the Great Southern Railways in Ireland, based on its comparative geographical proximity, was recognised by SAXA under its export heading: at home it would pick up orders from the Great Western Railway for switches and crossings although that company manufactured most of its own. Chairs, buffer stops, turntables, roof and bridge work, tanks and water and gas pipes formed the residue of its output. (One R.L.Laybourne was a local gas company chairman and engineer.) Isca also contracted for railway sidings work.

Grant Lyon subsequently merged with Eagre. The combined firm continued to manufacture and lay out switches and crossings. In March 1989 it was purchased by British Steel to complement its rail and steel sleeper manufacturing activities.

Sources: Scottish Record Office, GD282/12/129, 240; Sheffield R.O., Railway and General Engineering Co. Ltd, minutes containing minutes of SAXA, 12 October 1944, TW445; letterheads of Isca; D/AF correspondence with Isca; Kelly's Directory of Merchants and Manufacturers, 1961 and 1966.

MACFARLANE, STRANG & CO. LTD, Lochburn Works, Glasgow.

Incorporated in 1877, a new business, it came to employ 800-1000 men by the late 1880s at its works on a 16 acre site adjoining the North British Railway on the northern outskirts of Glasgow. It became a leading maker of cast iron pipes, taking large contracts at home and abroad (Bombay, Sydney etc.). Various related products such as hydrants, water meters, pumping engines and valves were supplied. Chairmaking began c1890.

As with British Hydraulic, chair production was largely confined to the supplying of the Caledonian and North British railways, local contractors and bodies such as the Clyde Navigation Trust. Soon this firm harmonised its activities with those of other chairmakers through Anderston, whose lead, after some initial competition, it was content to follow.

The Cast Iron Pipe Association was joined from the outset by this firm and by R. Maclaren & Co. with whom it had become associated. The latter produced some 37000 tons of pipes annually (1911-14) compared with this company's 17000 tons.

Initially the firm'scapital of £40000, of which £27655 was called up, was held by eight individuals. The shares were of £1000 each. By the early 1890s the issued capital comprised £62500 ordinary shares, held by eleven proprietors, and £21500 in non-voting preference shares held by sixty others. Gradually ownership of the ordinary shares was diluted but the company was as uninterested as Anderston in small shareholders. By 1908 seventeen ordinary holders faced 78 holders of preference stock. Loans of £30000 provided the business with the balance of its funds.

Before 1914 the articles of association became less restrictive and McQuistan (later of Cochranes) and R Maclaren (of the eponymous firm), sometime a shareholder in British Hydraulic, joined the board as executive directors. It was feared that, under Maclaren's influence, the firm would move into segment making. Other directors were the company secretary, a local solicitor and the descendants of the two Glasgow engineers who had been on the first board. These heirs had drifted away from both trade and Glasgow in a manner known at Anderston. In the early 1920s another Glasgow lawyer, descended from another of the original directors chaired the company, with Maclaren, a manager and a merchant resident in Surrey as companions. Herbert, this company's secretary was also a director of Maclarens. Continuing family influence is shewn by the loan of £9200 to the company from the family of a former director in the 1920s.

After 1920 profits collapsed under the double blow of McQuistan's disruption of the chair business and Stanton's seizing upon its new pipe technology to dish the Pipe Association. The loss for 1921 exhausted this firm's profit and loss account. A profit of £15500 for the years 1924 and 1925 little ameliorated trading losses of £16700 in 1922 and £22400 in 1923. Losses returned in 1926 (£4000). Having failed to interest Stanton in taking over the business,the company went into voluntary liquidation in September 1928. There were then 36 ordinary shareholders, 81 preference holders and seven dual holders.

Stanton's possession of the Delavaud patents allowed it to run rings round other pipe makers, dominating the market increasingly, and as cause and effect, absorbing competitors or driving them from the business. Few survived into the 1930s.

Contemporaneously the railway grouping, the collapse of price fixing in the chair business and the high costs of Scottish pig iron and foundries delivered a clear message. Macfarlane Strang would have been forced out of business had it not gone of its own accord.

Sources: J.R.Hume and M.S.Moss, Workshop of the British Empire; S.D.Chapman, Stanton and Staveley; Industries of Glasgow, Historical Publishing Company (1888); D/AF passim; Scottish Record Office, BT2/790.

ROBERT MELVIN LTD., Sunnyside Foundry, Alloa.

In business by 1880 as ironfounders, engineers, boiler makers, mill wrights and bridge builders, the firm remained a general foundry and engineering shop until the 1960s. It was making chairs before 1900, confined largely to supplying the North British Railway, which served Alloa, particularly with points and crossings chairs. The firm happily fell in with whatever collusive arrangements were in place from the 1900s to the 1950s.

A limited company was formed in 1918 with a capital of £10000, £4532 of it issued, and £3532 of it held by James Melvin. Upon his retirement in January 1920 his shares passed to the other three directors - the managing director, works manager and secretary of the business. Thereafter all shares were held by such men and passed on, upon death or retirement, to their successors. In 1950, by capitalising reserves, the issued capital was increased to £10000, the majority held by C.R.McArthur, director, secretary and former commercial manager.

The firm at that time could produce 1600-2000 tons of chairs annually, employing thirty men to do so. By the 1960s trading results were unsatisfactory. In 1968, a profitable year, £13900 was due on loan to McArthur and £20963 on overdraft. The cancellation of a regular contract le d to a loss of £18500 in 1969 which wiped out the capital and reserves. Losses continued and the company was liquidated in August 1971. Creditors amounted to £146000; the receipts of the liquidators to a tithe of that sum.

Sources: Registrar of Companies, Edinburgh, SC10040; Piggott's Directory of Scotland, various editions from 1880, and the advertisements therein; Kelly's Directory of Merchants and Manufacturers, various editions, 1950s-1960s; D/AF passim.

MURRAY, WORKMAN & CO. LTD., Craigton Engine Works, Glasgow.

To take over the business of Angus Murray, formerly the manager of the Anderston Foundry in Glasgow, this private company with a capital of £12000 was incorporated in July 1909. The joint managing directors, Murray and Robert Workman, were the only directors. Murray received £3875 in shares and £1500 cash for his existing business; Workman subscribed for £4501 in shares. The final division of capital was £4502 to the Workmans, £4503 to Murray and £3 to others. The business went into voluntary liquidation in January 1921 at a time of labour unrest in Glasgow and difficulties, shared by Anderston, in obtaining raw materials.

The company's business mirrored that of the Glasgow machine shop at Anderston of which Murray had over twenty years' experience: air compressors, high speed steam engines, foundry moulding and core making machinery. Coiled keys were made for the Great Indian Peninsula Railway and the competition instituted by this firm drove the profit from such work for Anderston and others who had long enjoyed cosy arrangements and payments of mutual commissions. Murray was not devoted to competition as an end, but as a means of establishing the business. He would have joined the collusive arrangements before 1914 had he been offered better terms.

Murray may have seen his prospects as an outsider at Anderston hampered by the Bunten cousinhood.

Sources: Glasgow directories, 1910-12; Scottish Record Office, Edinburgh, BT2/7240; D/AF430-437 and passim.

PATENT SHAFT AND AXLETREE CO. LTD., Wednesbury, Staffordshire.

Incorporated in 1864 to take over a business established in 1835, its output comprised axles, wheels, tyres, rails, iron and steel, steam engines and so forth. By amalgamation it acquired blast furnaces, rolling mills and a Bessemer steel works so that, by the turn of the century, it employed 4000 men on three separate sites in the Black Country with an area of 475 acres. One of its most noted works was the Benares bridge over the Ganges. Having previously enjoyed interlocking directorships with various local carriage builders, it was one of several companies merged by Dudley Docker (a director since 1899) into the Metropolitan Amalgamated Carriage and Wagon Co. Ltd. in 1902. Wheels and axles remained its prime business - in 1906 it made twice as many as any other British manufacturer. During 1949/50 part of the business was absorbed by its parent, Metropolitan-Cammell, part nationalised, and the manufacture of axles discontinued. The business closed down in 1980.

When the manufacture of switches and crossings began is unclear. The firm was party to the negotiations for arrangements during the 1910s and a founder member of SAXA. Such business must have formed a minor part of the whole, an adjunct to rail making perhaps, and probably ceased when the firm withdrew from SAXA in 1950 as part of the contemporary reorganisation of the business.

The railway wheel and axle suppliers, inevitably, possessed their own Association.

Sources: J.H.Price, Tramcar, Carriage and Wagon Builders of Birmingham (Hartley, Kent 1982); D/AF passim.

PEASE AND PARTNERS LTD., Tees Iron Works, Cargo Fleet (formerly Wilsons, Pease and Co., latterly Pease and Partners (Tees Foundries) Ltd.

M.W.Kirby in Men of Business and Politics has described the rise of the (Quaker) Pease family, the spread of its industrial interests and the problems of the late 1890s which caused Pease and Partners, incorporated in 1882 to control the family collieries, to become, in 1898, a public company, albeit one under effective family control. Seven of the nine directors in 1922 were members of the clan.

Gilkes, Wilson and Leatham, established in 1843 and soon to manufacture railway chairs, begat Wilsons, Pease and Company in the early 1880s via Gilkes, Wilson, Pease whose bridge building activities descended to the Tees Side Bridge and Engineering Company. The Wilsons, Westmorland Friends, were left to manage the business, which they did without success. Sir Joseph Pease had to inject £29000 into the business in 1880, despite which it owed £152000 to the family bank, J.& J.W.Pease, in 1901. A belated clearance of dead wood in management, plant and equipment was effected but the firm, valued at £200000 in 1901, had to be disposed of for £50000 in the forced sale which followed the bank's collapse (1902). Sir Joseph was too burdened by social obligation to conduct the family businesses purely fo profit, to his, and their, undoing.

In 1912, Pease and Partners acquired Wilsons, Pease. The combined concern employed 13200 men in 1914: 8900 in its coal mines; 1900 in ironstone mines; 400 in limestone quarrying; 1500 in its three ironworks. Its issued capital comprised £1.3m in

shares and £500000 in debentures. Consistent and rising dividends of 8%-12% were paid in the decade to 1914. A decade later bonus issues had increased the capital to £2.2m and the debenture debt had risen to £1.4m. and Pease and Partners was suffering financial traumas similar to those of other iron, coal and engineering giants. In the 1930s new brooms swept in under the bank nominee J.Frater Taylor: 95% of ordinary capital was written off. A strong family presence on the board continued but it was balanced by the renewal of the management in professional hands.

Anderston believed that the financial problems of Peases were an encouragement to its price cutting activities - a desparate attempt to secure high tonnages to spread overheads. Later, with a moratorium on interest payments and the subsequent reconstruction of the balance sheet, the reduction in fixed obligations was blamed for the continuance of these practices. Only by cross-subsidising its foundry (by artificially reducing the price of iron and coal supplied to it) were the results claimed for the foundry explicable to Anderston. Pease's, like Stanton, was felt to view its foundry as a means of consuming the large volume of pig iron produced by other branches of the firm.

Personal animosity between Pease's and Head Wrightson, of unclear origin, undermined the Chair Association in the 1920s and formed a serious obstacle to its reconstruction in the 1930s. Peases co-operated with the cartel when it suited it to do so and, by the continuing pursuit of self interest, was one of the major beneficiaries of CICA's operations in the 1930s. Post 1945 its chair capacity of 21000-24000 tons annually exceeded that of any other northern firm.

The amount of its overall traffic was felt to give it an ad-

vantage with the railway companies which, in financial difficulties themselves, were prone to order from their own customers pro rata to business done. Times had changed so much that the presence of a Pease on the board of the LNER held few of the possibilities of former times.

Nationalisation left Pease and Partners with much cash but few operating subsidiaries. Hence, perhaps, the urge to merge with Anderston and the means to do so. However, the lack of prospects for a foundry heavily committed to chairmaking, in the face of developments at Horwich, helped swing the balance from reinvestment in congruent businesses to orderly liquidation. A first liquidation liberated capital for the shareholders: 14s.9d. per 5/- share in 1955. The liquidation of the remaining business (1959), after the closure of the foundry, shewed a sense of timing comparable with that of British Hydraulic, and quite unlike Anderston's.

The products of the foundry are familiar ones: chairs, tunnel segments, tramway yokes, brake blocks, ingot moulds and floor plates. Having become the north's principal chairmaker, Pease and Partners was the first casualty of that business's collapse.

Sources: G.A.North, Teesside's Economic Heritage; M.W.Kirby, Men of Business and Politics; letter heads of Pease and Partners; D/AF passim, particularly correspondence with Pease's and other chairmakers, and with CICA; Durham Record Office, D/X619/1; Stock Exchange Year Book, various editions.

RAILWAY & GENERAL ENGINEERING CO. LTD., Meadow Lane, Nottingham.

Whereas Summersons' was a family firm taking the form of a limited liability company without any change of control and the Darlington Railway Plant and Foundry was an entirely new venture built from small beginnings, this, the third points and crossings maker incorporated at the turn of the century, was a hybrid whose ambitions were more comparable with British Hydraulic's than with the other firms examined in this appendix.

It was formed (25 April 1900) to acquire the assets of John Taylor and Sons Ltd., Midland Foundry, Queen's Road, Nottingham and to construct a new, enlarged works adjoining the Midland Railway line at Meadow Lane, there to make railway and tramway switches and crossings, other railway appliances, boilers, steam, gas and electric engines, and carry on a business as a general iron and brass founders.<1> From 1896 to 1898 Taylors' net profits of £6250pa were roughly comparable with Summersons'. Under L.W.Crosta, Taylors' works manager since 1896, the firm had expanded into one of the country's largest makers of switches and crossings. As the Darlington company backed Young's technical expertise, so Nottingham investors backed Crosta. He was appointed managing director on a ten year contract.

Taylors' business was bought for £17000: the Midland Railway received £7000 for its fixed plant at the works, which suggests an existing position of most favoured supplier. £40500 was set aside for new buildings and £15500 for working capital. To finance the scheme £50000 ordinary shares, £20000 cumulative preference shares, and £10000 4% debentures were to be issued.

Capital raised (£46785 ordinary and £25041 preference to

1908) was greatly exceeded by expenditure. Outstanding loans were consolidated into £35000 4.5% debentures in 1904.<2> During the next decade borrowings were rearranged and bankers changed. The company was overspent by £47000 and the directors had to lend it money to keep it afloat.<3> New businesses were considered; the existing one did not flourish despite the expansion of chairmaking. The new lines appear to have been even less successful.<4> A continued depression and keen competition were offered regularly as mitigation for poor performance (annual reports from 1907) and blame ascribed to railway and coal strikes, the rising costs of raw materials damaging fixed price contracts, and unfavourable market conditions. Despite the heavy capital expenditure profits failed to equal those of the Taylor business and, from 1905, plunged towards the losses of 1912-13. Dividends ceased. The directors established a committee of investigation.<5>

Gas engines, first investigated in 1901, were phased out as part of a campaign to rid the firm of unprofitable lines.<6> In other respects this firm's problems echo those of Anderston: the poor shewing in 1912; the considerable improvement in results during 1913 and 1914. These, and continued wartime prosperity, finally put the firm on its feet financially. Crosta was removed on health grounds which appear genuine - he had sacrificed £250 of annual salary during the period from 1910 but had not been fired; he was to be paid certain allowances in retirement.<7> Burnie, assistant manager from 1901, succeeded him. The profits of 1913-15 had reduced the company's debts. As a prelude to the resumption of dividends the seven years of arrears on the preference stock was capitalised as to 25% and the balance (net) paid in cash (£7/14/6d).<8>

The company's ambitions may be gauged by the nature of its directors - all prominent in the locality, experienced in business, and having railway and engineering interests - whose money was backing Crosta's experience. Most were of an age, swept away by death at the end of the First World War, and replaced by others of a similar stripe.<9> New railway connexions were not forged, reflecting, as with Anderston, the changing circumstances and the changed structure of the railway companies; existing ones may have proved fruitful. Ross junior, with his small holding of shares and his high position in the LNER was likely to be of far less use than his father had been when the latter, one of the largest shareholders in a then unsuccessful company, was brought inside as a director to head off any potential challenge or criticism from him on the outside.<10>

This firm's shares were always more widely held than Anderst on's but there was a similar continuity of ownership from the outset until the late 1940s by families, such as the Crostas, who had long ceased to be involved in running the company. The Hill family and connexions, holding some 25% of ordinary shares inter-wars, were exceptional. Unlike their equivalents at Anderston they were directly represented in the boardroom but they had never been concerned with day to day management. Other directors of the time typically owned 3%-4% of the shares but there were many small holdings amongst the 131 shareholders of 1931/32.<11>

The firm's financial performance between the wars compared well with that of much of heavy industry. There was evident pressure for change neither upon the board - whose 36% shareholding (1932/33) was impregnable - nor upon the management. In reaction

to previous difficulties and ambitions a policy of financial conservatism prevailed, to conserve resources rather than to maintain dividends for rentiers. Dividends were passed (1922-25) and debentures retired piecemeal to leave a debt-free company with healthy reserves in time for the depression of the early 1930s.

That depression severely reduced profits (only in 1933/34 was a loss made), but the concentration upon the home market under the SAXA arrangements left Railway and General better off than many of its erstwhile rivals despite the trend of economy-minded home railways towards self-sufficiency.<12> Expenditure on plant and equipment to improve efficiency<13> went hand in hand with cuts in salaries and fees and continued economy in working expenses. Nevertheless, high costs postponed investment in sand slinging machinery (1936). Arrears of preference dividends were cleared (1936)<14> and half preference capital repaid (1939)<15> from the realisation of investments and bank deposits for, like Anderston, the company could find "no useful employment of surplus resources"<16> There remained reserves of £15000 and a credit of £8700 on the profit and loss account (1940-41). The plant and buildings were valued at £48000, the business overall at £86000 with a capital of £65000: the bulk of the business's assets were invested in the business.

In the 1930s, as the principal department moved into loss, closer attention had to be paid to the allocation of overheads - further echoes of Anderston.<17> Other businesses - in this case general engineering work dominated by orders for Amos Crosta, sanitary engineers - might form a useful adjunct to railway work: it was insufficient on its own to be a paying proposition.<18> The recovery in the company's position depended upon the recovery of

its railway business.<19> Without guaranteed results the expenditure required to equip a general shop to manufacture the special engineering products of the 1930s was not worthwhile. Railway and General, which had burnt its fingers with gas engines, shared Cargill's doubts; nevertheless it continued to undertake engineering work post-war.<20>

Railway and General had started chairmaking by 1904,<21> at a time of disruption within CICA. Like Taylor Brothers, it concentrated upon switch and crossings chairs, never manufacturing ordinary chairs on the scale of the northern firms.<22> All three railways serving Nottingham made most of their own chairs, but perhaps not special chairs.<23> However Railway and General's personal connexions, and its location, must have placed it in a favourable position for any orders offered to outside suppliers. From its Nottingham base the company was best able to deliver to East Anglia and the south. By 1914, Railway and General had come to work in conjunction with CICA for, like most firms, it found that disruptive competition might cease to be beneficial. At a time of particularly poor trading results the path of collusion seemed to lead to the sun-lit uplands of improved margins and increased prices for all.

Collusion spread into the firm's points and crossings business during the First World War. The 1923 arrangements left the home mainline railway market to be divided with Taylor Brothers but did not specify how.<24> Subsequently, the latter's acquisitiveness in claiming all work for the Southern and the LNER, as well as a share of that for the Midland's successor, the LMS, caused friction.<25> The cutback in Railway and General's capacity from 1941 exacerbated the problem until a compromise was reached at a

series of bilateral meetings and meetings of all members of SAXA during 1944-45. Taylors would take all LNER orders; London Transport enquiries would be split; LMS orders would be divided pro rata to the pre-war capacity of the two makers: two thirds to Taylors and the balance to Railway and General. The small amount of business the Southern placed outside its own works would be divided in line with pre-grouping arrangements under which Taylors had supplied the South Eastern and Brighton companies, and Railway and General the South Western.

In 1941, with much of the works about to be requisitioned and Burnie of an age to retire, the company resolved upon liquidation, the sale of patterns and goodwill to Taylor Brothers (£3750) and redundancy payments for all classes of employee. Second thoughts prevailed.<26> A few months previously there had been a crisis in the board room. Small resigned the chair in April, due to old age, intending to resign as a director once a successor had been found. His nominee was G. O. Ringdale, head of E. Reader and Sons Ltd., which was interested in purchasing part of Railway and General's works; others put forward C. L. Hill, who had become the largest shareholder upon his father's recent death. Hill was appointed and Small and Webb, the new chairman, resigned in "regretable circumstances."<27> The repudiation of liquidation signified Hill's commitment to the development of the business. C. S. Stead, works manager, who had been given the task of arranging the closure, now became general manager of what was left. All work was given up bar the manufacture of points and crossings, which continued on a reduced scale in what was left of the plant.

The remaining directors, Kennedy and Burnie, retired amicably in 1945 and 1947 respectively<28> to allow Hill to introduce new

blood as part of his revitalisation of the firm. Sands, a long-time adviser and shareholder, and Barringer and Walmsley, two local businessmen, were recruited. A further director with experience of foundries and engineering was sought.<29> A new accountant was appointed together with a works manager to whom, during 1948, Stead handed over control in time for the resumption of business as usual. To March 1947, £15500 had been spent in re-equipping the chair foundry. New methods and attitudes took hold as they did not at Port Clarence.

Through Walmsley a joint venture with Baldwins was established within months of his joining the board. Later he mooted a further co-operative scheme involving type writers.<30> After a few years the relationship between the two dominant firures on the board, Hill and Walmsley, soured. The joint venture, Cable Boxes Ltd., was sold to Baldwins<31> and Walmsley, having been denied an extended leave of absence and a veto on boardroom appointments, resigned. Meanwhile, to finance modernisation and expansion, the company had raised new capital (up from £62500 to £100000) and split its shares into marketable 2/- units. By 1952 the Hill family holding of ordinary (voting) shares had been diluted to 16.7% and other established holdings had been sold or taken a similar path.<32> As time passed, many of the owning families became distant from the company, industry and the locality. The time scale was shorter than at Anderston and no charmed circle existed to absorb shares and maintain control. Thus Baldwins built up an 8.2% voting stake after 1947.

The mechanised foundry, which had cost more than anticipated, required a turnover of £20000 a month: this in return required further working capital. New planing machinery, ordered

in 1949 at a cost of £14000, brought the company's overdraft to £30000 as the first full year of operation<33> of these new works produced, after interest payments, the worst loss in the company's history.<34> In the 1950s volume was pursued at the expense of margins with mixed success and unwelcome consequences for rivals.<35> (Perhaps GKN was driven by similar problems in its disruption of the chair business.) MTW Trading Company was appointed agent for the north of England<36> and links were forged with the Railway Sidings Construction Company of Darlington, one of several new platelaying contractors.<37>

Modernisation of managerial attitudes may be seen in the appointment of an accountant (1947), the move towards service contracts for senior staff, the provision of company cars and a staff pension scheme, the employment of management consultants and efficiency experts, and the recruitment of a full time secretary.<38> Hill was receiving £200pa for his consultancy services. Argyle, the new general manager (1952) received bonus payments under a contract linked to the dividends paid by the company.<39> Appropriately, the expansionist managerialism let out of the bag by Hill was not encumbered with the loyalty characteristic of the cautious management of Anderston; Railway and General thus fell victim to another modern phenomenon: the contested takeover bid.

The first offer from Baldwin's in the autumn of 1954 was rejected but Baldwin's was left with a much enhanced share stake. Despite Hill's opposition, an increased offer of 5/- per 2/- ordinary share and 25/- per preference share was recommended by a majority of the board in January 1955. Hill resigned;<40> other directors followed after the completion of the takeover. Argyle

had assurances for his future but was to be disappointed if he had expectations of Baldwins finding the extra capital for further expansion. In preference to making an issue of new shares in Railway and General (at 4/3d) or of issuing further capital in Baldwins, and under pressure to decrease Railway and General's overdraft, Baldwins sold this company to the Thomas W. Ward group in September 1957 at 5/9d per share.<41> The residual outside share holders (c7%) followed suit in the ensuing years. For the fifteen months to June 1958 a company which had just broken even ran overdrafts of £280000; the balance sheet at March 1957 contained £100000 capital, and various reserves created by write ups and window dressing, in a balance of £815000.

Argyle, free from the deadweight of tradition which stunted Anderston's new recruits, happily embraced the "changed conditions of trading in recent years" (27 October 1953), resigning from SAXA from which "for a long time past [we had] received no material benefit" and taking up with the Railway, Mine and Plantation Equipment Company, through whom a recent large order for Burma had been obtained, to expand the manufacture of light railway materials for export. £11300 was spent on equipment to increase the turnover of light weight and standard products to £0.5m each.<42> An invitation to rejoin SAXA as an export maker, the result of Railway and General's success in obtaining contracts from the Crown Agents and other traditional export customers, was declined despite difficulties in obtaining supplies. Behind this the hand of the Anderston Foundry was detected, re-employing tactics used successfully in the 1930s to bring Summersons back into line.<43> Argyle and Baldwins were trying to knit together another group of switch and crossings firms. A half share in

Industrial Sidings and co-operation with George Cohen's, a group similar to Ward's, were sought. S. E. Gillies, late buyer for the Crown Agents was recruited as sales manager - a post unknown to Anderston and at one with this firm's more aggressive stance.<44>

In May 1958 Railway and General withdrew from the failing CICA,<45> reasoning that as its fellow Ward's subsidiary, Darlington Railway Plant, had declined to join the Association, and both were, as chairmakers, primarily interested in special switch and crossings chairs, little good would come from retaining membership. Vertical integration within the Ward's group allowed the Associations to be by-passed in respect of platelaying for private customers, as Darlington Plant had shewn in the late 1930s. Restrictive practices legislation and the position of British Railways as an oligopolistic purchaser were undermining the trade associations and those who clung to them whereas this firm, more than most of its competitors, had embraced the present. It declined a further approach from SAXA in 1961.<46>

Profits returned under the Ward's regime to peak at £60000 before tax in 1960/61 and fall to £33000, in response to domestic and foreign difficulties, in 1962/63.<47> After making losses in 1961/62, the chair foundry was reorganised in the expectation that orders were not likely to rise significantly. As other firms were swept to extinction, those enjoying the support of Ward's, their activities rationalised with those of other companies in the group, survived. Directors were exchanged. Industrial Sidings was brought into the menage. Ultimately, Railway and General would be absorbed, as a manufacturing unit, by Taylor Brothers, soon to join the Ward's camp, and subsequently closed.

Survival seems to have involved the trading of independence

for the strength of the larger unit and sloughing off the methods and attitudes of former times. By taking risks again the firm survived most of its erstwhile partners and competitors.

TABLE A1.3 RAILWAY AND GENERAL OFFICIALS AND BIOGRAPHIES.

Chaiman:

E. Parry	1900-19
C. H. Hill	1919-36
J. G. Small	1936-41
G. H. Webb	1941
C. L. Hill	1941-55

General Managers/ Managing Directors.

L. W. Crosta	1900-15	MD
J. D. Burnie	1916-41	MD
C. S. Stead	1941-48	
--- Smith	1948-52	
E. L. Argyle	1952-54	
E. L. Argyle	1954-	MD

Directors:

E. Parry	1900-1919	(d.1920)
C. H. Hill	1900-1936	(d.1941)
Sir E. H. Fraser	1900-1920	(d.1921)
W. Hunt	1900-1909	
L. W. Crosta	1900-1915	(d.1916)
Alex. Ross	1911-1923	(d.1923)
J. D. Burnie	1916-1947	
J. G. Small	1919-1941	(d.1953)
R. S. Kennedy	1923-1945	
G. H. Webb	1936-1941	
C. L. Hill	1941-1955	
H. Sands	1945-1955	(Secretary)
H.J.D.L.Walmsley	1947-1952	
	1955-	
R. E. Barringer	1949-1955	
E. L. Argyle	1954-	

Except for Ross and Kennedy all lived locally or had done so.

Edward Parry (1844-1920). A civil engineer. Former county surveyor of Nottinghamshire. Chairman of the Midland Railway Carriage and Wagon Company (Birmingham) and a director of local companies. During the 1890s he worked on the London extension of the Great Central Railway, having previously worked for the Midland. Estate valued at £34000.

Charles Hose Hill, J.P. (1852-1941) of Woodborough Hall, Notts. and of The Park, Nottingham. This last was the city's prime residential district. Son of Thomas Hill, a prominent hosier and partner of the Morleys. The Hills married into neighbouring families of the city's commercial elite just like the Muirs. His wife's family, the Littlewoods held some £1000 in shares and a

portion of that holding descended to the Birkins, one of whom married Mrs. Hill's sister. The Birkins provided the Great Northern Railway with two directors, 1896-1920. Hill held a directorship of Hollins and Company. Estate valued at £134000.

Sir E. H. Fraser (1851-1921). Mayor of Nottingham, 1896-99 and 1910-11. A prominent local solicitor, public firgure and Liberal parliamentary candidate. Director of a local bank, a power supply company and a colliery company. From 1900 he was a director of the Great Central Railway. His firm was employed as Railway and General's solicitors in the 1930s.

William Hunt. A maker of machine tools who provided some managerial assistance to Crosta in the formative years of this company. Retired in 1909.

L. W. Crosta. Works manager of John Taylors which he had joined in 1890. Managing director of Railway and General, on a 10-year contract, from 1900. Salary increased to £750pa in 1910 but reduced to £500 by the time of his retirement. Pensioned to 1918, but died in 1916. Family connexion with Amos and Crosta through whom Railway and General won work to supply patent gutters (for Nottingham Corporation).

Alexander Ross (1845-1923). Joined the board after retiring as Chief Civil Engineer of the Great Northern Railway (1897-1911) to which he had moved from a similar post with the Manchester, Sheffield and Lincolnshire alias Great Central (1890-97). In retirement he had established a consulting engineering practice in London. His son became Chief Stores Superintendent of the LNER in the 1930s. Ross was recruited to strengthen the board and to bring his knowledge and connexions to play on behalf of the company.

J. Dickson Burnie. Son of R. J. Dickson Burnie the former MP for

Swansea and Managing Director of the Swansea Wagon Co. Ltd. Assistant Works Manager at £250pa (1901); Managing Director at £600pa (1916). Paid £1000pa by 1926. Retired from management upon the requisitioning of the works and expressed a willingness to retire from the board after his removal to Birmingham in 1945. A director of the Swansea Wagon Co. Ltd. from 1921.

J. G. Small (d.1953). Managing Director of J. G. Small and Tidmans. Resided latterly in Dorset and Somerset. Resigned in 1941 on grounds of age and ill health, but also in disagreement about his successor.

R. S. Kennedy, MICE. Managing Director of the Glengall Ironworks. resident in London. His shareholding arose from stock sold by Ross's executors. He had (27 September 1944, R&G minutes) some "unofficial" links with the LNER - suggesting links with the Ross family. Retired in 1945 to help Hill infuse new blood. Chaired meeting following Webb's resignation.

George H. Webb. A director of Parker, Winder and Achurch of Birmingham. Through his wife he might have been connected with the Hill family (her shareholding descended by the same route as that of the Birkins). Resigned in 1941 in disagreement with the reconstruction of the board.

Charles L. Hill (b.1894). Son of C. H. Hill. Director of Nottingham House and Land Company. Lived in Buckinghamshire. Largest individual shareholder. Resigned in opposition to sale of the business (1955). More deeply involved in the company than was usual for a chairman - he received extra remuneration on various occasions for consultancy work and assistance.

H. Sands (b.1891). Succeeded father as part time Secretary. In private practice as an accountant [?]. Executor of Crosta. Direc-

tor of Hosiery Developments Ltd., George Spencer Ltd., and other local companies.

H. J. D. L. Walmsley (b.1900). Director of H. J. Baldwin's and eight other companies. Sought to exercise control over the appointment of directors. Resignation was acrimonious. He later led Baldwins' takeover bid.

R. E. Barringer (b.1893). Chairman and Managing Director of the Mansfield Standard Sand Company; director of six more local firms.

E. L. Argyle (b.1907). A new broom given his head - in complete contrast with Anderston. Joined as Assistant Works Manager in 1948 and stayed as Managing Director into the Wards' era.

Sources for biographies: Kelly's Handbook of the Titled, Landed and Official Classes, various editions; Burke's Peerage, 1938 edition; John Marshall, A Biographical Dictionary of Railway Engineers (Newton Abbot, 1978); Universal Directory of Railway Officials, various editions; Who was Who, various editions; The Times, obituaries, 15 October 1920, 11 November 1921 and 27 March 1941; J.P.Briscoe and W.T.Pike ed., Nottinghamshire and Derbyshire at the Opening of the Twentieth Century (Brighton, 1901); G.Dow, Great Central Railway, 3 vols (1965); J.Wrottesley, Great Northern Railway, 3 vols (1979-1981); Charlotte Erickson, British Industrialists, Steel and Hosiery (Cambridge, 1959); J.H.Price, Mountain and Gibson (Hartley, Kent, 1980); minutes of Railway and General.

TABLE A1.4 RAILWAY AND GENERAL SHAREHOLDINGS.

(%)	1916 ord.	1916 pref.	1932 ord.	1932 pref.	1947/8 ord.	1947/8 pref.	1952 ord.	1952 pref.
Burnie	0.6	1.0	3.7	5.7	2.5	7.2	0	4.7
Crosta	8.8	1.6	8.8	1.6	8.8	1.6	5.5	1.0
Fraser	7.4	0	7.4	0	7.4	0.8	1.8	0.5
Hills etc.	22.6	18.0	25.6	30.2	24.1	28.6	16.7	22.8
Hunt	2.1	0.4	2.5	0	1.1	0	0	0
Kennedy	0	0	3.1	3.5	2.1	6.8	0.7	3.0
Parry	11.1	2.8	11.3	3.0	8.5	8.8	5.3	3.5
Ross	5.3	1.6	0.6	1.6	0.6	1.6	0.4	1.0
Sands	0.2	0.8	0.7	0.9	2.0	3.4	2.0	3.4
Small	0	0	3.9	5.3	4.8	6.7	3.0	4.2
Webb	0.4	0	2.6	5.4	3.4	6.8	2.1	5.2
Walmsley	0	0	0	0	2.1	0	1.3	0
Barringer	0	0	0	0	?	0	2.1	0
Argyle	0	0	0	0	0	0	0.3	0
H.J.Baldwin's	0	0	0	0	0	0	8.2	0
G.R.& I. Co.	0	0	0	0	0	0	6.7	0
Issued (£)	46785	25041	46785	31284	46785	15642	75000	25000

Source: Sheffield Record Office TW430/1.

Notes: G.R.& I. is the General Reversionary and Investment Co.
The original directors and their families had small holdings of the company's debentures, 1907-16 (TW435).
The Hill/ Littlewood/ Birkin holding is treated as one. Mrs Webb inherited with Mrs Hill and Mrs Birkin on Littlewood's death, in 1909.
Hunt originally held 6.4% of the ordinary stock.
After 1947 a considerable change in the character of the shareholders and shareholdings took place with the rise of corporate and nominee holdings - Baldwin's built up its stake entirely after November 1947.
In 1952, Herbert Taylor of Taylor Brothers and the Industrial Sidings concern had small holdings in this company.

TABLE A1.5 FAMILY SHAREHOLDINGS OF DIRECTORS. (%)

1915	1916	1932	1948	1952
55.2	47.0	36.3	28.2	20.8

Source: TW430/1.

TABLE A1.6 RAILWAY AND GENERAL RESULTS.

	Trading Profit(£)	Net Profit	Ordinary Dividend	Preference Dividend (%)
2.1900-3.1901	6291	n/a	n/a	n/a
4.1901-3.1902	5682	4686	10	5.5
4.1902-3.1903	6555	4873	7.5	5.5
4.1903-3.1904	7652	5624	7.5	5.5
4.1904-3.1905	n/a	4341	5	5.5
4.1905-3.1906	n/a	n/a	n/a	5.5
4.1906-3.1907	n/a	n/a	n/a	5.5
4.1907-3.1908	n/a	1869	0	5.5
4.1908-3.1909	n/a	-1458	0	0
4.1909-3.1910	n/a	618	0	0
4.1910-3.1911	n/a	2905	0	5.5
4.1911-3.1912	n/a	-2825	0	0
4.1912-3.1913	n/a	-5280	0	0
4.1913-3.1914	10226	n/a	0	0
4.1914-3.1915	8839	n/a	0	0
4.1915-3.1916	9841	7599	0	7.75
4.1916-3.1917	n/a	8175	3	5.5
4.1917-3.1918	n/a	7240	4	5.5
4.1918-3.1919	n/a	6815	4	5.5
4.1919-3.1920	n/a	7856	4	5.5
4.1920-3.1921	n/a	5708	4	5.5
4.1921-3.1922	n/a	4883	4	5.5
4.1922-3.1923	n/a	2410	0	5.5
4.1923-3.1924	n/a	2536	0	5.5
4.1924-3.1925	n/a	2963	0	5.5
4.1925-3.1926	n/a	4976	2.5	5.5
4.1926-3.1927	n/a	4919	3.5	5.5
4.1927-3.1928	n/a	12478	6.25	5.5
4.1928-3.1929	n/a	6179	6.25	5.5
4.1929-3.1930	n/a	6735	7	5.5
4.1930-3.1931	n/a	6685	7	5.5
4.1931-3.1932	n/a	1795	2.5	5.5
4.1932-3.1933	n/a	364	0	5.5
4.1933-3.1934	n/a	-4323	0	0
4.1934-3.1935	n/a	806	0	2.75
4.1935-3.1936	n/a	40	0	13.75
4.1936-3.1937	n/a	3683	2.5	5.5
4.1937-3.1938	n/a	8211	5	5.5
4.1938-3.1939	n/a	5163	5	5.5
4.1939-3.1940	5236	3763	5	5.5
4.1940-3.1941	3396	2168	2.5	5.5
4.1941-3.1942	5527	3954	6	5.5
4.1942-3.1943	3739	3493	5	5.5
4.1943-3.1944	5510	3470	7.5	5.5
4.1944-3.1945	5540	3308	10	5.5
4.1945-3.1946	5406	3039	8.75	5.5
4.1946-3.1947	5017	3973	7	5.5
4.1947-3.1948	6302	3646	7.5	5.5
4.1948-3.1949	17236	9137	8.75	5.5
4.1949-3.1950	738	-5317	0	5.5
4.1950-3.1951	23893	14614	10	5.5
4.1951-3.1952	37287	25225	10	5.5
4.1952-3.1953	45827	35706	12.5	5.5

4.1953-3.1954	35308	20745	12.5	5.5
4.1954-3.1955	50123	31849	20	5.5
4.1955-3.1956	49099	33779	20	5.5
4.1956-6.1957	n/a	n/a	\ consolidated /	
7.1957-6.1958	-472	-16540	n/a	
7.1958-6.1959	44087	29337	n/a	
7.1959-6.1960	52608	25358	n/a	
7.1960-6.1961	59756	28506	n/a	
7.1961-6.1962	38456	15156	n/a	
7.1962-6.1963	32732	14482	n/a	

Source: annual reports and accounts of the company; Stock Exchange Year Books.
Notes: All debentures repaid by 1926. Half of preference capital repaid during 1939. Ordinary dividend for 1940-41 is paid tax free.

Footnotes: Railway and General Engineering Co. Ltd.

1. Prospectus of the company, 1900, Sheffield R.O.

2. Annual reports.

3. The fixed debt settled down to some £55000 viz. £40000 in debentures and a £15000 bank loan (1908); £35650 debentures and £20000 in second debentures, the latter as security for the bank (1910 - 11). In 1912, with a restive bank and particularly poor results, the directors advanced £2500 of their own money. (Minutes, 21 May 1912)

4. Minutes, 7 June 1909 - 1913. For example the purchase of some plant of plant of Mountain and Gibson, tramway truck manufacturers in receivership (1910) and unsuccessful co-operation with their successors (Minutes, 1 January 1912 and 12 March 1913); the contemporary involvement, jointly with Samuel Osborne's, in Titan Trackwork, to exploit tramway work (Minutes, 29 May 1911 - 15 October 1913); attempts to form a syndicate to exploit a patent for tramway rail joints; the involvement of Wilson, of the Bateman engineering company (which failed to sell its own business to Railway and General) as a general manager of R.& G. un til asked to resign (Minutes, 10 October 1910 - 30 May 1912); chair foundry extended (Minute, 28 October 1912). Some schemes lapsed for want of capital or access to it on the part of R.& G. (Mountain and Gibson, 22 November 1909).

5. Annual reports, 1907 - 13. The committee was appointed on 21 May 1912 (Minutes) and comprised two directors and an accountant. The general manager was dismissed. In 1913 Crosta voluntarily cut his salary. (13 August, Minutes)

6. Minutes, 11 January 1901; annual report, 1912/13.

7. Minutes, 22 December 1915. His colleagues "regret the necessity" of the move. A mixture of salary and pension was to be paid to March 1918 offset by any dividends he might receive.

8. Minutes 17 May 1916. The sums paid equalled all arrears net of income tax.

9. See biographical entries below and sources for same.

10. Annual report, 1911/12. Minutes, 22 August 1910, 29 May 1911 etc. for orders from the Great Central and Midland.

11. Share register.

12. Minutes, 25 March and 29 April 1936. A joint approach to the LMS was declined by Taylor Brothers.

13. Minutes, 29 September 1937 and 2 August 1939. Two new cupolas were ordered.

14. Annual reports, 1932/33 and 1934/35; minutes, 30 June 1936.

Directors' fees of £500, compared with £900 traditionally and £1228, including a profit-related element, in 1931. The 1936 cuts were restored in April 1938.

15. Minutes, 29 June 1938.

16. Annual report for 1936.

17. Minutes, 30 September 1936.

18. Minutes, 29 April and 30 June 1936. Sanitary engineers - one of the Crosta shareholders in R.& G. was thus described.

19. Minutes, 25 November 1936 discussing the half-year to September. Other work made £172; railway work lost £671.

20. It took on ten apprentices. (Minutes, 26 March 1947)

21. D/AF249, quotation to the Great Eastern, 20 December 1904.

22. See main text, chapters 5 to 8.

23. Midland at Derby, Great Central at Gorton, Great Northern at Peterborough.

24. Minutes, 27 September 1944, 25 October 1944, 7 May 1945 etc., including copies of SAXA minutes of 30 June and 12 October 1944.

25. The Southern made most of its own points and crossings; the LMS and the LNER part of theirs.

26. Minutes, 17 October 1941. Workmen, one week's notice plus four weeks' pay; staff, one month's notice and three months' salary; Burnie, six months' notice.

27. Minutes, 23 July 1941.

28. Minutes, 28 November 1945.

29. Minutes, 30 March 1949.

30. Minutes, 27 August, 29 October and 26 November 1947.

31. Minutes, 31 August 1949, 29 March 1950 and following.

32. See TABLE A1.4

33. Minutes, 31 August 1949 and 31 May 1950.

34. Whether due to too high fixed overheads, too high production costs or too low prices is uncertain.

35. Anderston was critical of such practices in 1954 and 1957. (See chapter 8).

36. Minutes, 29 November 1950.

37. Minutes, 8 September 1948.

38. Minutes, 2 January, 30 May and 27 August 1952, 25 April 1953 and 27 October 1954 seriatim.

39. Minutes, 30 April 1952.

40. Minutes, 27 January 1955. The rejected bid had been 4/- and 20/-.

41. Minutes to September 1957, eg. 27 February 1957 in respect of overdrafts. Baldwins' directors ensured that they received suitable compensation for loss of office (£10000), on a more generous scale than their predecessors. Ward's offered 5/6d per share in July 1957 and the price was talked up.

42. Minutes, 29 July, 30 September and 27 October 1953.

43. Minutes, 27 April 1955 - 30 May 1956, 29 November 1956.

44. Minutes, 24 July 1956 and as note 43.

45. Minutes, May - June 1958; minutes of the Darlington Railway Plant and Foundry, 11 June 1958.

46. Minutes, 31 August 1961.

47. Annual accounts within minute book.

Sources: Sheffield Record Office, records of the Railway and General Engineering Co. Ltd. comprising minutes, annual reports and accounts, prospectuses and share registers, TW428-458; Sheffield R.O., minutes of the Darlington Railway Plant and Foundry Ltd, TW216-248; D/AF; Stock Exchange Year Book, various editions; J. H. Price, Mountain and Gibson (Hartley, Kent, 1980).

ROSE STREET FOUNDRY, Inverness.

Suppliers of chairs, railway footbridges and other cast iron fixtures to the Highland Railway. It had various arrangements with Anderston, which were explicit neither to the other members of CICA nor to the other Scottish manufacturers, covering the supply of chairs to the Highland. Through Anderston a measure of co-ordination with CICA was secured. Its fate after the 1920s is unknown.

Source: D/AF correspondence and quotations.

SMITH PATTERSON & CO. LTD., Pioneer Foundry, Blaydon.

Incorporated in 1897 to take over a business founded in 1873 whose products included: sanitary appliances (valves, pen stocks, manhole covers), gas and water pipes, tanks, columns, girders, firebars, sashweights, railway and tramway chairs, point boxes and other railway appliances, tunnel segments and tubbing plates.

A loyal member of the various associations, Smith Patterson survived the collapse of CICA better than most. One of its principal customers was the Southern Railway which was little affected by the depression. Personal friendship between Cowen and the Southern's Stores Superintendent, reinforced by a little judicious bribery, secured the position.

In the 1890s the firm had been one of the lesser members of CICA. By the 1910s it was pressing for a larger allocation and in the 1920s it vastly exceeded its quota. It was not, however, anti-collusive. By stealth, rather than the outbursts and sulks of Pease and Partners and Head Wrightson, it had, by 1945, become one of the largest and most efficient chairmakers, with a capacity of 17000-23000 tons annually. Anderston could have learnt from it how to gain advantage whilst staying loyal to "arrangements".

John Cowen (1873-1938) was the firm's leading figure inter-wars. He was of the second generation of his family to be on the board and of the third to be associated with coal, iron and engineering on Tyneside. His own, and his family's, involvement with local gas and water undertakings complemented their involvement with this firm. Cowen was Cargill's principal collaborator in the revival of CICA (from which this firm did better than Anderston) and he became first chairman of the reconstituted CISA

of 1934. He introduced Anderston to the manhole cover business and their friendship helped force Summerson's back into the SAXA fold.

Cowen had many of the attributes of a third generation industrialist as popularly portrayed: he was a hunting magistrate with a country house. But he was no figurehead and was active in the affairs of several local companies besides this one.

Other members of his family succeded him onto the board but power passed to Sir Jonah Walker-Smith, MP, and to a managing director based in London and shared with Taylor, Stokes & Company. In 1954 the two companies were merged under a holding company, Vigilant Investments Ltd., although continuing as separate subsidiaries. Vigilant, with a board of four (a Cowen and two Walker-Smiths) was absorbed by Arusha Industries Ltd. in 1962, an engineering conglomerate which was to mutate into G.E.I. International PLC. Vigilant had paid no ordinary dividend in 1958/59 which could point to the difficulties of the foundry once chair orders had collapsed.

In the late 1950s some 300-350 workers were employed at the Blaydon works but it closed, like most of the other companies considered here, in 1964. A firm called Hyslops continued to manufacture manhole covers at the Pioneer Foundry. G.E.I. may, like Evans, have been more interested in the site than in the business.

The company's capital had increased from £60000 in the 1900s to £100000 in the 1920s to £250000 in 1950 through the capitalisation of reserves. Dividends of 25% were usual in the late 1940s and early 1950s, providing a higher return on original capital than Anderston achieved.

Sources: Kelly's Directory of Durham, various editions; Stock Exchange Year Book, various editions; Durham County Council, Plan-

ning Department, Index of Businesses, c1957-59; D/AF, particularly correspondence with chairmakers and CICA and CISA files.

STANTON IRONWORKS LTD., Stanton near Nottingham.

Stanton was the leading member of the Cast Iron Segments Association whose structure and success its conduct largely determined. Control of its own supplies of ore and pig iron, strengthened inter-wars by the relative cheapness of Midland ores compared with Cleveland ones, and economies of scale underscored its pre-eminence. After its purchase of Cochranes it enjoyed a preponderant stake in CISA (40%).

Like Tees Side, Stanton was dominated inter-wars by a managing director who knew what he wanted. The core of the foundry department, pipe making, was secure from serious competition after 1918 by the sole possession of British rights to the Delavaud spun pipe technology. From a sound foundation, diversification into the manufacture of railway chairs was successfully achieved in 1927. Existing makers were generally located in areas of higher raw material costs, whilst an enterprise of Stanton's scale could expect to benefit, like Pease and Partners, from the purchasing policies of the main line railways.

Following the usual path, Stanton was brought into the collusive arrangements for allocating chairs, to which its Cochranes subsidiary was already party. Anderston viewed with disfavour a competitor who was also one of its own suppliers. Post-war, Stanton briefly ceased chairmaking to concentrate on other things - its annual capacity of 7000-11000 tons was insignificant in terms of its overall capacity.

Stanton could diversify from strength into the disorderly chair business. Buoyancy might encourage adventure in a way that the environment besetting Anderston and the other chairmakers did

not. Diversification from desperation might be a cure worse than the disease as, for example, was the case with Armstrong Whitworth.

Sources: S.D.Chapman, Stanton and Staveley; S.Tolliday, Business, Bankers and Politics; D/AF, particularly CICA and CISA files and correspondence

THOMAS SUMMERSON & SONS LTD., Albert Hill Foundry, Darlington.

Thomas Summerson (1810-98) who had risen to be permanent way inspector of the Stockton and Darlington Railway (1839) assisted in the construction of other local railways and came to specialise in the design and manufacture of points and crossings and other track fittings. The Hope Town Foundry which he managed (1853) established a branch at Albert Hill (a rapidly expanding industrial centre adjoining the main railway through Darlington) which Summerson subsequently acquired to establish this firm.

A limited company was formed in 1900 for family reasons, and to raise extra capital to expand and modernise the works. It was intended to allot a portion of the shares to the company's customers to give them a direct interest in the continued prosperity of the firm. Of the purchase price of the old business (£50000), £27493 was in ordinary shares, the balance in non-voting cumulative preference shares whose issue was not underwritten: the former partners would, it may be assumed, take up any balance. The business remained a family one: the chairman and joint managing directors were Summersons. W.Hustler Hopkins, a director of Pease and Partners with landed, banking and colliery interests on Teesside, was the only outsider.

Initially £7000 of debentures were issued, absorbed into an issue of £25000 of February 1907, raised largely to pay for the expansion of the works since 1905. "To make a considerable addition to output" a new building costing £6000 was erected and 2.5 acres of land adjoining it purchased from the receivers of the Darlington Wagon and Engineering Company on which a new foundry was constructed. In 1901 the premises had been valued at £18632

and stock and book debts at £17000: in 1907 at £47000 and £23750 respectively when the net assets of the business were £55500.

Profits, which had risen from £5200 (1897/8) to £7600 (1899/1900), fell to £2300 (1902/3), before recovering to £5750 in 1905/6. The prosperity of the late 1890s seems to have spurred on expansion in the 1900s, as was the case with Darlington Railway Plant and the Railway and General Engineering Company. When further capital was sought (1907) recent poor performance was blamed on trade depression - ie a temporary setback - rather than the over capacity, and the price cutting which was taking place in a stagnant market.

Management and direction remained with the family: T.H.Summerson (1903-1986) became a director in the 1930s. By that time manufactures comprised wagon turntables, buffer stops and general engineering castings as well as points and crossings. A platelaying contracting business for industrial railway sidings was operated. Steel castings, such as cylinders and brake drums for the motor industry had been introduced. Both in such diversifications and in its consideration of opening a branch plant in India, Summersons' family management proved more adventurous than the professional managers at Anderston. Whereas Anderston was accommodating and determined to play the game with SAXA, Summerson's was ever seeking to increase its allocation, with some success, and prepared to gamble that it would do better cutting loose from the cartel in the depressed early 1930s.

Financial pressures, absent at Anderston, may have contributed: £65000 in 8% debentures, a net increase of £50000, had been issued (at 96%) in 1921. The debt had to be serviced, with a sinking fund to repay it at 105% by 1936. Ordinary dividends had aver-

aged 7% from 1925 to 1930. They disappeared until 1938/9 and arrears of preference dividends accumulated. Summersons lacked inner reserves, such as Anderston enjoyed, which would have allowed it to ride out the depression; its response was more aggressive than that of the similarly circumstanced Darlington Railway Plant.

In the late 1930s some 600 men were employed in the various foundries, machine shops and erecting shops - more than at Port Clarence. During the Second World War, Albert Hill was re-equipped with government help whilst T.H.Summerson served as Director of Steel Castings under the government control scheme. He returned as chairman of this firm in 1944, bringing with him as his joint managing director H.P.R.Scott. In 1947/8 the points and crossings business moved to a rented former munitions factory at Spennymoor, a 25 acre site, financed by the issue of £50000 preference shares to the I.C.F.C. With 85000sq.ft. under one roof, the firm boasted of the largest, best equipped private works of its kind in Europe. Albert Hill steel foundry continued to employ 300-400 men (1957-59); Spennymoor another 130.

Following fashion, ordinary share capital was written up by capitalising reserves to the extent of 200% in 1949 and 100% in 1956. The management removed itself to a country house on the outskirts of Darlington where it rewarded itself well. Following another fashion the business was reconstructed as a holding company, Summerson Holdings Ltd., with several subsidiaries including one for light engineering and one for the supply of sand to the foundry.

Dividends on the ordinary stock rose from 20% in the late 1940s to an equivalent to 90% on the original capital in 1956/7. For the next five years dividends of 36%pa were paid: thereafter

nothing. Whilst Anderston appeared to be doing very well, Summersons seemed to be doing a deal better. Profitable plate laying - and Grant Lyon may be used to shew how remunerative this could be - supplemented booming exports of points and crossings. By the 1960s the firm's railway business had become more home oriented and reverses similar to Anderston's were suffered.

T.H.Summerson became increasingly involved in local and regional public affairs thus causing his daily involvement in the business to diminish. Public service was a natural activity for a third generation industrialist whose firm seemed to be doing well and whose background included the right school and the right clubs. Other family members had long ceased to be connected with business eg Sir John Summerson, the art historian.

The business had grown to surpass Anderston. The assets taken over by the new Summerson and Sons, the points and crossings subsidiary, in 1953 were valued at £275000. At 30 September 1962, when Anderston had closed, group fixed assets were some £500000, net current assets £150000, and shareholders' funds £636000. The last had peaked at £520000 in Anderston in 1958. Difficulties multiplied. By September 1966 current liabilities of £809000, including £347500 due to bankers, exceeded current assets by £134000 and there was a debit balance on the profit and loss account of £287600. From January 1965, when Summerson was elevated to the presidency of the holdings company, control rested with Sumho Investments Ltd., the owner of £1000 special shares, behind which stood a group of new directors associated with the new chairman, someone in the city with a string of 16 other directorships of obscure financial trusts. Each special share ranked for £250 per £1 nominal in liquidation and carried 300 votes.

Receivers were appointed in March 1967. The steel foundry was viable and was operated by its purchasers, F.H.Lloyd, a Black Country engineering group, until 1976. No purchaser emerged for the points and crossings activities - a pointer to the possible fate of Anderston even had it bought Grant Lyon. All capital of the points and crossings subsidiary had been lost. Its assets just covered its direct liabilities but, under cross guarantees, all parts of the group were liable for the debts to the bank of £346000. The trading profits of the railway business (£75000 on sales of £441000 in 1962/3; £92000 on £525000 in 1963/4) were engulfed by rates, insurances, and "management charges" of £54000pa, to produce losses of £45000-.90000pa from 1961/2 to 1964/5. Volume was maintained at the expense of margins.

Serious problems elsewhere in the group, the fruits of unsuccessful diversification, have been hinted at. The management, whatever its quality, was, by Anderston's standards, an expensive incubus on which Anderston had commented. Desperate measures, involving the loss of family control, failed to save a business which had behaved more competitively than Anderston and had continued to invest. Its decline was less rapid than Anderston's; its fall just as complete.

Notes: Profits before 1914 are quoted before tax, fees, and depreciation. T.H.Summerson was, inter alia, a member of Aycliffe Development Corporation (1947-61), of the Independent Television Authority (1957-60), chairman of the North East Regional Board of British Railways, a part time member of the British Transport Commission, involved in local government, the bench, the shrievelty and the lieutenancy.

Sources: The Summerson Story, published by the firm, no date (1950s); Registrar of Companies, Cardiff, file 518095; Darlington trade directories; Darlington Official Guide, various editions, 1936-50s; interview with Mr. Hunter of Darlington, former manager;

Who's Who, various editions; Stock Exchange Year Book, various editions; The Times, 19 January 1965; Durham County Council, Planning Department, Index of Businesses, 1957-59; Durham Record Office, Darlington, D/DL18, prospectuses; D/AF passim; G.A.North, Teesside's Economic Heritage; David M.Tomlin and Mary Williams eds, Who was Who in 19th Century Cleveland.

TAYLOR BROTHERS (SANDIACRE) LTD., Midland Foundry, Sandiacre, Nottingham.

The business was established in 1858, and incorporated as a private limited company in 1916 by Joseph and Charles Henry Taylor who described themselves as engineers, ironfounders and lace manufacturers. The fixed capital invested in the lace and iron departments was then roughly equal at £13500 each.

Switches and crossings and railway chairs were the firm's principal products. Municipal and light castings were produced between the wars as they were by Anderston. Taylor's offered, unsuccessfully to sell this business to Railway and General in 1945. Lace and net manufacture continued into the 1930s, if not later, but sales were much below those of the firm's engineering department.

Three Taylors were joint managing directors; an accountant and a solicitor, both practising in Nottingham, completed the board in its early years. Ordinary share capital remained small (£2000 in 1916, £12000 in 1950) with large issues of debentures, some to the family but most to bankers, made regularly to provide tax-efficient capital without reducing family control (£47000- 86000 at any date between 1916 and 1949). Thereafter, three bonus issues of shares, typical of the post war era, brought ordinary share capital to £437670 by 1971, 95% of which was still held by the family.

In September 1971 the Taylors sold out to Thomas W. Wards who rationalised the railway activities in Sheffield and Nottingham and concentrated them in the Taylor business, now re-christened Thomas W.Ward (Railway Engineers) Ltd. The former

Railway and General works was closed in 1983/84, Wards taken over by R.T.Z. and this business sold to Henry Boot, another Sheffield based engineering and contracting conglomerate. Boot sold its railway business, including this firm, to Balfour Beatty, a subsidiary of B.I.C.C., in 1988.

British Railways remained Taylors' principal customer throughout. Taylors' encroachment upon Railway and General's domestic business caused friction within SAXA in 1944-45. Until the collapse of SAXA Taylors seems to have stayed loyal to the agreement and resisted the temptations of export work despite being strung along by British Railways in a way reminiscent of the chairmakers. By the early 1980s it was exporting to Jugoslavia and Iraq.

The 1978 merger with other subsidiaries of the Ward group increased turnover from £2.6m in 1976/77 (£363000 within the group) to £7.7m, and profits from £285000 to £955000. More recently the business has made losses, hence Boot's disposal of it. Nevertheless the survival of Taylors seems to indicate that in size and vertical integration lies strength. Home manufactures of points and crossings, when joined to a contracting business and taken within a large group able to rationalise and achieve economies of scale have survived. (Cunningham was impressed by the size of Taylors' works forty years ago.) The current owners are, largely, contractors, attracted to buy, for £5m, a business with a turnover of £26m and net assets of £0.5m, to be able to offer a complete package to railway customers just as British Steel has bought Grant Lyon Eagre.

TABLE A1.7 "Engineering Department" (years run from June to May)

	1917/8	1918/9	1919/20	1920/1	1921/2	1922/3	1923/4
Sales (£)	81463	111215	180709	218893	104879	97596	95213
Trading Profits (£)	6354	7548	11555	19533	4179	12339	12037

	1924/5	1925/6	1926/7	1927/8	1928/9	1929/30	1930/1
Sales (£)	95164	126458	131279	168970	140907	135744	147303
Trading Profits (£)	12233	17806	11623	26366	24350	18498	13982

Source: TW528

The net profit figures for Taylor's are misleading when compared with those of other firms in view of the heavy use of loans and the consequent heavy deductions of interest.

Sources: Registrar of Companies, Cardiff, file 145083; Sheffield Record Office, minutes of the Railway and General Engineering Company Ltd., TW445, and "Private Ledger" of Taylor Bros, TW528; The Independent, 17 December 1988; The Daily Telegraph, 23 March 1989.

THE TEES SIDE BRIDGE AND ENGINEERING WORKS LTD.

Incorporated in 1896 to take over the works of the Tees Side Iron and Engine Works Company Ltd, which was the successor to Hopkins, Gilkes and Company whose bridge-building business collapsed with the fall of the Tay Bridge in 1879. Both of the limited companies were financially unsuccessful and had to write off substantial amounts of capital as they failed to provide for the depreciation of their plant. A shipyard and blast furnaces were disposed of after 1896 when ownership of the company passed to Sir Christopher Furness, the shipping magnate, who rationalised the activities of the various companies in his group. Bridge building remained unprofitable.

In August 1914, James Barclay Peat, a director of Head Wrightson, joined the board. He was only thirty four, a trained engineer, and son of W.B.Peat, the accountant who was much involved in Teesside iron and steel matters. J.B.Peat moved full time to this company as managing director in January 1916. Simultaneously, Furness interests bought out the minority shareholders at a nominal price (£27500 debentures had been issued to Furness, there was an overdraft of £7500, the capital of £50000 was nearly valueless) and transferred most of the share capital to the Peats for a small sum. J.B.Peat held some 65% of shares in his own name. The Furness debentures were bought by the Peats in 1917.

Like many of their predecessors, the Furness interests were glad to be rid of an incubus; unlike many of his predecessors, Peat knew what he wanted to do with the business and, freed from restive shareholders and creditors, had the power to do it. The First World War provided the means to build up both works and

profits on the back of regular and large orders for munitions. Peat spent £13000 on a foundry which, like other additions, was rapidly depreciated. In 1917 the business made gross profits of £72000; the foundry made losses until it had established itself.

Using his experience gained at Head Wrightson, Peat commenced manufacture of ingot moulds in competition with Heads. In 1921 he recruited William Bow, Anderston's foundry manager, who carried various employees with him. With Bow's expertise (Anderston believed that he had carried off confidential information) Tees Side moved into railway work. In February 1922 it supplied its first cast iron sleepers to India and 500 tons of chairs to the North Staffordshire Railway. A new chair foundry was started in 1923: a key shop in 1925. £23500 had been spent on the foundry in 1922; work began on a steel sleeper plant but was suspended (11 March 1925) until orders justifying further outlay were received. Peat's optimism contrasted markedly with Anderston's outlook. He considered establishing a joint company with Cargo Fleet, a Furness controlled rail roller to break into the steel sleeper business (, May 1928). He was not constrained by existing loyalties to work within the collusive framework. He was free to take risks with the accumulated profits of the company.

Higher managers received incentives to perform well. Bow had a seven year contract (2 June 1926) for £650pa plus 2d. per ton on foundry output and 1.5% of net profits. Peat received commissions at 10% and Fletcher, the general manager poached from Head Wrightson, at 5%. Thus, in 1928, Peat enjoyed £2200 in commissions to supplement his salary of £1400, and Bow received £550 in incentive payments - far more than he could have expected from Anderston, then or later. Foremen received bonuses. Every effort

was made to recruit and retain a high quality staff which was given every opportunity for self improvement. Anderston's persistent complaints about its own low quality employees may point to one of the differences between the performances of the two frims. During the 1920s, ingot moulds, brake blocks, soleplates and bearing plates, axle boxes, buffers and wagon frames joined chairs, bolts, keys and sleeper fittings on the firm's product list. As we have seen, Tees Side caused considerable disruption to CICA and damaged the arrangements between Anderston and GKN for various types of keys and bolts. Once established, Tees Side was willing to collude. It was party to the residual meetings of northern chair makers and joined in over the division of certain orders for keys. But for the pique of Sir Guy Wrightson, and to a lesser extent that of A.T.Harvey, at the loss of important personnel to Peat, and at his techniques of recruitment, an earlier agreement for arranging chair orders might have been reached to the benefit of all. Peat, like McQuistan, was spurned. Head Wrightson and Pease and Partners responded in kind to price cutting so that Peat suffered. Paradoxically, Peat did well out of CICA during the 1930s by co-operating when it suited him and threatening the more timid with competition when it did not.

No comprehensive examination of Tees Side's orders now seems possible. It is known that it supplied 42000 tons of chairs to South Africa and 3500 to the LNER between 1924 and 1929. Peat would later boast of how much work the collapse of CICA had brought him. The "make" figure for the South African chairs fell from £2 (1924) to 25/- per ton (1928).

With shrewd timing, Peat sold the business to Dorman, Long in August 1929. £125000 was paid for capital that had been value-

less only fifteen years before. The firm had clear assets of £228000, subject to £75500 debentures, the bulk of which the Peats owned. Few dividends had been paid, thus profits accumulated within the business. Peat feared that steel company amalgamations would harm his business. His principal customers for ignot moulds and structural steel work (the booming area for the firm's bridge building department) might, through vertical combination, become self-sufficient and freeze him out. The Furness group was first approached but Dormans, increasingly involved in steel engineering, was the ideal partner. It could absorb many of Tees Side's products and give it favoured treatment; payment was largely in cash, not in uncertain steel company stock; the existing managers were to be left to run things.

Whilst Anderston felt threatened by mergers such as this one its own steel sleeper partnership with Dormans was not: nothing more was heard of Tees Side's intention to manufacture sleepers, a product for which demand was about to collapse. A profitable order for £95000 of coke oven doors helped see the foundry through 1931-32 but it suffered more from the depression than the bridge building department where oil tanks for the Admiralty and steel frameworks for cinemas, aircraft hangers, power stations and the like provided sufficient work.

In the late 1930s the foundry had resumed its former trading patterns: brake blocks for the Crown Agents, keys for South Africa, 4000 tons of chairs for home railways and the same for South Africa. Tees Side's post war capacity was for 19000 tons of chairs annually. Throughout the war orders flooded in, particularly for engineering products - hangers, bridges, air raid shelters, armoured car bodies, welded barges. Engineering profits averaged

£250000 (1946-50); foundry ones £50000. Engineering sales fluctuated between £1.8m and £3m (1951-56); foundry ones averaged £700000pa. Foundry profit margins (8% in 1950) were half those of the structural steel business. In the 1950s prosperity continued: the 1960s saw the demise of British Railways' wagon building programme and the rise of reinforced concrete as a cheaper and more quickly supplied alternative to structural steel, as well as the familiar fall in chair orders. When TeesSide ceased chairmaking is not known. However, its foundry survived better than many, maintaining an annual turnover of £1m and profits of £120000 for much of the 1960s.

The strengthening of legislation against restictive practices caused various associations to mutate into central agencies to which inquiries were reported: old wine in new bottles. Tighe, the company's long serving manager was, like many in the steel industry, and unlike some of his predecessors, very well disposed towards collusion - evidence that this company was now well established.

TeesSide's progress shows the advantages of resolute leadership. Peat was starting with a clean slate, unburned by outside shareholders whose desire for dividends would conflict with building up the company through the retention of profits. Able to operate a despotism comparable with Bunten's, Peat could afford to offer long term contracts and profit-related incentives, to himself as much as to others. He, Fletcher and Bow knew what to do to succeed in the diversification into railway business, and were amply rewarded. Such would have been denied Bow had he stayed at Anderston where the succession and outlook were set in the mould.

Sources: T.R.Tighe, Tees Side Bridge. The Rise, Fortunes and Dissolution of a Private Company; British Steel, Northern Regional Records Centre, Middlesbrough, Minutes of Tees Side Bridge and Engineering Works, BSC22/44/2/6.

TABLE A1.8 TEES SIDE BRIDGE AND ENGINEERING, SALES AND PROFITS.

	Sales (£000)			Working Profits (£000)		
	Engineering	Foundry	Total	Engineering	Foundry	Total
1919	153	113	266	6	9	15
1920	290	183	473	-8	22	14
1921	359	104	463	14	13	27
1922	271	30	301	17	9	26
1923	269	135	404	-2	21	19
1924	314	79	393	7	3	10
1925	294	213	507	6	10	16
1926	197	121	318	-11	23	12
1927	234	176	410	1	11	12
1928	332	148	480	18	8	26
1929	296	139	435	8	3	11
1930	212	143	355	4.5	7	11.5
1931	335	92	427	10	4.5	14.5
1932	362	91	453	11.5	5.5	17
1933	155	77	232	5	3	8
1934	244	129	373	2.5	8.5	11
1935	283	159	442	10	6	16
1936	365	195	560	16.5	15	31.5
1937	548	236	784	52	27	79
1938	664	298	962	102	24	126
1939	622	255	877	79	25	104

Source: Tighe.

ROBERT WHITE & SONS (ENGINEERS) LTD., WIDNES.

A private company was incorporated in 1944 to take over the business, established in 1869, and latterly run by the brothers J.W.White and Herbert White (d1941) in order to re-arrange the family interests following the latter's death. The firm manufactured or supplied: railway points and crossings, portable railways, aerial ropeways, turntables, stop blocks, chairs, conveyors and steel sleepers.

The old firm was purchased for £66050. J.W.White, who held all but £3 of the ordinary share capital of £32135, was governing director for life: his late brother's executors received preference shares and cash. The other directors were managers in the business and a local accountant. Ellen White succeeded her late husband as governing director in 1960.

Throughout the 1970s there was a rapid turnover of directors and much juggling with capital and loans. The White family's interest ceased at that time. A receiver was appointed in May 1980 and the business closed down.

Sources: White's letterheads; D/AF passim, particularly SAXA files; Registrar of Companies, Cardiff, file 388801.

APPENDIX 2

Biographies of Anderston's leading personnel

TABLE A2.1 OFFICIALS OF THE ANDERSTON FOUNDRY.

Chairman		Managing Director:	
J.C.Bunten	1884-1901*	J.C.Bunten	1884-1901*
Edward Dawson	1901-1919	Edward Dawson	1901-1919
A.T.Harvey	1919-1927*	A.T.Harvey	1919-1927*
James Watt	1928-1945*	T.P.Cargill	1928-1938
T.P.Cargill	1946-1954	G.D.Cunningham	1938-1960
G.D.Cunningham	1954-1962	F.K.Tubby	1961-1962

Secretary:

Thomas Robertson	1884-1900*
Alex Drennan	1901-1906*
William Hardie	1906-1928*
G.D.Cunningham	1928-1938
J.W.Finlay	1938-1947
D.A.Mason	1948-1953
C.E.Needham	1953-1961
G.C.Smith	1961-1964?

Directors:

J.C.Bunten	1884-1901*
Wm. Houldsworth	1884-1899*+
Thomas Robertson	1884-1900*
Edward Dawson	1884-1919
Alex. Drennan	1901-1906*
Joseph Houldsworth	1901-1910*+
Alex.T.Harvey	1903-1927*
J.C.Bunten junior	1906-1912
John Faill	1912-1931+
G.W.Dawson	1918-1927*
T.P.Cargill	1920-1958*
William Morris	1927-1940*
James Watt	1928-1945*+
A.K.L.Harvey	1928-1929
	1934-1962+
G.D.Cunningham	1928-1962
Col.E.C.Sowerby	1928-1934*+
F.H.Adcock	1943-1955
F.K.Tubby	1952-1962
C.E.Needham	1958-1961

* = died in office + = non-executive

TABLE A2.2 GEOGRAPHICAL BALANCE OF DIRECTORS

	Working Directors:		All Directors:		
	Glasgow	Middlesbro	Glasgow	Middlesbro	Other
1884-99	2	1	3	1	0
1900-01	2	1	2	1	0
1902-03	1	1	2	1	0
1903-06	1	2	2	2	0
1906-10	1	2	2	2	0
1910-12	1	2	1	2	0
1912-19	0	2	1	2	0
1920-27	1	2	2	2	0
1928-29	0	4	1	4	2
1930-31	0	3	1	3	2
1931-34	0	3	0	3	2
1935-38	0	3	0	3	2
1939-40	0	2	1	2	2
1940-43	0	1	1	1	2
1943-45	0	2	1	2	2
1946-52	0	2	1	2	1
1952-55	0	3	1	3	1
1955-58	0	2	1	2	1
1958-60	0	3	0	3	1
1961	0	2	0	3	1
1962	0	1	0	2	1

James Clark Bunten (1838-1901)

> "By his unwearying energy and perseverance he was largely instrumental in raising the Anderston Foundry to one of the highest positions in the kingdom."

Thus spake the Glasgow Herald of a man who ruled the business for a generation, who, continuing the re-direction of the business towards railway track fittings begun by his brother-in-law brought that business to maturity in the 1880s, and whose shadow was cast over that business for generations to come. The Anderston Foundry of the 1950s was still largely his creation of the 1870s and 1880s. He ousted the Muirs, overawed the other full time directors and rapidly acquired wealth and business connexions on a par with Houldsworths'.

Britton's survey of wealthy Scots, 1876-1913, contains four individuals connected with Anderston: Bunten, M.A. Muir, Wm and J.H. Houldsworth. Of the later directors only Faill and Watt (qqv) enjoyed fortunes of a size (£250000-£500000) similar to those four. The opportunities for capital accumulation enjoyed by Bunten and his predecessors had ceased by 1900, due to failing profits and, later, rising taxes, but also to the creation of a limited company in which a fixed capital was enjoyed largely by those whose forebears had accumulated capital in the business in the past, with all reserves accumulating to those same holders. Active partners had been able to re-negotiate their stake in the business and benefit materially from the effort put in. Where e.g.Tees Side Bridge company (see Appendix 1) the capital had been all but written off and incentive payments were in vogue, capital accumulation was compatible with limited liability. After the demise of commission payments to Bunten there remained bonuses payable to the other managers but these were small beer.

Muir (£407400) and Bunten (£446750) (personalty) owed their

fortunes largely to Anderston: Bunten's father had left only one hundredth of this amount half a century before; Bunten's brother, dying in 1901, left £8200. The chance of his sister's marrying Muir, the latter's providing an opening at Anderston (1855) and lending Bunten the money (£5000) to acquire a capital stake in the firm, formed the framework within which Bunten (self) made his fortune. Between 1870 and 1901 he drew £572500 from the firm in salaries, fees, commissions etc.: his gross estate at death, £596000, neatly matches this.

Bunten was in the business for 46 years; in charge of it for over 20 - longer than most of his successors. Edward Dawson, Cargill (qqv) and many others, devoted 40-50 years to Anderston but they could never wield the power of one who combined the chairmanship and managing directorship with the largest shareholding. Bunten knew what he wanted and could achieve it: with his autocratic hand removed, the business lost direction. Such may have been the price to be paid for his manner of operating: despots who overawe are unlikely to groom worthwhile successors. His entrepreneurship gave way to the orderly management of decline within the parameters set by price fixing and collusive arrangements. To those who knew nothing else, these means of making steady profits became ends in themselves. Pitt gave way to a stream of Addingtons.

Bunten was, even as he succeeded Muir, establishing himself as one of the leading businessmen of the West of Scotland. If Rubinstein is correct, a successful manufacturer typically left an estate of c£100000 in the later 19th century: the exceptional nature of Bunten is clear. His wealth had passed that figure in the early 1880s. Between 1880 and 1914 only one individual a year, on average, left estate of more than £500000 in the West of Scotland, only eight such estates arose from an engineering background.

M.A. Muir's fortune eclipsed those of Dubs, the locomotive builder, the elder Beardmore (both £120000-£130000 in 1876/7) or various Neilsons (£221000, 1885; £301000, 1887). Bunten outstripped a Dubs (£400000, 1900), a Clark of the Paisley thread firm (£326000, 1899) and Birkmyre of Gourock Ropeworks (£438000, 1900) in terms of personalty, and his predecessor as Caledonian Railway chairman, J.C. Bolton (£430500, plus £61000 heritable estate) in overall terms. A few of the leading families of Anderston's larger rivals, such as the Peases, may have collectively enjoyed comparable wealth, and Sir Thomas Wrightson left over £200000 in 1921, but those in charge of most of Anderston's collaborators were lesser men. Keen of PNB, a millionaire at his death in 1915, is the exception. Bunten's fortune ossified after his death as did his business: his daughter, in 1952, left £412500.

Established wealth recognised new wealth and the talent that had created it. The Houldsworths held directorships of railways, banks and insurance companies; so did Bunten, assisted by the existence of distinct Scottish financial institutions whose scale surpassed anything found in provincial England. As a rising man based in the "workshop of the British Empire" (as Hume and Moss describe it) he was extremely well placed to take up opportunities for business advancement.

Joining the board of the Glasgow-based Caledonian Railway (1881) strengthened links stretching back to its foundation. The recruitment of John Cowan (qv) to the Anderston interest was one further step; Bunten's chairmanship of the railway, from 1897 onwards a culmination. He became a local director of the Liverpool, London and Globe Insurance Company to whose affairs he made a real contribution (Glasgow Herald); he had not just lent his name. His contacts through John Blair with

Edinburgh finance, as much as the recognition of his abilities, lie behind his becoming an extraordinary director of the Bank of Scotland.

There is no evidence that Bunten sought to involve himself in public life as the Houldsworths had done, both as local councillors and as generous subscribers to hospitals and charities. Bunten's charitable bequests were minor and limited to the area around Dunalastair, Perthshire where he bought a landed estate in 1890/91. The valuation of his realty at c£149000 is consistent with the details of Dunalastair given by Bateman in 1883: 21000 a. with a gross annual value of £4563. The purchase of land with profits from Anderston was on a scale commensurate with his fortune: no token gesture to older values. His daughter and her descendants, the de Sales La Terriere family, were established as a landed dynasty. The La Terrieres, of French landed stock, were more attuned to such a life style than to succeeding Bunten in the management or direction of the foundry.

Bunten was one of several in the history of Anderston to fail to produce a male heir who could be brought up in the business. The Muir, Bunten, Harvey counsinhood notwithstanding, Anderston was incompletely a family firm. No managerial dynasties such as the Whitelaws and McCoshs arose to take the place of the proprietorial families: the second Bunten, the Dawsons and the Harveys faded from the scene for various reasons.

Dunalastair's purchase coincided with Bunten's attempt to reduce his day to day involvement in the foundry but it did not mean that he had turned his back on industry: the bulk of his wealth was still invested in shares; his time was taken up by outside directorships, increasingly the Caledonian and, through the Railway Companies' Association, the affairs of the railway industry overall.

Large shareholdings in the Caledonian and a limited group of South American railways dominated Bunten's portfolio. The symbiotic relationship between the foundry which produced his wealth, the railways in which he invested, their custom which the foundry received, the financial underpinning of the Livesey and Henderson lines and the investment in Anderston by the Liveseys, Hendersons and their associates has been explored. There was spun a web of investments designed to yield more than simple dividends: Bunten tended the spindle. What nowadays smacks of insider dealing and corruption is unlikely to have been unique although it may have been a more than usually successful example of this sort of thing. The bulk of these investments was worthwhile simply as an investment. Directing funds through friends and contacts was, to some extent, what business friends were for in an era when the modern open market in investments with its access to independent financial advisers had yet to come about.

Muir had provided "family" capital for Bunten to consume (1869) to help him on his way. By the later 1870s both were providing mortgage finance to their brother-in-law to help consolidate G. & A. Harvey, machine makers, whose products Anderston regularly bought. Some £3000 was due at the time of Muir's death, £7000 at the time of Bunten's. The maximum advance had been £12000 (SC49/31/186).

The Caledonian connexion led to Bunten's advancing £10000 in debentures to the Drummonds for their Glasgow Railway Engineering Company (see Appendix 1) with which Daniel Macnee (qv), Sir James King, deputy chairman of the Caledonian, and William Lorimer, partner in Dubs and Company, a Glasgow locomotive builders, were financially involved. Bunten held £16000 nominal (valued at £7625 for probate) in tea companies in which the influence of James Finlays, the Muirs'

family firm may be detected. Bunten was the largest outside shareholder in the Neilson family's Summerlee and Mossend Iron Company in which other Caledonian directors and their general manager had invested. One of the Neilsons, a Caledonian director, was to be a Bunten executor.

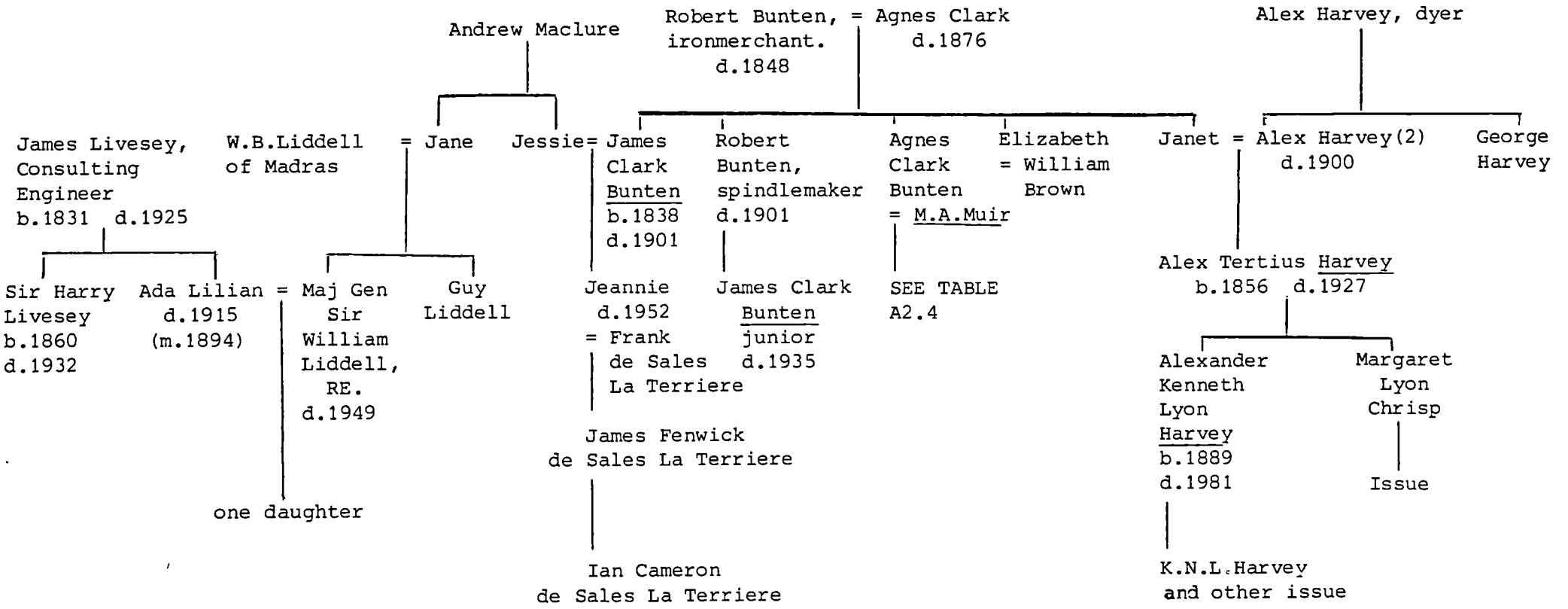
Bunten's importance is not just to be measured in the size of his fortune: if details of all his regular contacts with railway directors, bankers, financiers and lawyers could be established, and the permutations of the cousinhoods of other business families, such as the Lorimers, uncovered, and their investments analysed, a true anatomy of Scottish capital might be established. Some 57% of Bunten's personal estate was invested in businesses in which he was active or in enterprises in which the lines of influence are clear: Drummond, Harvey, Henderson, Livesey.

None of Bunten's successors matched his stature but, in judging their performance, the reduction in the opportunities that would have been available for him to grasp must be kept in mind. He should have made better provision for a successor than to allow Buggins his turn. After 1890 he might have lacked enthusiasm for the business just as it settled into the rut down which it would travel for 70 years. Money paid out in high dividends and commissions might have been better employed in buying new businesses or in diversifying the existing one. The need for this became apparent, if at all, only after the money had gone whilst examples of disastrous diversifications are legion. The partial recovery in business in the later 1890s might, to contemporaries, have signalled the resumption of prosperity.

Bunten's success, and his dominance of the firm whilst achieving it, inhibited his successors who ran his inheritance but inherited neither his abilities nor breadth of outlook. They did not investigate

or understand the basis of that success - diversification, seizing opportunities - and sought to maintain and repeat it by sticking to the last with the products that they had and the methods that they had inherited.

TABLE A2.3 LIVESEY - BUNTEN - MUIR - HARVEY



William Brown and Alex Harvey (2) are partners in G.& A.Harvey and Brown is later managing director of G.& A.Harvey Limited.

TABLE A2.4 DESCENDANTS OF M.A.MUIR

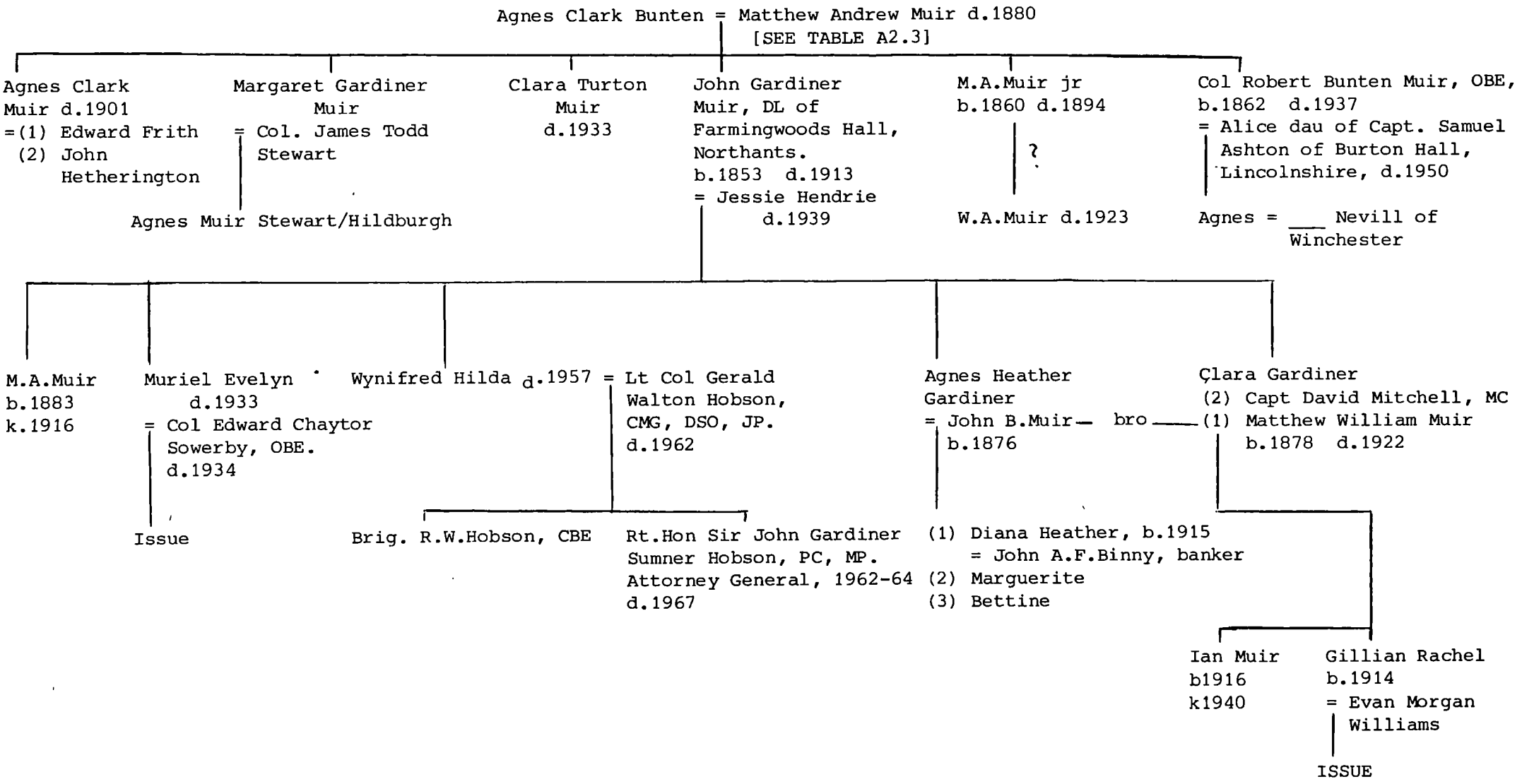


TABLE A2.5:

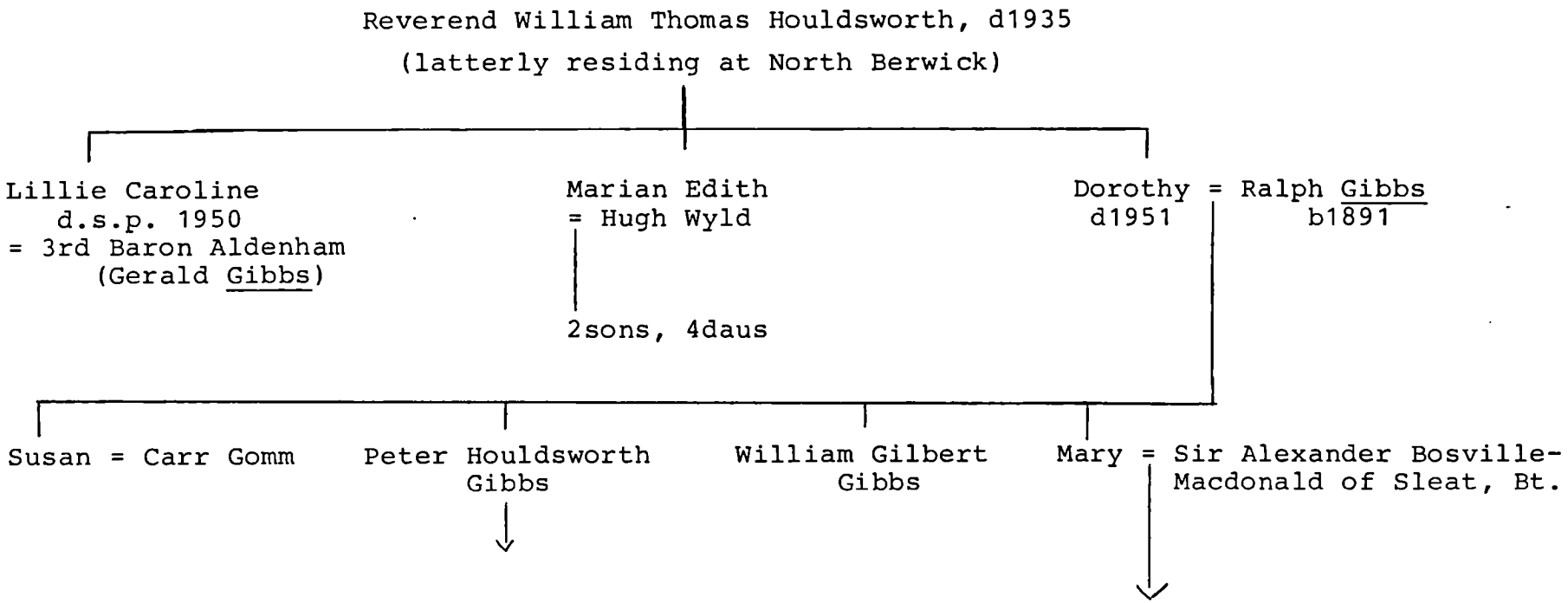

Reverend William Thomas Houldsworth, d1935
(latterly residing at North Berwick)
Lillie Caroline
d.s.p. 1950
= 3rd Baron Aldenham
(Gerald Gibbs)
Marian Edith
= Hugh Wyld
2sons, 4daus
Dorothy = Ralph Gibbs
d1951
b1891
Susan = Carr Gomm
Peter Houldsworth Gibbs
William Gilbert Gibbs
Mary = Sir Alexander Bosville-Macdonald of Sleat, Bt.

TABLE A2.6 INCOME DRAWN BY J.C. BUNTEN FROM ANDERSTON (£)

1869-70	4000 (plus £3892 repaid to M.A. Muir)
1870-71	6500
1871-72	2512
1872-73	1000
1873-74	1300
1874-75	4116
1875-76	5115
1876-77	865
1877-78	12995
1878-79	6500
1879-80	10402
1880-81	7000
1881-82	5824
1882-83	23366
1883-84	10259
Total	101750

	Commissions	Salary	Fees	Dividends	Total
1884-85	16694	1500	131	28500	46825
1885-86	13457	1500	131	32250	47338
1886-87	10034	1500	131	24937	36602
1887-88	12839	1500	131	28500	42970
1888-89	12265	1500	131	28500	42396
1889-90	16713	1500	131	38000	56344
1890-91	15966	1500	131	38000	55597
1891-92	3976	1500	131	9500	15107
1892-93	3432	1500	131	9500	14563
1893-94 (9mos)	2158	1225	131	4750	8264
1894-95	2918	1500	131	6175	10724
1895-96	0	1500	131	14250	15881
1896-97	0	1500	131	26125	27756
1897-98	0	1500	131	17100	18731
1898-99	0	1500	131	10450	12081
1899-1900	0	1500	175	5700	7375
1900-01	0	1500	175	10638	12313
Total					470870

Sources: Glasgow Herald, 10 July 1901; The Times, 29 October 1901; Calendars of Confirmations; Scottish Record Office SC49/31/186, inventory; Scottish R.O. GD282/12/129, 240, 296 and GD282/3/12, 60-63, 133-135, Davidson and Syme papers; Scottish R.O. BT2/3221, Mossend Iron Company file; Dundas and Wilson, Edinburgh, will of J.C.Bunten; A.C.Blair, Davidson and Syme, W.S.: two centuries of law; J. Bateman, Great Landowners of Great Britain and Ireland; G. Alderman, The Railway Interest; R.Britton, "Wealthy Scots, 1876-1913" Bulletin of the Institute of Historical Research, vol 58, #137 (1985);W.D.Rubinstein, "The Victorian Middle Class: Wealth, Occupation and Geography" Economic History Review, vol 30 #4 (1977); Rubinstein, "Wealth, Elites and the Class Structure of Modern Britain" Past and Present, #76 (1977); Rubinstein, "British Millionaires, 1809-1949" B.I.H.R. vol 47, #116 (1974).

Frank H. Adcock (1886-1956)

Joined the company as an apprentice in Glasgow in 1902 and, but for seven months in 1912 (whose coincidence with the end of the reign of Bunten the younger may be significant) remained with it until obliged to retire on health grounds in 1955. Moved to Port Clarence as Foundry Manager in 1922 in the wake of Bow's defection to Tees Side Bridge. Assistant Works Manager under the ailing Morris (qv), February 1940; General Works Manager, April 1941; director, December 1943. Health deteriorated in the early 1950s; he suffered a stroke but resumed part-time in 1954. A generous retirement pension was paid to him and, uniquely, an allowance was paid to his widow, in recognition of his long and valuable service.

Earlier doubts about his suitability were dispelled in 1938/39. He was the last of the line of first rate practical engineers trained within the firm. Patentee of various track fittings, he was prominent in perfecting the improved one-piece rail anchor in 1926-28. Much of the post-1945 rebuilding of the works was planned by him and he designed various of the machines and production lines installed at that time. His weakness was to leave the day to day operations of the plant to competent but unadventurous departmental managers. He was, for much of the time, the sole contact between the production side of the business and the board room where the making of general policy was largely in the hands of Cunningham (qv). He was content to accept the junior position and avoid involvement in financial matters and wider concerns.

Sources: interviews with C.E. Needham and N. Hanlon; Dundas and Wilson, Edinburgh, Anderston file; D/AF 498, correspondence with The Improved Anchor Company; D/AF9-10, minute books; D/AF337, 338, 347, 408-411, 437-438, 541-542, 545-546, 549-551, 586, 628.

John Blair, W.S. (1839-1903)

Born at Dalry, Ayrshire, the son of a weaver; educated at Glasgow University; articled to Wilkie and Faulds, W.S., Glasgow, he came to know Bunten who was the same age. In 1864 he moved to Edinburgh to work for the Bank of Scotland and left in 1871/72 to resurrect the firm of Davidson and Syme, formerly (1814-1869) the Bank's law agents, whose surviving partners had recently died. He built up a large commercial practice, acting for Anderston from 1874. He became a director of the Bank in 1896 and of the Caledonian Insurance Company. Blair mixed in Edinburgh financial circles and was the likely means of introducing Bunten to them. He was one of those in whom Bunten confided and was a front-man for various nominee shareholdings in Anderston. Estate at death: £59000.

His grandson, Sir Alastair Blair, was in his turn senior partner of Davidson and Syme and a director of the Bank and of other institutions. Sir Alastair succeeded James Watt (qv), who had succeeded John Blair, as legal adviser to Anderston (1945-1962) and to the La Terriere family. John Blair also acted for Daniel Macnee (qv) and for the Drummonds (see Appendix 1).

Sources: interview with Sir Alastair Blair; A.C. Blair, Davidson and Syme, two centuries of law (Edinburgh, 1980); Calendars of Confirmations; Scottish Record Office, GD282, Davidson and Syme papers; Glasgow University Archives, UGD100/3/2/1, Glasgow Railway Engineeing Company papers; D/AF384 and D/AF passim.

James Clark Bunten junior (d1935)

Nephew of his namesake. Employed by Anderston from the 1890s, or earlier. Succeeded Angus Murray as chief engineer in Glasgow under Drennan (qqv) whom he succeeded as resident director in 1906. Forced to resign in 1912 through his close identification with the costly failures of the gas engine business. His successor gave the impression that Bunten had ignored the overall management of Glasgow, building machinery impulsively and allowing slackness to develop amongst the work force. After taking a stand at the 1912 A.G.M. he caused no difficulty and, in his subsequent guise as an engineering agent in Glasgow, occasionally put work Anderston's way. He had considered emigrating.

His 792 Anderston shares formed 30.3% of his personal estate of £5300 and would have formed more before the capital repayments of that era.

His concentration upon machine making was, by the 1910s, inconsistent with the firm's emphasis on railway work. His was the last attempt to shake up the company and change its direction. The need to change what the machine shop manufactured was correct in theory but difficult to achieve in practice. The leap into the dark with the making of gas engines was brave but insufficiently thought through in technical, practical and economic terms - a fitting epitaph to this Bunten's reign.

Sources: Calendars of Confirmations; Glasgow Trade Directories; Scottish Record Office, SC36/48/486, inventory; D/AF7, 136, 336, 386-388, 430-431, 628.

Thomas Patterson Cargill (1872-1958)

Born at Kirkaldy, the son of a draughtsman in an ironfoundry, and apprenticed there. He spent eight years as engineer in chief of H. Greening and Sons, wire weavers in Warrington, before joining Anderston in Glasgow in late 1906. He introduced the manufacture of wire weaving machinery to Anderston and established a long standing and profitable relationship with the expanding firm of Brunton's of Musselburgh. He replaced Bunten junior as manager of the Glasgow works, into which he recruited his brother M.L. Cargill (a draughtsman) and Forsyth, an old contact from Kirkcaldy, in 1912. His abilities as a manager and engineer in bringing about a partial revival of the fortunes of the Glasgow works were recognised in 1920 when he became the first manager not raised in the business to become a director. His salary was significantly lower than that of his opposite number in Middlesbrough: G.W. Dawson (qv). Cargill would probably have succeeded G.W. Dawson at Port Clarence when the latter, as was intended, succeeded A.T. Harvey (qv). Dawson's death brought Cargill to Port Clarence (1927) and Harvey's death propelled him, unexpectedly, into the managing director's seat. These sudden developments, and Cargill's lack of family connexion, required the importation of James Watt (qv) as chairman to reassure the large shareholders. The two of them reorganised the board in 1928 and maintained a working partnership in which Watt's value as a link to the family shareholders outweighed his nuisance value as a deviser of impractical and impracticable schemes.

During the Second World War, Cargill, who had returned to Glasgow after his retirement in 1938, acted as unpaid inspector and liaison officer with the iron and steel control whereby he provided

Anderston with privileged information. Through the good offices of Davidson and Syme he took up a brace of directorships of Glasgow iron foundries on behalf of the custodian of enemy property. He received a retiral allowance, as was customary, but, unusually, remained a director of Anderston where his technical expertise continued to be in demand, at least until Adcock was firmly established post-war. Cargill succeeded Watt as chairman in 1946, retiring as such in 1954 but remaining a director until his death in 1958. In later years he contributed more reminiscences of the past than ideas for times present or future.

His almost romantic attachment to the firm spread to his three daughters: he felt the desire of the Muirs to liquidate the business in the 1930s to be a personal affront to his life's work. Experience with Bunten's gas engines reinforced his cautious approach. He shewed ability at Glasgow, and latterly at Port Clarence, in damage limitation. He was neither demoralised nor disorientated by trading conditions in the 1920s (unlike A.T. Harvey) but he was not the man to break the mould of the business. A pragmatic and practical man, he was responsible for the diversification into light castings and, more than any other, for the resurrection of CICA. He admitted that he should have sorted out the wage and labour question at Port Clarence but lacked the courage to do so.

Of his personal estate of £8666 Anderston shares formed 65%.

Sources: Calendars of Confirmations; Scottish Record Office, SC58/42/207, inventory; D/AF136, 348, 386 et seq., 430 et seq., 494-495, 496 et seq., 628.

John Cowan (d1895)

A merchant in Greenock, director of the Scottish Union Insurance Company, partner in H.C. Fairle and Company, manufacturing chemists of Falkirk. He was a director of the Caledonian Railway from 1868 until his death, and chairman of its Stores Committee at the time of Bunten's joining the board. Bunten became a member of that Committee by 1884 and their friendship bloomed, at least in part from self interest. Cowan was the first outsider to hold shares in Anderston and his postion of trust was such that he was John Blair's partner in fronting the various nominee holdings.

Cowan's estate (£101450 personalty) is, Rubinstein would lead us to believe, more typical of that left by a successful businessman of the time than the much larger sum left by Bunten. Cowan had no investments in other enterprises in which Bunten and his associates were involved. The Cowan family retained shares in Anderston until 1962 but were, from 1895, relegated from its inner circle. At that time sentiment had no place in business. Like so many others, the Cowan family's direct contacts with business diminished; members took to the army and other professions, moving south or emigrating to the dominions.

Cowan's wealth comprised: £29500 in Caledonian stock and £13600 in that of other home railways; £3000 in Anderston; £5750 in ships managed by the Cowan family; £34500 in business partnerships; and £13000 in miscellaneous shares and foreign bonds.

Sources: Scottish Record Office, BR/CA1, minutes of the Caledonian Railway Company and SC53/41/8, inventory, Renfrew Sheriff Court; D/AF1, 127, 384, 628.

George Douglas Cunningham, C.A. (1890-1969)

Educated at George Watson's in Edinburgh, he was articled to Whitson and Methven, accountants in that city and qualified in 1915. His family had no known connexion with business: his brother was a missionary. After serving in the First World War, Cunningham returned to Edinburgh. He was recruited as confidential assisitant to A.T. Harvey (qv) in November 1920. Anderston was his only business appointment; in forty years with the firm he acquired no great technical understanding of its manufacturing processes. Thus may, perhaps, be explained his preference for investing company money in the stock market to investing in the business. During the 1920s and 1930s he and William Morris (qv) were rivals for salary and status.

Cunningham became a director in the reconstruction of 1928, taking control of the financial and office activities at Port Clarence. He succeeded Hardie (qv) as Secretary in September 1928 and overhauled the accounting practices of the firm. His thoughts of reform upon succeeding Cargill as managing director in late 1938 were interrupted by the war. The ensuing era of controls and apparent prosperity drove them from his mind. He continued in office until the end of 1960, by which time his loyal adherence to cartels and arrangements, and to the attitudes and perceptions of the 1930s had become a liability. As chairman from 1955-1962, as for much of the preceding decade, Cunningham ran the business and the board - which received reports rather than formulated policy. There was no insider with the requisite experience to challenge him. He worked hard but lacked the broad outlook which would have allowed him to comprehend more readily the changing world in which the company operated and the changes necessary within the company to give it a better chance of

surviving. His handling of the crisis from 1958 shews a want of understanding and direction similar to that of Harvey in the 1920s.

During the 1950s his colleagues were aged, ill or lacking in status and experience. He dealt with them individually and informally. Once Watt was dead no shrewd, inquisitive outsider sat on the board to ask awkward questions or query policy.

Cunningham was a keen cricketer whose loyalty to the trade associations' team was that of one who always played the game by the rules and whose horizons were limited by those same rules. Incapable of adjusting either to changes in the rules or to rivals who played to win: "he always played the game and he always lost it." He must carry considerable responsibility for the failure of the business, but that failure was a logical culmination of its behaviour in the previous forty years - than which he knew no other.

Sources: interviews with N. Hanlon and C.E. Needham; Dundas and Wilson, Edinburgh, Anderston file; Sheffield Record Office, minutes of the Railway and General Engineering Co. Ltd; D/AF9-10, 348, 461, 494-495, 496 et seq., particularly Cargill/Watt correspondence, 1927-28, and Cunningham's private letter files 1938 and 1958-62.

Edward Dawson (1852-1927)

Joined the Anderston Foundry in the late 1860s and moved to Port Clarence for the opening of the works there in 1875/76. His salary increased from £130pa in 1876 to £312 by 1882, and as a further sign of his increasing value, he became a director of the limited company from the outset as general manager of Port Clarence. In 1901 he succeeded Bunten as chairman and managing director. He retired to Bournemouth in May 1919 with an allowance of £500pa and died there in September 1927, a few days after his son.

In Middlesbrough he was a magistrate, President of the Temperance Society and a leading free churchman. He seems to have had no outside business interests bar the directorship of a local shipping company. He was married, with two sons and four daughters. His Anderston shareholding formed 74% of his personal estate of £29000. This, and the holdings of other members of his family, had been built up piecemeal over a long period, often with money borrowed from Bunten or from bankers.

Having worked in Bunten's shadow for a generation he continued the business very much as he had inherited it. He was of "a calm and placid disposition - very methodical and of sterling character" (D/AF628) which suggests competence more than a restless searching for new opportunities.

He was the first manager to head the business: his predecessors had all been to a great extent proprietors. His family shareholding at the end of his life (14.6% of Anderston's share capital) was little more than the partnership stakes of his predecessors at their coming to power. He was not independently wealthy, and the terms on which he was employed - a salary as managing director of £2000pa -

did not allow him to accumulate a fortune in the fashion of his predecessors who had no "shareholders'" capital to consider. The first in a line of expatriate Scots administering a branch plant, whose spiritual home was never Teesside, he did not establish links with the business communities either there, or of Clydeside, such as those which his predecessors had enjoyed, by inheritance, in Glasgow.

Sources: Calendars of Confirmations; D/AF6-7, 136, 329, 384, 628; W.H. Scott and W.T. Pike eds., The North and East Ridings of Yorkshire at the Opening of the Twentieth Century, (Brighton, 1903).

George Watson Dawson (1882-1927)

Son of Edward. Entered the firm in 1903 and by 1912 was in receipt of the same salary (£312pa) as the long serving Morris (qv). He served in the First World War but, due to illness and the demands of Port Clarence, he was invalided out and returned to the business in 1917. He had been groomed for high things as part of a prospective managerial dynasty. Having become a director in 1918, he succeeded A.T. Harvey (qv) as general manager at Port Clarence, where much of his career had been spent, in mid-1919. During the 1920s recurrent illness undermined his effectiveness. His sudden death from appendicitis in August 1927 completely disrupted the succession shortly before Harvey's planned retirement. Dawson's salary was extremely generous due to a combination of parental influence, recognition of the overall financial needs of the Dawson family, and to place him in a good position lest the company were taken over by one of its larger steel-making neighbours. He was also better equipped thereby to resist financial blandishments from Dorman Long and the like.

He was married, with two daughters. His personal estate of £9000 was formed as to 47% by Anderston shares.

Sources: Calendars of Confirmations; D/AF334-335, 429, 444, 494-500, 628.

Alexander Drennan (d1906)

A keen golfer and captain in the 3rd Lanark Volunteers. He resided latterly at Helensburgh. He had been cashier with the various Houldsworth enterprises before, early in 1883, transferring to Cheapside Street when Anderston established its separate offices. Having presided over the cash and book keeping departments, he became assistant to the ailing Robertson (see Chapter 3 above) in 1899. In 1901 Drennan succeeded Robertson as Secretary and, a few months later, as a director. Bouts of influenza undermined his health over his last three years. His personal estate of £16000 was formed as to 83% by Anderston shares. His family retained a holding representing over 3% of Anderston's share capital until its demise. His son, Prof. A. Murray Drennan (d1983), was one of Anderston's few interested shareholders during the 1930s and after. Another son had become an army officer.

Sources: Calendars of Confirmations; Scottish Record Office, SC65/35/9, inventory; D/AF6-10, 384, 628.

John Faill (1855-1933)

Born into a family of prosperous Glasgow contractors and quarrymasters (A. & J. Faill, established 1858) who constructed a large portion of the Clydeside tramway systems with their associated street works - the firm held Glasgow Corporation's paving contract - and held shares in, and sat on the boards of, various local tramway companies. Faill lived in Kelvinside as had his father John (d1899, estate £195000) before him.

Faill was introduced to Anderston through his son-in-law, Grierson, manager of the Bank of Scotland branch at Anderston with which the foundry banked. During the years before and after the First World War these two families built up a considerable shareholding in Anderston. Faill was recruited as a director (1912), when few others were available, to forestall any renewal of the Muirs' attempt to obtain a seat. He was largely decorative; his business background making him appear more impressive on paper than he was in the flesh.

In 1927 he declined to become chairman and retired from the board in 1931 after the closure of the Glasgow works and offices. He was unwilling to journey to Middlesbrough. His Anderston shareholding formed less than 1% of his personal estate of £345000; it was sold shortly after his death, although the Griersons continued as shareholders until 1962. His family contracting and mining/quarrying businesses took some 6% of the estate but the bulk comprised government and local authority stocks, deposit receipts and mortgages (a combined 63.5%), blue chip stocks widely spread, and other low risk securities.

Sources: 1861 census returns; Scottish Record Office, SC36/48/462, inventory; Calendars of Confirmations; D/AF7-8, 387, 431, 494-495,

498-500, 628; The Industries of Glasgow (1883); A.W. Brotchie and R.L. Grieves, Paisley's Trams and Buses (Dundee, 1986); I.L. Cormack, Tramways of Greenock, Gourock and Port Glasgow (Glasgow, 1975).

J.W. Finlay (b1880s d?)

Joined the Glasgow office in February 1899 and was senior clerk and cashier under Hardie (qv) when, in 1928, he moved to Port Clarence as Cunningham's assistant. Secretary from 1938 to 1947, when he retired due to ill health, he was the last such trained from within. His career, both in kind and in length was typical of that of many of the office and works staff.

Sources: D/AF9, 346-348, 498.

Norman Hanlon (b1920)

Native of Glasgow - a fact in his favour - and formerly apprenticed to Stewarts and Lloyds, pipemakers, he joined Anderston from Dorman Long's in 1949 and returned to them in 1951 after two years as Adcock's deputy. Impatient with the hide bound ways of Anderston. Pursued a successful career with Dorman's and later as managing director of a special steels business in Sheffield. Master Cutler. Interviewed 1987.

Sources: D/AF9-10; interview.

William Hardie (1869-1928)

His entire working life of 45 years was spent with Anderston, in Glasgow, which he joined as an office boy straight from school. He was cashier until succeeding Drennan as Secretary in 1906. A thorough and methodical character but not a dynamic one, he felt a strong family responsibility for his staff. Thus when, as the company's highest official remaining in Glasgow, the arrangements for the closure of the foundry there fell to him, he suffered nervous exhaustion. The appointment to the board of Cunningham, a qualified accountant twenty years his junior, contrasted with his own failure to follow his two predecessors thither. He died in a nursing home in September 1928, an unexpected development which allowed a reorganisation of personnel and accounting practices which might otherwise have had to wait upon his retirement. It is likely that he would have been pensioned off in 1931, not transferred to Middlesbrough.

He left personal estate of £6178, much less than his predecessors: Anderston shares, 26.4%; government stocks, 31.8%; other shares, 24%. His widow was given £500 to pay for his daughter's education - one sign of the company's generosity to its staff, and a contrast with that to its workmen.

Sources: Scottish Record Office, SC36/48/401, inventory; D/AF7-8, 136, 346-348, 497-500, 628.

Alexander Tertius Harvey (1856 -1927)

Nephew of J.C. Bunten and scion of the family which controlled G. & A. Harvey, machine tool makers and a textile dying business, both in Glasgow (see Chapters 2 and 3 above and entry for Bunten in this appendix). Harvey joined Anderston in 1876 and but for a brief sojourn with the Caledonian Railway (arranged by his uncle?) remained with the firm until death. On his return from the Caledonian, in 1884, he moved to Port Clarence and was groomed for high things - as is shewn by his receiving shares in the company during the 1890s. He succeeded Edward Dawson as general manager at Port Clarence in 1901 and joined the board in 1903. From 1919 he was chairman and managing director (both in succession to Dawson) until his death, shortly before his planned retirement, in October 1927.

His long service and family connexions allowed him to deal directly with the La Terrieres and Muirs if need arose, to smooth over the differences and prevent greater interference with the management of the company. This was of particular value in the 1920s.

"A man of untiring energy, well known in railway circles as an engineer of the highest ability... the Anderston Foundry formed his principal interest in life" (D/AF628). He was no better integrated into the business world of Teesside than Dawson despite his long residence there. When he succeded it was clear that his reign would be much shorter than those of his predecessors. He had been Dawson's lieutenant for 35 years and sought to keep the business on the same course. In the rapidly changing circumstances of the 1920s he lost his bearings but the ballast of its inheritance kept Anderston to its usual path.

Personal estate of £58800, only 13% of which was invested in

Anderston, indicates some private (inherited) wealth. During the 1920s Harvey felt no need to bolster his position by buying more Anderston shares: he preferred the safety of gilts.

Sources: Calendars of Confirmations; census returns, trade directories and electoral registers for Glasgow, 1880-1881; D/AF6-8, 330-334, 384, 494-495, 628; private information, K.N.L. Harvey.

Alexander KENNETH Lyon Harvey (1889-1981)

Son of A.T. Harvey. Apprenticed to Anderston in Glasgow during the 1900s, he moved to Port Clarence in 1912. He was a likely successor to G.W. Dawson and, ultimately, to his own father, until ill health forced him to emigrate to British Columbia in 1919 where he took up farming. He was persuaded to rejoin the firm when in England during his father's last illness and with his father's approval. His presence would reassure family shareholders and restore him to the succession. Cargill was willing to stand aside in due course. After eighteen months as a director and general works manager he again resigned on health grounds. His succession to Sowerby (qv), in 1934, as the family director was arranged by Cargill and Watt (qqv) to preempt an unwelcome nomination such as that of Guy Liddell (qv). Harvey was of an age with Cunningham and collaborated with him closely during his time on the board.

Harvey lived, from 1930, at Uckfield, Sussex where he became a county councillor and involved himself in local affairs. His director's fees provided a useful supplement to a private income. He took advantage of stock market tips from Watt, Cunningham and Anderston's brokers to counteract the effects of inflation and

taxation (of which he regularly complained). His social contacts included various company directors and money men; he tried to open useful doors for Anderston in London. In the 1950s he became a director of the Pantewan Dock and Railway Company of which his son was managing director. That son, K.N.L. Harvey, had rejected the opportunity of joining Anderston in 1945. He would, it may be supposed, have become managing director in succession to Cunningham.

Sources: Stock Exchange Year Book, various editions; D/AF8-10, 335, 497-500, 503, 523-524, 573, 628; private information, K.N.L. Harvey.

Guy Liddell (1870s-1950s)

A member of the Bunten cousinhood (see Tables A2.3 and A2.4 above). He worked for Anderston at Port Clarence in the 1890s. His father had worked in India; his elder brother was a military engineer. Liddell's later career was spent with British owned railways abroad, including the East Indian and the Cuba Central. He felt that he ought to have been preferred to Sowerby (qv) in 1927 as family nominee and it was the prospect that he or his brother might seek the support of Mrs. La Terriere in 1934 which prompted the speedy appointment of Kenneth Harvey in the room of Sowerby deceased. In 1936, and after the death of Watt (qv) in 1945, he made further approaches but with no obvious family backing. Cargill was "dead set" against having Liddell as a director.

Sources: D/AF 332-333, 523-524, 558 and succeeding letters between Harvey and Cunningham; private information, I.C. de Sales La Terriere; Who's Who, various editions.

Daniel Macnee (d1893)

The son of Sir Daniel Macnee (d1882), a prominent Scottish portraitist, he sold the points and crossings business which he had established in Rotherham to Anderston in 1880/81. The plant was transported, with many of its workmen, to Port Clarence whilst Macnee removed to London as Anderston's agent for such work, becoming, latterly, its sole London representative. How Macnee came into contact with Anderston is unclear: their first business dealings seem to date from 1879. Either a Scottish connexion or one through James Livesey (see Chapters 2 and 3 above) is possible. Once he had he became part of Bunten's business circle.

Macnee retained various patents for axleboxes in his own hands and expanded his London agency to deal in springs and spring steel. He acted as casual agent for various Hallamshire firms such as Steel, Peach and Tozer and H. & S. Barker whose products he supplied to the Caledonian, London and South Western and Great Indian Peninsula railways, amongst others. He was agent for axles, wheels and couplings supplied by John Baker of Rotherham and by Dugald Drummond and Sons (see Appendix 1: Glasgow Railway Engineering Coy; Drummond moved from the Caledonian to the London and South Western). Another agency was for the the Glasgow firm of Arrol's Bridge and Roof Company, a structural iron and steel fabricators established in 1882. Common to all was their dependence on railway custom.

At his death Macnee's personal estate was valued at £21000, which included shares held in the Buenos Aires and Rosario and Buenos Aires Western railways (£6170 nominal, valued at £4723), both part of the Livesey and Henderson stable, and a loan of £4000 (valued at £3333) to the Drummonds. £3000 of shares were held in the Indian

Midland Railway (value £3465) where T.R. Watt was chairman and George Berkeley was engineer (see Chapters 1 to 3 above).

Macnee's London agency was typical of its time. London trade directories and the classified advertisements of railway year books are awash with agents of more or less specialist stripe acting as intermediaries or permanent representatives for a clutch of firms each too small to afford exclusive representation in London. Such agents came to possess expertise and their own web of connexions for selling into a particular market or to a particular class of customer. Specialisation begat further specialisation.

Macnee located himself in Victoria Street, Westminster, heart of the capital's engineering quarter, close to the consulting engineers, the engineering institutions and Parliament.

On the foundations of business for Glasgow and Rotherham-based suppliers of railway equipment, personal and financial links were erected, as was the case with Bunten. Macnee's executors comprised: Bunten; Arthur Arrol, a Glasgow engineer, partner in the structural iron and steel business mentioned above; another Glasgow merchant; and George Berkeley, with his long connexion with the Anderston Foundry.

Macnee held shares in Anderston at Bunten's invitation and at his pleasure. He was briefly considered for a seat on Anderston's board in the abortive 1890 reconstruction. Bunten, like Macnee, had lent money to the Drummonds' business. Macnee, Bunten, Anderston and the Drummonds were all clients of Davidson and Syme.

Macnee's agency, still bearing his name, passed to his assistant of eleven years, F.O. Tubby, to whom the Macnee trustees advanced £600 in working capital. Agencies were lost and gained; by the 1920s Macnee and Company acted solely for Anderston.

Macnee was married, with three daughters and a son who took no part in his business. He lived in Ladbroke Square.

Sources: D/AF384, 557 (Cargill to Cunningham, 20 June 1945) and D/AF passim; Scottish Record Office, GD282/12/129, GD282/12/240, GD282/3/133-135, Macnees trust papers in the Davidson and Syme deposit, and letter books of Davidson and Syme 1889-1890; Glasgow University Archives, UGD100/3/1/1, Glasgow Railway Engineering Co. Ltd, minutes.

William Morris (d1940)

Joined the firm at Port Clarence in 1891 and had become one of its highest paid employees by 1914. During the 1920s, and possibly earlier, he was the manager of the points and crossings department, then the most successful in the company. He was offered a seat on the board in August 1927, the arrangements for which, including the purchase of shares from Edward Dawson, were incomplete at the time of the deaths of the Dawsons and Harvey.

Morris was deliberately not given the title of general works manager following Kenneth Harvey's departure. His bumptious character did not endear him to his colleagues Cargill and Watt (qqv); his rivalry with Cunningham for status and emoluments told against him. He remained something of an outsider. Cunningham was preferred as Cargill's successor in 1938, by which time Morris had started to suffer from bouts of ill health. He had, however, been recognised as works manager.

In the spring of 1940 he was persuaded to retire, with effect from September, on an allowance of £200pa. The appointment of Adcock as his deputy he took poorly (February 1940) as also the refusal to allow him to retain his seat on the board. He died on July 19th before all the matters touching upon his going had been settled.

Morris was no innovator. For example, the installation of modern planing machinery into the points and crossings shop, whose benefits were immediately apparent, had to wait upon Adcock's succession. Morris's outside interests were limited to local politics in Redcar, of which he was mayor in the mid-1930s. The council's contracts for manhole covers were placed with Anderston and, in his role as chairman of its electricity committee, he directed business

towards Bruce Peebles of Edinburgh, whose chairman was James Watt.

Morris had first acquired shares in 1910 but not through the charmed circle. By piecemeal additions he had, by 1940, the largest holding of any director. His personal estate was £13000, one third of it in Anderston shares. These were sold by his widow in the mid-1950s.

Sources: Calendars of Confirmations; interview with N. Hanlon; D/AF8-9, 332-335, 348, 494-500, 545-548, 628.

Robert Bunten Muir, OBE (1862-1937)

Educated at Cheltenham. Living at Newport Lodge, Melton Mowbray by 1887 and married to the daughter of another local landowner. An officer in the Yeomanry, he served briefly in the Boer War. Later he rose to the rank of colonel. A keen rider to hounds and a magistrate (1902). As the eldest surviving Muir he was consulted in 1927/28 and 1934 regarding appointments to the Anderston board. He seems to have been the most realistic of the Muirs and was not eager to follow J.G. Muir's trustees into a demanding obstructionism. In later life he resided at Kirby Hall, Melton Mowbray. His 1000 shares remained in his daughter's hands until 1962. Personal estate at death was valued at £40315 of which Anderston shares formed 8% - a figure which had been diminished by the various repayments of capital.

Muir is a perfect exemplar of the fate popularly ascribed to the descendants of industrialists: taking up the pastimes and, perhaps, adopting the attitudes of the pre-industrial upper classes. In their various ways, and to a varying extent, the Muirs, Houldsworths, Dawsons, Harveys and La Terrieres followed a similar path of disengagement from industry over two or three generations, and a similar flight path to the rural idyll.

Sources: Kelly's Handbook of the Titled, Landed and Official Classes, 1899 and 1926; M.J. Wiener, English Culture and the Decline of the Industrial Spirit; W. Scarff and W. Pike eds., Leicestershire and Rutland at the Opening of the Twentieth Century (Brighton, 1902); D/AF passim.

Angus Murray (fl 1880s-1910s)

Co-patentee with Bunten of various designs for metal railway sleepers during the 1880s, he had risen to the position of chief engineer/works manager at Glasgow by 1901. He may well have felt that he could go no further due to Harvey's likely succession to Dawson and the presence of other "family" managers behind him ready to tread on his tail. Drennan's early death might have given him a place on the board but he had left Anderston in 1904 to establish his own business and compete with his former employers (see Appendix 1: Murray, Workman & Co.)

Sources: D/AF136, 158, 384-385.

Cyril Ernest Needham (b1922)

An accountant trained in York. Anderston was his first industrial appointment when he became Secretary in 1953. He was made a director in 1958 and left in late 1961 when the impending extinction of the company was obvious to all. He pursued a successful career in business, initially as an accountant and subsequently as a managing director. Interviewed, 1985.

Sources: D/AF10, 582, 628; interview.

Col. Edward Chaytor Sowerby, OBE (1872-1934)

A member of a landed family with North Riding connexions. His father was tenant of Snow Hall, Gainford, Co. Durham, owned by Lord Barnard whose agent for the Shropshire estates Sowerby became. Sowerby was educated at Wellington and served in the Durham Light Infantry. He married one of the daughters of J.G. Muir in 1907.

J.G. Muir's trustees had canvassed Sowerby's membership of the board in 1924/25 but Harvey had successfully resisted them. His appointment in 1928 was the price to be paid for the Muirs' acceptance of the rest of the reconstruction proposals. Sowerby's shareholding was lent him by the Muirs and he was, initially, more their agent than his own man. In the past his connexions would have been useful: he served on Shropshire County Council with E.B. Fielden, the deputy chairman of the London, Midland and Scottish Railway; his cousin, Sir Murrough Wilson, was a director, and subsequently deputy chairman, of the London and North Eastern Railway; his uncle, Maurice Wilson, was a civil engineer with the contractors Pauling's, working on the construction of Kilindini Harbour in Africa. In an era of professionally managed railways, Sowerby's attempts to talk shop (sleepers) with his contacts produced no more than offers of introductions to their chief engineers.

After his wife's death in 1933 Sowerby became depressed. He seems to have taken his own life. Anderston shares formed an insignificant portion of his personal estate of £18000. He was a very distant family connexion of the Houldsworths and the Hendersons.

Sources: Burke's Landed Gentry, Who's Who, and Kelly's Handbook of the Landed, Titled and Official Classes, various editions; Calendars of Confirmations; D/AF494-495, 498-500, 509-524, 628.

Frank K. Tubby (b1903)

The first Tubby had been Daniel Macnee's assistant and successor in the London agency. F.K. Tubby graduated from London and was apprenticed to Cowans, Sheldon of Carlisle, makers of railway lifting gear, whose London agents were Macnees. In 1927 he left to join the Bengal Nagpur Railway of which he was Deputy Chief Engineer (Bridges) from 1946. The sudden death of his brother, L.O. Tubby, caused his return from India in 1951 to run Macnees, where the succession to his eighty year old uncle, F.A. Tubby, had been severely disrupted. In 1952 Anderston recruited him as "Technical Director" i.e. heir apparent to Adcock.

Like Sowerby, Tubby's connexions would, in former times, have been useful, and helpful in justifying his appointment. In the era of Indian independence they could not compensate for his lack of experience of production engineering and of manufacturing. Tubby was the nearest thing Anderston could find to an internal appointment. Unfortunately, the various skills of Adcock, Cunningham and the departmental managers did not knit together effectively.In 1955 Tubby became general works manager; at the end of 1960 managing director of a rapidly failing business which, only then, was recruiting a technically skilled and experienced outsider as works manager.

Tubby's expenditure on mechanisation to reduce overheads came too late to save Anderston of whose closure he was principal casualty. He had greatly expanded his family's shareholding during the 1950s. With the firm's demise and that of Macnee and Company he lost both money and his livelihood.

Sources: interviews with Hanlon and Needham; letter received by the author from Arthur Gracie; Dundas and Wilson, Edinburgh, Anderston file; D/AF10, 130, 578, 583.

Dr. James Watt, W.S. (1863-1945)

Educated at the Royal High School and Edinburgh University. Joined Davidson and Syme in 1889 as sprcial clerk to John Blair. Assumed as a partner in 1897 having previously become a Writer to the Signet. He began taking over most of Blair's commercial work. On Blair's death the latter's son, William, became senior partner but, in 1911, he was supplanted by Watt, who remained senior partner until death.

Davidson and Syme's wide business connexion is illustrated by the directorships its partners held. Bruce Peebles, the electrical contractors based in Edinburgh, had been reorganised by Davidson and Syme: Watt and his son William, who followed him into the practice, were directors from 1917 to 1961. Shares in Bruce Peebles formed 13% of Watt's personal estate at death. Watt assisted in the merger which produced Tullis Russell, paper manufacturers, in 1907, and in later reorganisations: a Watt or a Blair sat on that company's board from 1924. William Watt succeeded his father as a director of T. & H. Smith, manufacturing chemists, where Archibald, another of James's sons, was an accountant and, from 1935 to 1946, a director. James Watt had invested £152000 in Smith's. Davidson and Syme's close contacts with the Bank of Scotland and the Edinburgh financial community were fully maintained during the Watt era.

The firm acted for the La Terriere family. During the 1920s Anderston feared that it was one of Watt's lesser concerns but the possible takeover of the business and the threats of liquidation involved Watt more deeply in Anderston's affairs. With his considerable business experience, his position as Mrs La Terriere's trusted adviser, and the long connexion between his frim and

Anderston, he was the obvious choice for the vacant chairmanship in 1927/28. His own stature and connexions outshone those of most of the shareholders; his contacts, in effect, and effectively, replaced Harvey's at Dunalastair. He could easily represent the company to its major shareholders if they grew restive.

Despite suffering from diabetes, and declining in physical strength in his last years, Watt remained active in Anderston as in his other concerns. After a bad patch in the early part of the Second World War, his mental alertness returned as he pressed his colleagues at Anderston into formulating post-war reconstruction plans. Watt lacked any technical understanding and his many ideas for diversification lacked practicability, or so it seemed to the company's managers who enjoyed narrow technical expertise without breadth of ideas. Watt was one of the few people with broad commercial experience to be active in Anderston's affairs after the 1900s. The absence of a suitable questioning successor to Watt helps explain the post-war drift evident in the company.

Fears that Watt and his successors would back the La Terrieres rather than the foundry, should any conflict arise, were groundless (see Chapter 8 for the events of 1952-1954). Watt resolutely kept the Muirs and La Terrieres from interfering, built up his own shareholding in the company and introduced some of his clients to its shares.

Watt took a continuing interest in the affairs of Edinburgh University, which awarded him a D.C.L. in 1925. He was Treasurer of the Writers to the Signet Society and of the Royal Society of Edinburgh. He did much work for charity; his charitable outlook is reflected in the paternalism he felt towards employees of Anderston.

Watt was a director of: R. & C. Clark Ltd, printers; Alexander

Ferguson Ltd, confectioners; and Lawrie and Symington Ltd, auctioneers. He chaired Bruce Peebles.

His shareholding in Anderston represented under 1% of his personal estate of £218500. However, much of his own and his family's shareholdings were routed through The Albyn Trust Ltd and The Charlotte Trust Ltd, two tax avoidance vehicles. When the latter was liquidated in 1947, a sum of £58000 was repaid on a nominal capital of £100.

Sources: Scottish Record Office, BT2/10303, Charlottee Trust file, and SC70/1/1140, inventory; Who's Who, various editions; D/AF8-9, 494-495, 628 and Cargill/Watt correspondence, 1927-1946; A.C. Blair, Davidson and Syme, two centuries of law.

Biographies of James Livesey and Alexander Henderson, 1st Lord Faringdon will be found in David J. Jeremy ed., Dictionary of Business Biography. In those articles Sir Harry Livesey, Sir Brodie Henderson and H.W. Henderson are mentioned in passing. Appropriate issues of The Times contain obituary notices of the above. The Livesey and Henderson connexion is explored in David Wainwright, Henderson, A History of the life of Alexander Henderson, first Lord Faringdon, and of Henderson Administration, (1985).

John Marshall, Biographical Dictionary of Railway Engineers, contains various short notices of consulting engineers, contractors &c. whose activities touch upon the present work.

The Houldsworths are mentioned in both the Dictionary of Business Biography and in A. Slaven and S.G. Checkland eds., Dictionary of Scottish Business Biography. However, the bulk of biographical information given in Chapters 1 to 3 above is drawn from D/AF628 and from J.L. Carvel, The Coltness Iron Company and W.H. Macleod and H.H. Houldsworth, The Beginnings of the Houldsworths of Coltness (see bibliography).

APPENDIX 3

Select statistics of sales, profits and output, analysis of ownership of shares etc.

ANDERSTON FOUNDRY, 1853-1884
(All calculated from D/AF 11-13, 22-23)

A3.1A	Average capital of partners
A3.1B	% Return on partners' capital (five yearly averages)
A3.2	% Return on partners' capital and upon total capital employed
A3.3	Capital of partnership families invested in the business
A3.4	Capital divided between Glasgow and Middlesbrough plants
A3.5A	Average drawings by partners
A3.5B	Drawings and salary of M.A. Muir
A3.5C	Drawings by partners, 1858-69, actual year by year and as % of profits
A3.6A	Trading profits
A3.6B	Makeup of trading profits
A3.7	Profit and loss attributable to partners
A3.8	Trading profits, 1876-84, as % return on partners' capital: Middlesbrough and Glasgow
A3.9	Average trading profit as % return on partners' capital
A3.10	Trading profits as % of sales, Glasgow
A3.11	Average sales, Glasgow, apportioned between departments
A3.12	Iron consumed by the Glasgow Foundry

OWNERSHIP, ANDERSTON FOUNDRY CO. LTD.

A3.13	Analysis of shares owned by various categories of shareholder, 1880s - 1960s
A3.14	Tabulation of Principal shareholdings, 1880s - 1960s

RESERVES

A3.15A	Tabulation of reserves, investment and investment income, 1886-1944
A3.15B	Specimens of investments, 1932-33
A3.15C	Tabulation of reserves and investments, 1945-59

SALARIES

A3.16	Details of salaries of principals, 1900-54

OUTPUT STATISTICS

A3.17	Iron consumed annually by Glasgow Foundry and by Middlesbrough Foundry
A3.18	Miscellaneous output figures for Middlesbrough, 1908-14, 1919-26
A3.19 (I-VI)	Glasgow production and sales analysed by product and destination, 1911-15
A3.20A	Overall business of Switches & Crossings (Export) Association, 1929-40
A3.20B	Division of work of Switches and Crossings and Junction Fish Plate Associations
A3.21	Sales of Switches and Crossings Department, Middlesbrough, 1929-60, apportioned by destination

A3.22A	Summary of sales (£), Switches and Crossings, 1929-60, apportioned by destination
A3.22B	Summary of sales (%), Switches and Crossings, 1929-60, apportioned by destination
A3.23	Sales of Bolt Shop, Middlesbrough, 1929-60
A3.24	Orders (tons) received by Bolt Shop, 1886-1929; sales (tons), 1929-40, 1950, 1955, 1960, apportioned by destination
A3.25	Details (tons and %) of rail anchors produced by Bolt Shop
A3.26A	Summary of sales (£) Bolt Shop, 1929-60, apportioned by destination
A3.26B	Summary of sales (%) Bolt Shop, 1929-60, apportioned by destination
A3.27A	Summary of output (£) Bolt Shop, 1886-1939, apportioned by destination
A3.27B	Summary of output (%) Bolt Shop, 1886-1939, apportioned by destination
A3.28A	Summary of output (%) Iron and Steel Sleepers, 1879-1960, apportioned by destination
A3.28B	Summary of output (%) Iron and Steel Sleepers, 1929-60, apportioned by destination
A3.29A	Summary division of sleeper orders between iron and steel, 1889-1929
A3.29B	Detail of division of sleeper orders between iron and steel, 1919-24
A3.30	Orders (tons) received for iron and steel sleepers, 1875-1929, apportioned by destination
A3.31	Sales of Steel Sleeper Shop (tons), Middlesbrough, 1929-60, apportioned by destination
A3.32	Summary of orders for all sleepers, 1879-1929, apportioned by destination
A3.33	Sales of Steel Sleeper Shop (£), Middlesbrough, 1929-60, apportioned by destination
A3.34A	Summary of steel sleeper sales (£), 1929-60, apportioned by destination
A3.34B	Summary of steel sleeper sales (%), 1929-60, apportioned by destination, with sub-contracts apportioned
A3.35	Analysis of orders secured by the Steel Sleeper Association, 1945-50
A3.36	Division of orders received by the S.S.A. between individual members
A3.37	Analysis of S.S.A. orders, 1936-39
A3.38	Details of S.S.A. business and Anderston's share of it, 1920-24
A3.39	Details of S.S.A. business, Anderston's share and commissions, 1928-39
A3.40A	Foundry Order Books, summary of orders, 1879-1929, divided between various products (tonnage)
A3.40B	Foundry Order Books, summary of orders, 1879-1929, divided between various products (%)
A3.41A	Summary of of chair orders (1879-1929) apportioned between principal customers/markets (tons)
A3.41B	Summary of chair orders (1879-1929) apportioned between principal customers/markets (%)
A3.42	Summary of fencing and pole base orders (1879-1929) apportioned between markets (tonnage and %)
A3.43	Foundry orders (excluding sleepers) divided between products, 1875-1939

A3.44 Chair orders apportioned as A3.41A, 1875-1929
A3.45 Foundry output (tons), 1928-30, 1936-60, divided between various products , from Output Books
A3.46 Summary of foundry output/sales, 1929-60 (weight, %), divided between various products
A3.47 Foundry production (tons), 1929-39, from Sales Day Books, divided between various products
N.B. No analysis of foundry sales by market of destination may usefully be compiled after 1929. Pole bases were largely for export, largely through intermediaries, and other products were primarily for domestic consumption.

FINANCIAL STATISTICS
(Sources: Private ledgers, D/AF 14-15, and Private Ledger 3, with Evans of Leeds PLC; supplemented by minute books, D/AF 6-10, and annual reports and accounts, D/AF 121-126, where appropriate)

A3.48A Wages as % of sales, 1884-1962
A3.48B Wates as % of costs of production, 1952-62
A3.49 Summary wages as % of sales, 1884-1959
A3.50 Sales of Anderston Foundry, Glasgow (1884-1931), divided by department (£)
A3.51 Average sales, Glasgow (1884-1929) (£)
A3.52 Average sales, Glasgow (1884-1929) (% and index)
A3.53 Average sales, Middlesbrough (1884-1962), divided by department (£)
A3.54 Average sales, Middlesbrough (1884-1962), (£)
A3.55 Average sales, Middlesbrough (1884-1962), (% and index)
A3.56 Departmental trading results, Glasgow (1884-1932), (profit/loss), (£)
A3.57 Average trading profits, Glasgow (1884-1929), (£)
A3.58 Average trading profits, Glasgow (1884-1929) (index and %)
A3.59 Average Glasgow profits as % of sales
A3.60 Glasgow profits as % of sales, annual, by department, 1884-1932
A3.61 Departmental trading results, Middlesbrough (1884-1962), (£ and index)
A3.62 Average trading profits, Middlesbrough (1884-1962), (£)
A3.63 Average trading profits, Middlesbrough (1884-1962), (index and %)
A3.64 Average Middlesbrough profits as % of sales
A3.65 Middlesbrough profits as % of sales, annual, by department, 1884-1962
A3.66 Average sales overall apportioned Glasgow/Middlesbrough (1884-1929)
A3.67 Commissions paid and received, by department, 1884-1952
A3.68 Commissions received as % of sales, 1884-1952
A3.69 Capital, profits and return on capital, 1884-1963
A3.70 Profits, 1945-62, as restated under revised accounting conventions
A3.71 Expenditure on new plant and machinery, 1915-59
A3.72 Annual dividends on ordinary stock
A3.73 Share price

MISCELLANEOUS

A3.74 Summary of membership of principal cartels

General Notes

When figures for the return on capital for a year ending 30 June x are given, this is a return on the capital stated at 1 July x - 1.

Production statistics are based entirely on years running 1 April - 31 March. 6 months of foundry production records excepted, there are no later figures than 31 March 1960. To incorporate these figures as fully as possible, a series of five year averages is broken by one six year term to coincide with the Second World War.

Financial statistics relate to years commencing 1 July and terminating 30 June until 1893. A nine month accounting period is used for 1893/4 and thereafter the financial year from 1 April - 31 March.

Orders for all classes of sleeper passed through the foundry order books as did orders for various fittings for sleepers. In consequence it is not possible to apportion orders (to 1929) between the foundry and the sleeper shop, whilst orders executed in the bolt shop are understated.

A3.1A PARTNERS' CAPITAL (£) (averaged at 30 June)

1854-58	41200	1855-59	46640
1859-63	52170	1859-64	53920
1864-68	67600	1864-69	73360
1868-73	57200	1869-74	50980
1874-78	70008	1874-79	89041
1879-83	130932	1879-84	145863

A3.1B % RETURN ON PARTNERS' CAPITAL (TABLE A3.7 related to A3.1A)

1854-59	31.1
1859-64	23.7
1864-69	58.2
1869-74	70.3
1874-79	42.7
1879-84	43.3

A3.2 RETURN ON CAPITAL

(Profit attributable to partners: <u>not</u> trading profit)

	% of Partners' Capital	% of Total Capital Employed
30.6.1854	n/a	n/a
30.6.1855	9.24	n/a
30.6.1856	49.30	n/a
30.6.1857	38.92	n/a
30.6.1858	41.62	n/a
30.6.1859	28.18	n/a
30.6.1860	31.46	n/a
30.6.1861	22.25	n/a
30.6.1862	12.06	n/a
30.6.1863	28.68	n/a
30.6.1864	18.75	n/a
30.6.1865	39.89	n/a
30.6.1866	34.23	n/a
30.6.1867	78.35	n/a
30.6.1868	65.18	n/a
30.6.1869	64.46	n/a
30.6.1870	71.90	n/a
30.6.1871	115.26	61.35
30.6.1872	61.48	23.94
30.6.1873	31.39	25.09
30.6.1874	63.11	53.30
30.6.1875	74.33	55.83
30.6.1876	42.57	33.43
30.6.1877	25.84	20.26
30.6.1878	41.72	35.08
30.6.1879	39.08	33.01
30.6.1880	38.32	29.75
30.6.1881	41.23	32.94
30.6.1882	37.03	26.93
30.6.1883	62.32	36.01
30.6.1884	35.48	19.52

A3.3 CAPITAL OF PARTNERSHIP MEMBERS

	£			%		
	Muirs	Houldsworths	Bunten	Muirs	Houldsworths	Bunten
AT 30.6.1854	6494	1800	-	26.5	73.5	-
AT 30.6.1859	17940	34816	-	34.0	66.0	-
AT 30.6.1864	19691	41816	-	32.0	68.0	-
AT 30.6.1869	35294	57802	7225	39.1	52.9	8.0
AT 30.6.1874	23137	30312	5747	39.1	51.2	9.7
AT 30.6.1879	46357	35402	22602	44.4	33.9	21.7
AT 30.6.1884	74537	59738	44741	41.6	33.4	25.0

A3.4 CAPITAL (£): represented by Glasgow and Middlesbrough Operations

	Glasgow	Middlesbrough	Total
at 30.6.1874	59195	-	59195
1875	68892	n/a	(68892)
1876	70938	14211	85149
1877	60651	35238	95889
1878	53883	37031	90914
1879	59232	45129	104361
1880	58207	53359	111566
1881	81523	53490	135013
1882	71679	75956	147635
1883	68767	87320	156087
1884	?	?	179015

A3.5A DRAWINGS BY PARTNERS, (averaged p.a.) Excludes M.A. Muir's salary

	Muirs	Houldsworths	Bunten	Total
1.7.1853-30.6.1858	971	4548	-	5519
1858- 1963	6305	12243	-	18548
1863- 1868	14305	20528	-	34833
1868- 1873	21967	29398	2803	54168
1873- 1878	12368	12495	5080	29943
1878- 1883	19701	15969	10618	46288
1854- 1859	2829	8134	-	10963
1859- 1864	5412	8563	-	13975
1864- 1869	16118	21708	-	37826
1869- 1874	21770	29898	3063	54731
1874- 1879	12131	11895	5918	29944
1879- 1884	20579	16736	11370	48685

Excludes £5,000 paid by Muir to Bunten in January 1869 and repaid as to £3,892 in 1870.

A3.5B DRAWINGS AND SALARY OF M.A. MUIR (p.a.)

1.7.1853-30.6.1858	£1051
1858- 1863	£6905
1863- 1868	£15185
1868- 1873	£22967
1873- 1878	£13368

M.A. Muir's salary: £400 p.a. 1.7.57 - 30.12.60; £800 p.a. 1.1.61 - 30.6.66; £1000 p.a. 1.7.66 - 31.12.78; £450 p.a. 1.1.79 - death 1.1880

A3.5C DRAWINGS BY PARTNERS - SPECIMEN DECADE

	Total	As % of profit and loss	As % of previous year's profit and loss	Muir's % of all drawings
1.7.1858-30.6.1859	32290	161.4	174.5	28.8
1859- 1860	21220	127.9	106.1	6.7
1860- 1861	19340	171.1	116.5	62.4
1861- 1862	1425	18.6	12.6	100.0
1862- 1863	18468	116.4	240.9	39.7
1863- 1864	9422	89.6	59.3	51.2
1864- 1865	38917	158.6	370.0	34.4
1865- 1866	8010	45.8	32.6	30.1
1866- 1867	24458	48.9	139.8	26.8
1867- 1868	92408	150.8	184.6	47.0
1868- 1869A	24337	56.0	39.7	56.9
1868- 1869B	29337	67.6	47.9	

A Excludes £5,000 drawn by Muir to be paid to Bunten's capital account;
B Includes it

A3.6A TRADING PROFITS

(£ p.a.)	Foundry	Machine Shop	Sleeper Yard	Middlesbrough
1.7.1853-30.6.1858	9206	3076	-	-
1858- 1863	12348	4340	-	-
1863- 1868	26138	13550	-	-
1868- 1873	34140	17051	-	-
1873- 1878	26645	4618	3359	n/a
1878- 1883	29020	7691	5366	12690
1.7.1854-30.6.1859	12306	2997	-	-
1859- 1864	9908	4453	-	-
1864- 1869	32615	15948	-	-
1869- 1874	31072	15086	-	-
1874- 1879	25712	4627	3218	n/a
1879- 1884	30026	8164	6392	18540

Excludes profits on sale of Londonderry and Enniskillen Railway stock and profits of Brass Foundry closed c.1859/60 of £100 p.a.
Commission income from Eddingtons (1850s-60s) cannot be apportioned.

A3.6B MAKEUP OF TRADING PROFITS %

	Foundry	Machine Shop	Sleepers	Middlesbrough
1853-1858	75.0	25.0	-	-
1858-1863	74.0	26.0	-	-
1863-1868	65.9	34.1	-	-
1868-1873	66.7	33.3	n/a	-
1873-1878	76.9	13.4	9.7	n/a
1878-1883	53.0	14.0	9.8	23.2
1854-1859	80.4	19.6	-	-
1859-1864	69.1	30.9	-	-
1864-1869	65.7	34.3	-	-
1869-1874	67.3	32.7	n/a	-
1874-1879	76.8	13.8	9.4	n/a
1879-1884	47.6	12.9	10.1	29.4

A3.7A PROFIT AND LOSS ATTRIBUTABLE TO PARTNERS (£ p.a. averaged)

		lowest	highest
1.7.1853-30.6.1858	11335	2362	18461
1858-1863	14287	7667	20001
1863-1868	33775	10517	61269
1868-1873	42426	15176	64942
1873-1878	33513	22000	44000
1878-1883	52706	35530	92000
1.7.1883-30.6.1884	55386 (net of £49,317 bad debts (Vienna Elevated Railway and after adding £23,151 for increased value of property)		
1.7.1854-30.6.1859	12817	2362	20001
1859-1864	12390	7667	16596
1864-1869	39355	17502	61269
1869-1874	40191	15176	64942
1874-1879	34172	22000	44000
1879-1884	56637	40000	92000

A3.8 TRADING PROFITS as % return on Partners' Capital: Glasgow/Middlesbrough

	Glasgow	Middlesbrough
1.7.1876-30.3.1877	32.36	18.75
1877-1878	55.99	n/a
1878-1879	54.44	19.24
1879-1880	65.81	11.41
1880-1881	75.48	9.47
1881-1882	42.00	30.64
1882-1883	89.12	39.15
1883-1884	60.88	41.71

A3.9 TRADING PROFITS as % return on Partners' Capital (averages)

1.7.1854-30.6.1859		37.3	
1851-	1864	27.5	
1864-	1869	71.8	(excludes Middlesbrough profits)
1869-	1874	80.7	(1874-79)
1874-	1879	41.8	
1879-	1884	48.2	

A3.10 TRADING PROFITS AS % OF SALES: Glasgow

		Foundry	Machine Shop	Sleeper
1.7.1853-30.6.1858		11.9	9.7	
1858-	1863	10.2	11.6	
1863-	1868	17.5	16.0	
1868-	1873	21.0	17.1	
1873-	1878	20.3	16.8	16.8
1878-	1883	15.3	24.0	13.2
1.7.1854-30.6.1859		11.7	10.0	-
1859-	1864	9.5	11.5	-
1864-	1869	19.6	16.9	-
1869-	1874	18.9	16.9	-
1874-	1879	20.4	18.2	13.3
1879-	1884	14.4	24.0	15.5

A3.11 SALES: Glasgow

		£ p.a. Foundry	Machine Shop	Sleepers	% Foundry	Machine Shop	Sleepers
1.7.1853-30.6.1858		77550	31860	-	70.9	29.1	-
1858-	1863	121285	37280	-	76.5	23.5	-
1863-	1868	149500	84760	-	63.8	36.2	-
1868-	1873	162350	99740	A	62.0	38.0	-
1873-	1878	131460	27390	19080	73.9	15.4	10.7
1878-	1883	188940	32050	40612	72.2	12.3	15.5
1.7.1854-30.6.1859		104600	29880	-			
1859-	1864	104215	38780	-			
1864-	1869	165140	94620	-			
1869-	1874	158940	89520	B			
1874-	1879	126290	25470	23520			
1879-	1884	280280	34010	41310			

Notes: A = £9,000 sold in 1872/3 (first year)
B = £30,500 sold in first two years
Foundry includes South Dock (£131,360 sales, 1869/70 - 1871/2)
Middlesbrough foundry sales £61,286-1876/7 compared with Glasgow foundry £103,733. Other figures not available for Middlesbrough

A3.12 IRON FOR GLASGOW FOUNDRY (includes South Dock), i.e. approx. output figures

1.7.1858-	30.6.1863	c.21800 tons p.a.	1.7.1859-	30.6.1864	c.19800 tons p.a.
1863-	1868	c.26400 tons p.a.	1864-	1869	c.30000 tons p.a.
1868-	1873	c.34600 tons p.a.	1869-	1874	c.31800 tons p.a.
1873-	1878	c.23700 tons p.a.	1874-	1879	c.25200 tons p.a.
1878-	1883	c.40500 tons p.a.	1879-	1884	c.44600 tons p.a.

Maximum 54200 tons 1882/3 or 64875 tons 1869/70 including South Dock
Minimum 6270 tons 1872/3

A3.13 ANALYSIS OF OWNERSHIP: ANDERSTON FOUNDRY CO. LTD.

	Directors	Share-holders	Direct-ors	% of shares held by largest holder	3 largest holders	6 largest holders	Direct-ors families	'Partner-ship' families	Ex-directors & their families	Employees & their families
1.9.1889	4	16	46.13	31.67	54.17	71.39	65.5	83.3	-	-
1.9.1890	4	16	46.13	31.67	54.17	71.39	65.5	83.3	-	-
1.9.1891	4	16	46.13	31.67	54.17	71.39	65.5	83.3	-	-
1.9.1892	4	16	46.13	31.67	54.17	71.39	65.5	83.3	-	-
1.9.1893	4	16	46.13	31.67	54.17	71.39	65.5	83.3	-	-
1.6.1894	4	17	46.13	31.67	54.17	71.39	65.5	83.3	-	1.17
1.6.1895	4	18	46.13	31.67	54.17	71.39	65.5	83.3	-	1.17
1.6.1896	4	18	46.13	31.67	54.17	71.39	65.5	83.3	-	1.17
1.6.1897	4	18	46.13	31.67	54.17	71.39	65.5	83.3	-	1.17
1.6.1898	4	18	46.13	31.67	54.17	71.39	65.5	83.3	-	1.17
1.6.1899	4	18	46.13	31.67	54.17	71.39	65.5	83.3	-	1.17
1.6.1900	3	17	39.67	31.67	54.17	71.39	65.5	83.3	-	1.17
1.6.1901	3	17	39.67	31.67	54.17	71.39	39.67	83.3	-	1.17
1.6.1902	3	18	20.92	31.67	54.17	73.08	39.67	83.3	-	1.17
1.6.1903	4	20	34.25	16.67	59.03	77.39	39.67	68.33	-	1.17
1.6.1904	4	20	34.25	16.67	44.44	71.75	47.17	38.33	-	2.83
1.6.1905	4	20	34.25	16.67	44.44	71.75	47.17	38.33	-	2.83
1.6.1906	4	23	30.58	16.67	44.44	71.75	47.17	38.33	-	2.83
1.6.1907	4	23	30.58	16.67	44.44	69.72	43.67	68.33	3.00	3.33
1.6.1908	4	23	31.83	16.67	44.44	69.72	43.67	68.33	3.00	3.33
1.6.1909	4	26	33.97	16.67	44.44	69.72	44.92	68.33	3.00	2.33
1.6.1910	4	26	33.97	16.67	44.44	69.72	43.25	64.03	3.00	2.83
1.6.1911	3	28	21.06	16.67	44.44	69.72	43.25	64.03	3.00	2.83
1.6.1912	3	34	19.42	16.67	44.44	69.72	21.73	64.03	3.00	2.67
1.6.1913	3	34	19.42	16.67	44.44	61.05	20.92	64.03	5.64	2.67
1.6.1914	3	47	19.57	16.67	44.44	61.05	20.92	64.03	5.64	2.67
1.6.1915	3	47	19.57	16.67	44.44	61.21	21.31	59.83	5.64	2.67
1.6.1916	3	50	19.57	16.67	44.44	61.21	21.31	59.83	5.64	2.67
1.6.1917	3	n/a	20.74	16.67	44.44	61.21	21.31	59.75	5.64	2.67
1.6.1918	3	n/a	20.74	16.67	44.44	61.21	23.13	52.84	5.64	3.68
1.6.1919	3	n/a	8.91	16.67	42.77	59.69	23.13	52.84	5.64	3.68
1.6.1920	4	n/a	9.14	16.67	42.77	59.69	23.13	52.84	5.64	3.68
1.6.1921	4	n/a	9.84	16.67	42.77	59.69	23.06	52.84	5.64	3.48
1.6.1922	4	n/a	10.04	16.67	42.77	59.69	23.76	52.19	5.64	3.48
1.6.1923	4	n/a	10.37	16.67	42.77	59.69	23.96	52.19	5.64	3.62
1.6.1924	4	n/a	11.01	16.67	42.77	59.69	24.30	52.19	5.64	3.62
1.6.1925	4	n/a	11.34	16.67	42.77	59.69	25.10	52.19	5.64	3.62
1.6.1926	4	n/a	11.34	16.67	42.77	59.69	25.76	49.0	5.71	3.70
1.6.1927	4	74	11.34	16.67	42.77	59.69	25.76	49.0	5.71	3.70
1.6.1928	7	75	10.44	16.67	42.77	55.53	26.32	49.0	5.71	3.70
1.6.1929	7	78	11.27	16.67	40.28	51.94	15.70	47.33	18.67	3.38
1.6.1930	6	75	10.73	16.67	40.00	51.67	15.70	47.33	18.67	3.38
1.6.1931	5	78	7.23	16.67	40.00	51.67	13.62	47.05	23.71	1.98
1.6.1932	5	77	7.23	16.67	40.00	51.67	8.04	47.05	28.80	1.98
1.6.1933	5	74	7.49	16.67	40.00	51.67	8.04	47.05	28.80	1.98
1.6.1934	5	74	11.00	16.67	40.00	51.67	8.30	47.05	28.80	1.98
1.6.1935	5	72	11.07	16.67	40.00	51.67	15.14	47.05	22.31	2.01
1.6.1936	5	74	12.41	16.67	40.84	52.51	15.30	48.05	21.31	2.01
1.6.1937	5	76	12.57	16.67	40.84	52.42	17.28	47.10	19.75	2.01
1.6.1938	5	75	12.69	16.67	40.84	51.80	17.48	47.10	18.75	2.01
1.6.1939	5	84	14.09	16.67	40.84	51.80	17.61	47.10	18.75	2.03
1.6.1940	5	90	14.56	16.67	40.84	52.10	20.50	43.07	18.75	2.40
1.7.1943	4	93	10.14	16.67	25.08	35.90	21.95	43.07	17.78	2.67
1.7.1946	4	94	9.48	16.67	25.08	35.90	17.64	42.47	20.75	2.78
1.7.1949	4	n/a	n/a	16.67	25.08	35.90	12.90	42.69	25.19	2.68
1.3.1951	4	n/a	n/a	16.67	25.08	35.90	14.29	52.69	25.19	2.68
1.7.1953	5	108	9.74	16.67	25.08	35.97	15.24	41.88	25.19	2.62
1.3.1958	4	144	9.62	5.56	25.08	35.60	16.68	40.82	25.19	n/a
1.6.1962	3	147	6.88	5.56	15.11	25.66	20.98	35.32	24.41	n/a
					15.11	25.39	16.58	32.10	29.10	3.87

Notes:

(a) Partnership families: Houldsworths, Muirs, Buntens; J.C. Bunten sr. and the Houldsworth directors are credited with their own holdings in the "Directors" column and in both the "Partnership" and "Directors and their Families" headings for all of their families' holdings. After their retiral, these holdings appear only in the "Partnership" column and not with ex-"Directors".

(b) Employees includes Tubby but not Macnee.

(c) Ex-directors = those directors not of Partnership families. J.C. Bunten jr. is classed thus, viz as worker, then director then ex-director. While he is a director only his personal shareholding and not that of the La Terrieres is included in the "Directors and their Families" column. Likewise the Harveys are treated as directors not a partnership family.

(d) The entire Houldsworth family holding is counted in when a member of that family serves as a director.

(e) Muir and Dawson trusts split 1939-40.

(f) Sowerby's own shares (65) are listed under the headings of Directors' and subsequently ex-Directors' shares until the division of the Muir holdings in 1939/40. His qualifying shares lent him by the Muir trusts are deducted from the Partnership heading from 1928 to 1934 inclusive.

(g) Shares held in trust are apportioned to real owners as far as possible, e.g. bank nominee holdings.

(h) G.W. Dawson and A.K.L. Harvey are taken under "Directors and their Families" not under employees. All Dawson/Edwards and Harvey/Chrisp family holdings also appear under that heading.

(i) The 1958-62 changes result primarily from Cargill's death and the increase under employees through the purchases of Turvey and Gracie of Macnees.

(j) The division of shares into smaller units in the 1950s seems to have improved the marketability of shares and hence the number of holders as well as easing the subdivision of existing holdings.

(k) In 1953/4 10 holders owned 48.3% of the shares; 26 owned 75.8%.

Sources: D/AF 127-135

A3.14 SHARES OWNED (including family and legatees)

	Bunten	Muir	Houlds-worth	Dawson	Robert-son	Dren-nan	Harvey	Tubby	Fall	Har-die	Car-gill	Morris	Cunn-ing-ham	Livesey/ Henderson	T.R. Watt etc.	Cowen	Barker etc.	J. Camp-bell	J. Watt	Adcock
1.9.85	9500	7750	7750	1200	1200	-	-	-	-	-	-	-	-	-	750	500	-	-	-	
86	9500	7750	7750	1200	1200	-	-	-	-	-	-	-	-	500	750	500	250	-	-	-
87	9500	7750	7750	1200	1200	-	-	-	-	-	-	-	-	500	750	500	250	-	-	-
88	9500	7750	7750	1200	1200	-	-	-	-	-	-	-	-	500	750	500	250	-	-	-
89	9500	7750	7750	1200	1200	-	-	-	-	-	-	-	-	500	750	500	250	-	-	-
90	9500	7750	7750	1200	1200	-	-	-	-	-	-	-	-	600	750	500	600	-	-	-
91	9500	7750	7750	1200	1200	-	-	-	-	-	-	-	-	600	750	500	600	-	-	-
92	9500	7750	7750	1200	1200	-	-	-	-	-	-	-	-	600	750	500	600	-	-	-
93	9500	7750	7750	1200	1200	-	-	-	-	-	-	-	-	600	750	500	600	-	-	-
1.6.94	9500	7750	7750	1200	1200	-	-	-	-	-	-	-	-	600	750	500	100	-	-	-
95	9500	7750	7750	1200	1200	-	200	-	-	-	-	-	-	900	750	500	100	-	-	-
96	9500	7750	7750	1200	1200	-	200	-	-	-	-	-	-	900	750	500	100	-	-	-
97	9500	7750	7750	1200	1200	-	200	-	-	-	-	-	-	900	750	500	100	-	-	-
98	9500	7750	7750	1200	1200	-	200	-	-	-	-	-	-	900	750	500	100	-	-	-
99	9500	7750	7750	1200	1200	-	200	-	-	-	-	-	-	900	750	500	100	-	-	-
1.6.1900	9500	7750	7750	1200	1200	-	200	-	-	-	-	-	-	900	750	500	100	-	-	-
01	9500	7750	7750	1800	-	600	200	-	-	-	-	-	-	900	750	500	100	-	-	-
02	9500	7750	7750	1800	-	600	200	-	-	-	-	-	-	900	750	500	100	-	-	-
03	5250	7750	7750	4000	-	1900	500	150	-	-	-	-	-	900	750	500	100	-	-	-
04	5250	7750	7750	4000	-	1900	500	150	-	-	-	-	-	900	750	500	100	-	-	-
05	5250	7750	7750	4000	-	1900	500	150	-	-	-	-	-	900	750	500	100	-	-	-
06	5500	7750	7750	4050	-	900	800	150	-	300	-	-	-	900	750	500	100	-	-	-
07	5500	7750	7750	4050	-	900	800	150	-	300	-	-	-	900	750	500	100	-	-	-
08	5675	7750	7750	4050	-	900	1000	150	300	300	-	-	-	900	375	500	100	-	-	-
09	6042	7750	6458	4200	-	900	1275	300	550	300	-	-	-	900	375	500	100	-	-	-
10	6042	7750	6458	4200	-	900	1275	300	550	300	-	50	-	900	375	500	100	-	-	-
11	6042	7750	6458	4200	-	900	1275	300	550	300	-	50	-	900	375	500	100	-	-	-
12	5792	7750	6458	4200	-	900	1275	300	800	300	-	50	-	900	375	500	100	-	-	-
13	5792	7750	6458	4200	-	900	1275	300	800	300	-	50	-	900	375	500	100	-	-	-
14	5792	7750	5199	4250	-	900	1342	300	800	300	-	50	-	900	375	433	100	629	-	-
15	5792	7750	5199	4250	-	900	1342	300	800	300	-	50	-	900	375	433	100	629	-	-
16	5792	7750	5175	4250	-	900	1342	300	800	300	-	50	-	900	375	433	100	629	-	-
17	5792	7750	3102	4250	-	900	1375	375	1275	300	70	50	-	900	375	433	100	871	-	-
18	5792	7750	3102	4250	-	900	1375	375	1275	300	70	50	-	900	375	433	100	871	-	-
19	5792	7750	3102	4250	-	900	1375	375	1275	300	70	50	-	900	375	433	100	871	-	-
20A	5792	7750	3102	4250	-	900	822	375	1275	300	570	50	-	900	375	433	100	871	-	-
21	5792	7750	2908	4290	-	900	992	375	1275	300	570	50	-	900	375	433	100	871	64	-
22	5792	7750	2908	4290	-	900	1052	375	1275	300	570	60	10	900	375	433	-	871	64	-
23	5792	7750	2908	4390	-	900	1052	375	1275	300	570	60	10	900	375	433	-	871	64	-
24	5792	7750	2908	4390	-	900	1242	375	1325	300	570	60	10	700	375	433	-	871	64	-
25	5792	6792	2908	4390	-	920	1242	375	1525	300	570	60	35	700	375	433	-	871	64	-
26	5792	6792	2908	4390	-	920	1242	375	1525	300	570	60	35	700	375	433	-	871	84	-
27A	5792	6792	2908	4390	-	920	1412	375	1525	300	570	60	35	700	375	433		871	84	-
28	5792	6542	2908	3890	-	900	1412	375	1525	300	450	560	165	700	375	433		871	347	-
29	5792	6542	2908	3890	-	900	1412	375	1525	-	450	560	165	700	375	433		871	347	-
30	5792	6542	2874	3890	-	1020	1412	375	1525	-	715	610	245	700	-	433	-	871	691	-
31	5792	6542	2874	3890	-	1020	1412	375	1525	-	715	610	245	700	-	433	-	871	541	-
32	5792	6542	2874	3890	-	1020	1412	375	1525	-	715	610	245	700	-	433	-	871	541	-
33	5792	6542	2874	3890	-	1020	1412	375	1525	-	715	610	323	700	-	433	-	871	541	-
34	5792	6607	2874	3890	-	1020	1412	375	625	-	938	848	440	700	-	433	-	871	903	-
35	5792	6607	2874	3890	-	1020	1412	375	625	-	950	848	450	700	-	433	-	871	931	-
36	5400	6607	2589	3890	-	1020	1538	375	550	-	1065	961	560	700	-	411	-	871	1061	-
37	5100	6607	2589	3890	-	1020	1538	375	550	-	1080	976	575	600	-	411	-	871	1076	-
38	5100	6607	2589	3890	-	1020	1538	375	550	-	1080	993	575	600	-	394	-	871	1076	-
39	5100	5398	2589	3890	-	1020	1748	375	550	-	1130	1300	800	600	-	394	-	871	1408	20
40	5100	5398	2589	3600	-	1020	1763	375	550	-	1140	1440	835	600	-	394	-	871	1543	30
43	5100	5218	2589	3600	-	1020	1808	375	550	-	1150	1440	880	600	-	394	-	871	1543	40
46	5100	5218	2589	3600	-	1020	1808	375	550	-	1150	1440	900	600	-	194	-	871	1543	408
49	5100	5218	2589	3600	-	1020	1883	375	550	-	1150	1440	1000	600	-	173	-	871	1543	354
51	5100	5218	2346	3600	-	1020	1942	375	550	-	1205	1440	1080	600	-	173	-	871	1543	413
53	5100	5200	2046	3600	-	1020	1942	377	550	-	1205	1440	1080	600	-	151	-	871	c1465	399
58D	3433	5116	2046	3712	-	1020	2433	921	550	-	1337	40	1620	600	-	151	-	871	c1465	576
62	3433	4835	1363	3652	-	1020	2433	921	550	-	1337	40	1620	600?	-	c.95	-	591	c1465	576

Sources: D/AF 127-135

Notes: A = 500 lent by Harvey to Cargill to qualify him. A.K.L.
Harvey sells his shares.
Cargill returns 170 shares in 1927 to the Harveys

B = Adcock was lent 260 shares by Cargill, 1943-49 to qualify him, these have not been included.
Cunningham lends Tubby shares, 1952-54 for similar reasons.

C = Figures for J. Watt and family are approximate: various nominee holdings sub Albyn Trust, Charlotte Trust were subject to complex arrangements within the Watt family for tax avoidance.

D = Note increase in Dawson family holding by acquisition.

N.B. Morris shares sold June 1955.
1953-62 figures calculated in terms of old capital.
From 1946 it is increasingly difficult, in the absence of comprehensive records, to trace the descent of certain holdings.

Bunten holding includes J.C. Bunten jr.

A3.15A INVESTMENTS & RESERVES (£)

	Deposit Receipts (Bank of Scotland)	Government Stock	Local Authority Loans (C)	Caledonian Railway Loans	Other	Reserve Fund	Interest received/ Investment income
At							
30.6.1886	77000	-	-	-	-	17146	10851E
1887	25000	-	-	-	-	25146	1645
1888	55000	-	-	-	-	23066	926
1889	20000	-	-	-	50556A	25000	2325F
1890	85000	-	-	-	-	25000	1345
1891	70000	-	-	40000	-	25000	3375
1892	71000	-	-	-	-	25000	1687
1893	94000	-	-	-	-	25000	1255
31.3.1894	70000	-	-	-	-	25000	991
1895	82000	-	-	-		20000	978
1896	86000	-	-	-	-	20000	754
1897	126000	-	-	-	-	25000	872
1898	n/a	-	n/a	n/a	n/a	25000	985
1899	n/a	-	n/a	n/a	n/a	25000	1554
1900	n/a	-	n/a	n/a	n/a	25000	2033
1901	68000	-	25000	-	-	25000	1468
1902	59000	-	25000	25000	-	25000	1757
1903	28000	-	40000	20000	-	25000	1880
1904	53000	-	20000	-	-	25000	1457
1905	50000	-	40000	-	-	25000	1139
1906	32000	-	30000	-	-	25000	1134
1907	30000	-	20000	-	-	25000	1379
1908	18000	-	-	40000	-	25000	1421
1909	13000	-	-	10000	10000	25000	617
1910	26000	-	-	25000	-	15000G	946
1911	21000	-	-	15000	-	15000	1013
1912	15000	-	-	-	-	15000	758
1913	-	-	-	-	-	15000	321
1914	-	-	-	-	-	15000	361
1915	-	-	-	-	-	25000	865
1916	n/a	n/a	n/a	n/a	n/a	27500	997
1917	n/a	9500	-	-	-	30000	1260
1918	n/a	79500	-	-	-	35000	2354
1919	n/a	24500	-	-	-	40000	4200
1920	-	-	-	-	-	40000	-1055
1921	n/a	n/a	n/a	n/a	n/a	50000	-1400
1922D	10000	40189	65000	-	-	60000	6828
1923	14000	140392	-	-	-	70000	6775
1924D	-	130517	-	-	-	70000	6673
1925	-	130517	-	-	-	70000	5392
1926	8000	130517	-	-	-	70000	Total 5649
1927H	-	130517	-	-	-	70000	Investments 5520
1928J	36000	116692	-	7903	6974	70000	5039
1929	49750	n/a	n/a	n/a	n/a	70000	206320 6991
1930K	11166	n/a	n/a	n/a	n/a	72500	167736 7182
1931	7900	n/a	n/a	n/a	n/a	70000	179106 6485
					Building Socs.		
1932	7308	n/a	n/a	n/a	9900	68000	188370 6730
1933	21800	n/a	n/a	n/a	9900	69000	170128 7013
1934	500	n/a	n/a	n/a	9900	70000	165021 7217
1935	10500	n/a	n/a	n/a	9900	70000	137225 6047
1936L	500	n/a	n/a	n/a	9900	68000	144283 4911
1937	-	n/a	n/a	n/a	9900	68000	122958 4275
1938	-	n/a	n/a	n/a	9900	68000	123068 2600
1939	-	n/a	n/a	n/a	9900	70000	123068 2658
1940	-	n/a	n/a	n/a	9900	62500M	123068 2708
1941	-	n/a	n/a	n/a	9900	62500	130494 1917
1942	-	n/a	n/a	n/a	9900	62500	120494 1107
1943	-	n/a	n/a	n/a	9900	64000	120494 1355
1944	-	n/a	n/a	n/a	9900	66000	120494 2288

A3.15A

A = To Watsons, iron merchants, secured on iron warrants

B = Scottish Widows' Fund. (of which W.H. Houldsworth had been a director)

C = Glasgow Corporation, Lanarkshire County Council etc. None to local authorities on Teesside

D = Capital profit on investments taken into profit and loss account

E = Plus £205 profit on sale of Buenos Ayres Rosario shares

F = Plus £6903 profit on 600 Anderston shares held in trust - in effect the dividends received therefrom

G = £10000 to bad debts

H = £10823 overdraft

J = New South Wales Govt. stock is "other"

K = £13580 overdraft

L = £11393 overdraft

M = £7500 from reserve to Investment Reserve Fund

The reduction in income from the mid 1930s reflects both an era of cheap money and the change in investment policy towards capital appreciation in preference to income.

A3.15B SPECIMENS OF INVESTMENTS, 1930s (at cost) (£)

	Insurance Shares	Government Stocks	Dominion Governments	Railway Debentures	Industrial Debentures	Deposit Receipts Building Societies	Other Loans	Total
30.9.1932	27918	19117	30037	15606	-	46150	30000	169028
30.4.1933	29474	19117	44784	7702	7150	30400	30000	168828
31.10.1933	32599	7497	58719	-	10200	18400	44777	172193

Source: D/AF 125

Other loans includes Local Authorities, Mersey Docks and Harbours, Leith Dock Commission and Trust and Loan Company of Canada

A3.15C INVESTMENTS, 1945-1959 (£)

	Insurance Shares	Government Stocks	Dominion Govern-ments	Railway Deben-tures	Industrial Debentures	Redeemable bonds Building Socs. Redeemable deposits etc.	Total	Reserve Funds	Net Income
31.3.1945	72915	21608	-	-	15971	9900	120394	68000	2346
1946	29449	21608	-	-	10568	9900	101525	77500	1645
1947	31438	21608	-	-	-	14900	67946	33500	1449
1948	31438	21608	-	-	-	14900	67946	38500	245
1949	31438	21608	-	-	-	14900	67946	41000	796
1950	54039	-	-	-	-	14900	68939	46000	1527
1951	54039	-	-	-	-	14900	68939	52500	2036
1952	39165	-	-	-	-	29908	69065	67500	2465
1953	58637	4272	-	-	-	19900	82809	82500	2884
1954	22543	27021	-	-	-	39900	89464	97500	5049
1955	13062	27021	-	-	400	54900	95383	110000	4980
1956	39772	92525	-	-	892	49900	183089	110000	9317
1957	53747	92525	-	-	892	20000	167164	135000	8641
1958	54122	92238	-	-	892	20000	167251	115000	7391
1959	47301	99062	-	-	892	15000	162256	115000	7694

Notes: 1948 overdrawn £27,092, 1949 overdrawn £15,542
Reduction in reserves frequently is the result of the capitalisation of reserves

Source: Minute books

A3.16 SALARIES (including directors' fees from 1947 where appropriate, and bonuses) (£)

	Managing Director	Director & Works Manager	Secretary	Other full-time directors	
1.7.1900	1500	800	500	-	
1.7.1905	2000	800	1000	-	
1.7.1910	2000	1000	460	540	Bunten jnr.
1.7.1915	2000	1200	485	-	
1.7.1919	2000	1500	600	-	
1920	2000	1000	650	900	Cargill
1921	3000	1300	650	1000	Cargill
1922	3000	1300	650	1000	Cargill
1923	3000	1750	650	1000	Cargill
1924	3000	1750	650	1000	Cargill
1925	3000	1750	800	1000	Cargill
1926	3000	1750	800	1000	Cargill
1927	3000	1750	800	1000	Cargill
1928	2447	1140	800	960-1066	Morris/Cunningham
1929	2250	1140	1050	1050	Morris
1930	2250	1200	1200	1200	Morris
1931	2250	1200	1200	-	
1932	2100	1120	1120	-	
1933	2100	1120	1120	-	
1934	2100	1120	1120	-	
1935	2100	1120	1120	-	
1936	2100	1120	1120	-	
1937	2200	1200	1200	-	
1938	2200	1200	1200	-	
1939	1500	1200	420	-	
1940	1750	1300	480	-	
1941	2000	-	540	-	
1942	2000	-	540	-	
1943	2000	945	610	-	
1944	2600	1150	621	-	
1945	2600	1150	731	-	
1946	2640	1190	750	-	
1947	3010	1610	750	-	
1948	3010	1660	700	-	
1949	3010	1910	850	-	
1950	3513	2263	975	-	
1951	3513	2263	1025	-	
1952	4398	2928	1140	2000	Tubby
1953	4473	2973	930	2252	Tubby
1954	4463	2963	1080	2663	Tubby

Source: D/AF 348

A3.17 IRON CONSUMED ANNUALLY (a rough guide to output) (tons)

	Glasgow Foundry	Middlesbrough (Foundry)
To 30.6.1885	42808	87256
1886	32509	78420
1887	18950	84270
1888	29485	69760
1889	19228	70180
1890	44416	84045
1891	6710	71945
1892	4200	17179
1893	3900	24297
31.3.1894	4287	19105
1895	8116	21622
1896	12823	47668
1897	8973	78554
1898	10012	44286
1899	9383	34451
1900	7235	27540
1901	9274	27995
1902	10622	27552
1903	8312	30105
1904	7928	43943
1905	6209	48923
1905	5555	43231
1907	6222	33586
1908	5310	35370
1909	5091	27088
1910	4198	21693
1911	4042	31475
1912	4591	22903
1913	5468	39261
1914	5134	49005
1915	5180	33051
1916	4925	22218
1917	4455	11717
1918	3011	17737
1919	2720	19106
1920	3240	25759
1921	2895	28861
1922	1643	24713
1923	1465	15076
1924	2712	13124
1925	1186	13966
1926	1007	7946
1927	365	8046
1928	658	6591

Source: D/AF 14-15

Note: (1) Iron purchased in one year may have been carried forward for use in the next

(2) Iron consumed in the foundry could have been as furnishings for another department of the business.

A3.18 SUMMARY OUTPUT FIGURES: MIDDLESBROUGH (tons)

	Foundry	Switches & Crossings	Sleepers	Bolts	Total
1.4.1908-31.3.1909	30127	n/a	10436	759	n/a
1910	20460	5870	14390	1540	42260
1911	n/a	n/a	n/a	n/a	n/a
1912	21835	5440	20475	1640	49390
1913	38920	5900	24760	2120	72700
1914	n/a	7205	n/a	n/a	25490
1919	n/a	n/a	n/a	n/a	31400
1920	n/a	n/a	n/a	n/a	38460
1921	32910	3653	16394	1189	54146
1922	21244	2553	13107	1462	38366
1923	16147	2492	16685	1420	36744
1924	13082	2929	16282	2278	34571
1925	12647	3386	9850	2387	28270
1926	10374	n/a	n/a	n/a	n/a

Source: D/AF 430-442, Anderston,Middlesbrough to Anderston, Glasgow. April each year in connexion with apportionment of overheads for annual accounts; D/AF 424-425, Anderston, Glasgow to Anderston, Middlesbrough, 26 February, 15 May and 9 June 1926; D/AF 494-495, Cargill/Harvey correspondence, 28 April 1924 and 1 March 1926.

Notes: In 1908/09 the figures include 5779 tons of tramway fixtures and 15317 tons of iron sleepers, but only 3947 tons of chairs.

These are the only figures shewing output of Switches and Crossings available for the period before 1929.

A3.19 GLASGOW BUSINESS, 1911-1915

Apart from D/AF 212, details of iron consumed, and various hints in commission accounts and order books the only means of working out what the Glasgow works was doing lies in the (incomplete) series of daily letters from Glasgow to Middlesbrough 1919-31 (D/AF 386-429 etc.) The laborious work of reconstruction, assuming all orders were reported, is outside the scope of this work. For the period for which Cargill sends monthly detailed reports to E. Dawson some reliable figures are available as hereunder.

(i) Machine Shop Orders - machinery only (£)

	(A) Winding Machinery	Wire Machinery	Textile Loons	Gas Engines	Air compressors/ Vacuum pumps	Steam Engines	Other
1911-12 (8 mos)	658	1555	1935	1275(B)	353	0	230
1912-13	999	1907	3151	3200	371	0	0
1913-14	291	904	1556	3070	1232	2540	1141
1914-15 (7 mos)	451	113	2035	0	961	1814	429

A = For wire and other textiles B = plus one gas engine with no definite price

(ii) Destination of above products (£)

	Scotland	Other U.K.	Export	Unknown
1911-12 (8 mos)	2668	2639(B)	674	0
1912-13	4762	2039	733	2400
1913-14	5527	3911	1085	211
1914-15 (7 mos)	3939	1502	362	0

(iii) Orders in hand, 20 April 1912

Locms £2067; gas engines £2005; other £795; Total £4867

For: Scotland, £2125: other U.K. £2331; export £412; Total £4867

(iv) Machine Shop Sales (overall) (£)

	Machinery	Coiled Keys	Unknown
1912-13 (10 mos)	15681	12038	1738
1913-14 (11 mos)	12626	7928	0

(v) Glasgow Foundry Production (tons)

	Jobbing	Stoker links	Chairs	Other
1912-13 (10 mos)	885	0	4251(A)	0
1913-14 (11 mos)	947	682	2796	103

A = including 757 for stock

A3.19 (cont.)

(vi) Glasgow Foundry Sales (£)

	Jobbing	Stoker links	Chairs	Other
1912-13 (10 mos)	10556	0	18769(A)	0
1913-14 (11 mos)	11389	4262	14386	736

A = including £2629 for stock

A3.20 SWITCHES AND CROSSINGS ASSOCIATION (SAXA) est. 1.12.1923; JUNCTION FISH PLATES ASSOCIATION (JFPA) est. 1.9.1934

(A) Business of SAXA (Anderston used one unit to equal one ton when calculating overheads)

Calendar year

1928	11741	1930	9126	1936	5057
1929	12782	1931	1467	1937	4151
		1932	203(6ms)	1938	2035
		1933	n/a	1939	2657
		1934	2167	1940	1241
		1935	2370		

(B) Division of Work (%)

SAXA

	1.1.1924	1.1.1927	1.1.1928	1932-34	1936-50	1.1.1951 and after	JFPA 1.9.1934
Anderston	30	28	26	32	24.5	27	43
Darlington	19	18	20	25	18.75	20.75	-
Summerson	19	18	20	-	18.75	20.75	24
Isca	19	18	17	21	16	18.5	19
Patent Shaft	13	12	12	14.5	12	-	-
White	-	6	5	7.5	5	6.5	14
Edgar Allen	-	-	-	-	5	6.5	-

Source: Anderston/Macnee correspondence wherein are (incomplete) monthly returns.

Notes: No geographical division of orders is possible. From mid 1932-34 the departure and return of Summersons complicates calculations

A3.21 SALES (£) OF SWITCHES AND CROSSINGS DEPARTMENT, Anderston Foundry

	Home	Home Railways	Other SAXA members	South Africa	South America (D)	Crown Agents (E)	Rhodesia/ Benguela etc.	India (F)	Other Export	British Companies Abroad	Contractors (R)
1.4.1929-31.3.1930	1698	65	-	27812	30851	138	211	2643	-	-	7441
1930- 1931	603	-	2	18738	16032	6262	3528	761	-	-	1513
1931- 1932	1756	5	84	-	512	2554	1375	806	-	755(L)	326
1932- 1933	2639	-	-	545(X)	216	871	538	1328	-	-	831
1933- 1934	1301	-	-	-	428	875	656	56	-	-	935
1934- 1935	1550	81	15	-	138	508	124	2776	7873(G)	886(M)	1940
1935- 1936	932	61	253	28860	20	3995	112	221	-	-	174
1936- 1937	2470	212	202	23290	315	1718	3356	2227	1098(H)	96(M)	891
1937- 1938	2944	46	2560(A)	14747	1674	5340	7722	1720	-	1971(M/N)	1437
1938- 1939	2502	383	202	24136	483	2362	22968	1566	-	451(M)	2208
1939- 1940	47716	3	4548	434	280	1201	7917	-	-	-	64
1940- 1941	45262	30	6371	3038	289	304	874	-	-	-	-
1941- 1942	97873	44	6549	-	631	46	656	-	-	-	-
1942- 1943	98457	2	8865	-	-	260	1330	-	-	-	-
1943- 1944	95968	32	9191	-	-	965	2068	-	-	-	-
1944- 1945	82463	-	4287	-	-	1019	3544	-	-	1520(M)	-
1945- 1946	12416	5	429	7050	342	1496	2380	-	-	2360(M)	13896
1946- 1947	10913	-	738	29448	909	5813	2244	-	-	598(M)	5358
1947- 1948	18960	8	989	6487	2267	9189	-	9264	-	-	2141
1948- 1949	14659	-	715	2070	5636	14986	-	13659	-	1120(M/P)	2757
1949- 1950	6059	-	2549	36866	3040	26845	-	6532	-	1973(Q)	720
1950- 1951	8670	-	1578	25267	73	15034	956	15583	-	605(M/N/Q/)	687(V)
1951- 1952	14779	101	1604	34197	1385	17611	743	22163	-	240 (N/Q)	3133(V)
1952- 1953	11449	-	1091	52415	5010	11163	23077	15560	-	1308(N/Q)	1320
1953- 1954	14965	-	1201	-	1795	61623	19955	4775	-	5122(L/N/Q/)	6746
1954- 1955	30129	-	1056	Iran (USC)	-	38790	40140	-	28127(I)	4947(L/N/Q/)	750(S)
1955- 1956	16516	-	3342	-	1547	31434	17192	7039	6223(I)	632(Q)	1387
1956- 1957	9240	-	26384(B)	87150	679	16146	283	-	-	2164(R)	455
1957- 1958	8931	-	217	161850	2027	64480(K)	200	551	32707(J)	3299(P/Q)	-
1958- 1959	24046	1854	60038(C)	329080	1400	37544	-	13725	8205(H)	698(Q)	-
1959- 1960	17814	-	11392(C)	-	-	34875	-	4718	818(H)	564(P/Q)	6877(T)

Source: Calculated from D/AF 221-240

(1) Output includes various small steel sleeper orders, 1936-39 and excludes the machining of castings for Davy & United Rolling Mills, a regular source of small orders in the 1930s.

(2) Crown Agents includes Iraq; India includes Burma etc.; Home includes War Office, which accounts for £468,000 of sales 1939/40 - 1944/45, inasmuch as the sales to home firms during the Second World War are frequently for the War Office and other service ministries.

(3) Home permanent way contractors are classified as home firms. Although part of Robert Hudsons' orders may be for home use, they are treated with "contractors" who are largely undertaking business abroad.

(4) Home Customers are principally Dorman Long; Ashmore, Benson, Pease (Power Gas); Liverpool Corporation (tramway fishplates); Carnald Engineering (Glasgow) and Priest Furnaces (industrial use).

(5) The information on weight of output is incomplete.

A = Summersons for Singapore Dock Yard (subcontract). Naturally the bulk of business from other SAXA firms is for export.
B = Summersons and Darlington Railway Plant for India (subcontract).
C = Darlington Railway Plant for New Zealand (subcontract).
D = Largely British owned lines. Some orders in late 1940s from Argentine state system.
E = Crown Agents might supply rails "free" to Anderston thus the sale price for their work, despite it being at a premium price, is similarly understated.
F = Post 1949 this is largely for Pakistan and Burma. T.I.S.C.O. executing most Indian domestic orders.
G = China
H = New Zealand
I = Australia
J = Turkey
K = £46000+ for Iraq
L = Sierra Leone Development Co.
M = Anglo Iranian Oil Co.
N = Whitehall Securities (Pearsons) for Latin America and Greece
P = Senna Sugar, Mozambique
Q = Lisbon Electric Tramways
R = Chiefly Hudsons; 1929-31 Hudsons/Paulings for Crown Agents/E. Africa/Dormans for Cyprus; others as marked and nothing for Hudson in such years. From 1940/41 to 1944/45 any contractor is assumed to be for home/war use
S = Cleveland Bridge
T = Wolfe Barry Consulting Engineers
USC = United Steel Companies
V = Paulings
X = S. African Company not the Railway Administration

A3.22A SUMMARY SWITCHES AND CROSSINGS SALES (£ p.a.)

	All Home	SAXA members	South Africa	South America	Crown Agents	Rhodesia etc.	India etc.	Other Export	British Cos. abroad	Contractors	SALES
1929-34	1613	17	9419	9608	2140	1262	1119	-	151	2209	27549
1934-39	2236	646	18207	526	2785	6856	1702	1794	681	1330	36763
1939-45	77975	6635	579	200	633	2732	-	-	253	n/a	88912
1945-50	12604	1084	16384	2439	11666	925	5891	-	1210	4974	57181
1950-55	16019	1306	22376	1653	28844	16974	11616	5625	2444	2527	109385
1955-60	15680	20275	Iran 115616	1131	36896	3535	5207	9591	1471	1644	211145

A3.22B SUMMARY SWITCHES AND CROSSINGS SALES
Percentages

	All Home	SAXA members	South Africa	South America	Crown Agents	Rhodesia etc.	India etc.	Other Export	British Cos. abroad	Contractors	SALES
1929-34	5.9	0.1	34.2	34.9	7.8	4.6	4.1	--	0.6	8.0	100
39	6.1	1.8	49.5	1.4	7.6	18.6	4.6	4.9	1.9	3.6	100
45	87.7	7.5	0.7	0.2	0.7	3.1	-	-	0.3	n/a	100
50	22.0	1.9	28.7	4.3	20.4	1.6	10.3	-	2.1	8.7	100
55	14.6	1.2	20.5	1.5	26.4	15.5	10.6	5.1	2.2	2.3	100
60	7.4	9.6	Iran 54.8	0.5	17.5	1.7	2.5	4.5	0.7	0.8	100

Source: D/AF 221-240

Notes: sales differ from those recorded in the final accounts due to the charging of one department by another of various works done etc. Rhodesia etc. includes Benguela; India etc. includes Pakistan and Burma.

A3.23 BOLT SHOP SALES (£)

	Home	A Home Rails	South Africa	South America	Crown Agents	Rhodesia/ Benguela etc.	India	B Other Exports	Contractors	Total
1929-30	30	7673	-	22630	770	15550	14643	6448	671	68410
1930-31	100	2592	1968	4860	2100	3186	15015	1935	897	32654
1931-32	65	5115	1972	637	1236	4755	15668	4471	6670(C)	40589
1932-33	45	2670	950	754	1638	726	6751	2267	-	15801
1933-34	6	2996	-	2073	914	2138	10692	2202	352	21373
1934-35	38	736	407	743	3412	1260	1888	2441	172	11096
1935-36	308	1546	13672	1524	1021	55	1076	4867	247	24316
1936-37	28	1487	12631	1024	193	1299	976	1029	305	18972
1937-38	78	323	13579	152	994	706	213	-	266	16311
1938-39	219	1110	5027	87	1497	986	477	-	39	9442
1939-40	4556	1045	1879	104	420	12	645	-	21	8682
1940-41	2138	868	10811	522	9279	185	-	-	D	23803
1941-42	5335	1091	3670	2127	636	-	-	-	D	12859
1942-43	33993	-	776	329	-	-	-	-	D	35098
1943-44	85432	14	-	-	-	-	-	-	D	85446
1944-45	56168	-	-	-	910	-	-	-	28	57 106
1945-46	27383	-	-	-	9006	8713	-	-	1577	46679
1946-47	1831	-	41351	-	4282	3155	-	-	1546	52165
1947-48	777	-	10034	19262	20632	1410	-	-	2370	54485
1948-49	1419	123	17206	861	6950	2608	-	-	2348	31515
1949-50	1995	-	14377	-	723	14237	-	1236(H)	4816	37384
1950-51	8222(G)	-	-	-	6764	6178	-	20899	-	42063
1951-52	749	-	-	-	2346	3510	-	26411	1181	34197
1952-53	9444	578	-	-	1896	-	-	33768	3340(J)	49026
1953-54	111110	-	-	-	12790	1380	-	4188	2369	131837
1954-55	564	-	-	-	55926	293	-	-	404	57187
1955-56	3240	-	-	-	17584	-	-	-	3865	24689
1956-57	5194	-	-	-	24209	-	-	-	298	29701
1957-58	2198	-	-	-	48177	-	-	8610	3942(E/F)	62927
1958-59	1905	-	-	-	41775	1133	-	-	E	44813
1959-60	1085	13	-	-	43954	5730	-	-	E	50782

Source: D/AF 220-240

Notes: Contractors include other members of SAXA and British-owned firms trading abroad.
Home includes War Office. Sales of scrap and furnishings to other departments excluded.
Particularly in the mid 1950s these latter are extensive, e.g. to the Switches and Crossings Dept. £4000 for Iran 1955/56; £3000 for Iraq (Crown Agents) in 1956/57; £4200 for the Crown Agents, 1957/8

A = Anchors apart, exclusively for the London and North Eastern Railway

B = Largely anchors for France/Belgium and Japan 1929-31. 1931/2 and 1935/6 is largely bolts etc. for China

C = Principally for the Sierra Leone Development Company

D = Contractors are undertaking domestic/service ministry business - included in "home" column

E = In 1957/8 - 1959/60 large orders from the Crown Agents for the East African Railways and Harbours and Nigeria were split between Anderston, GKN and Richardsons with each sub-contracting various portions to the others. (£69630 gross, £51737 net for Anderston). All is listed under the Crown Agents column

F = Largely Summersons and Darlington Railway Plant for sale in India and C. Africa

G = Ministry of Supply and Korean War account for increase and in subsequent years

H = 1950 and after all entries in this column are for Australia/Australian registered companies

J = 1952/3 Edgar Allen is the chief "contractor" with work for the Crown Agents and Argentine. Other Edgar Allen orders have unknown destinations - probably for export. The Sudan Light & Power Co., an associate of Dorman Long , is another prominent "contractor" customer of the early 1950s.

A3.24 BOLT SHOP ORDERS/PRODUCTION (tons)

		Home Firms	-------Home Rails------- Caledonion	North Eastern	Gt. Eastern (C)	Other (C)	South Africa (D)	South America	Crown Agents (D)	Rhodesia/ Benguela etc. (E)	India	Contractors (L)	Other Exports	Total
1.4.1886-31.3.1887		-	50	-	-	-	6	-	-	-	558	-	-	614
1887-	1888	-	-	-	-	-	28	813	-	-	595	43	-	1479
1888-	1889	1	120	-	-	-	64	502	-	-	469	12	-	1168
1889-	1890	-	122	-	-	-	89	1921	-	-	310	17	-	2459
1890-	1891	-	202	-	-	-	37	109	-	-	384	-	-	732
1891-	1892A	-	202	-	-	-	41	59	93	-	367	-	-	762
1892-	1893A	-	202	-	-	-	18	71	223	-	411	6	-	931
1893-	1894A	1	198	-	-	-	473	24	5	-	86	32	29	848
1894-	1895A	-	139	-	-	-	13	-	-	-	10	-	-	162
1895-	1896A	-	171	10	-	-	-	-	-	-	55	-	-	236
1896-	1897A	-	235	310	-	-	-	208	1	100	78	42	-	974
1897-	1898A	6	104	489	-	-	-	248	-	-	-	21	-	868
1898-	1899	3	318	325	13	-	-	-	1	-	139	-	-	799
1899-	1900	-	406	251	44	30	-	-	-	404	94	1	-	1230
1900-	1901	2	191	476	95	-	-	-	-	-	-	2	-	766
1901-	1902	-	349	2	62	-	-	-	-	14	47	-	-	474
1902-	1903	-	238	-	74	-	-	-	-	143	94	111	-	660
1903-	1904	-	55	-	60	-	-	-	38	121	540	-	-	814
1904-	1905	-	-	-	90	-	-	233	-	-	350	21	-	694
1905-	1906	-	-	-	128	-	-	64	22	-	-	-	-	214
1906-	1907	-	108	88	107	-	-	156	-	-	333	47	-	839
1907-	1908	-	-	70	164	-	-	14	416	19	55	-	-	738
1908-	1909	-	-	-	65	-	-	38	289	179	55	-	-	626
1909-	1910	-	-	-	-	-	484	243	7	319	126	-	-	1179
1910-	1911	-	-	-	-	-	66	339	34	68	158	65	-	730
1911-	1912	-	-	-	56	-	-	224	59	36	282	42	-	699
1912-	1913	-	91	-	237	-	-	558	56	186	112	13	-	1253
1913-	1914	-	89	328	134	3	147	33	15	27	138	1	-	915
1914-	1915	-	2	448	-	-	20	-	5	5	141	20	-	641
1915-	1916B	n/a	-	479	106	-	-	-	-	-	648	5	1	n/a
1916-	1917B	n/a	-		100	-	-	-	-	35	-	-	-	n/a
1917-	1918B	n/a	50	-	175	-	-	-	-	-	-	1	-	n/a
1918-	1919	331	100	274	260	51	-	100	-	14	-	37	-	1167
1919-	1920	-	55	216	-	60	-	-	-	171	70	-	-	572
1920-	1921	1	115	100	23	-	-	7	9	-	123	-	-	378
1921-	1922	1	180	371	-	75	-	200	98	-	40	-	-	965
1922-	1923	21	30	87	105	150	37	10	460	64	400	392	-	1756
1923-	1924	13	230	138	55	147	135	289	2	192	115	128	-	1444
1924-	1925	-	160	42	365	239	259	875	316	200	231	11	-	2698
1925-	1926	-	40	163	-	130	40	488	703	451	121	26	207	2369
1926-	1927	-	58	160	15	170	2	163	25	290	936H	11	27	1857
1927-	1928	4	-		235(G)		-	1464	253	227	1240H	19	68	3510
1928-	1929	1	-		40(G)		-	1474	214	243	597H	55	205	2829
1929-	1930	1			510		-	1325	29	647	707	18	306	3550
1930-	1931	4			147		114	288	95	140	866	41M	88	1783
1931-	1932	2			376		143	26	65	271	716	305M	247K	2151
1932-	1933	2			193		72	32	118	38	348	-	119	922
1933-	1934	0			223		-	128	59	180	574	20	149	1333
1934-	1935	2			52		18	28	226	55	82	4	160	617
1935-	1936	14			104		1016	68	53	3	72	5	274K	1609
1936-	1937	1			100		818	45	9	60	58	5	51	1147
1937-	1938	2			13		535	4	24	38	7	9	-	632
1938-	1939	6			49		224	3	244	31	17	1	-	575
1939-	1940	175			46		56	2	20	-	33	0	-	332
1949-	1950	29			-		182	-	7	173	-	68	-	459
1954-	1955	10			-		-	-	841	2	-	1	-	854
1959-	1960	11			-		-	-	304	48	-	178	-	541

Source: D/AF 221-240, 304-306

A = Brass bolts being finished for Admiralty, not accounted for

B = Excludes First World War special items, e.g. 1916-17, 70,000 Base Plate Punchings, 85,000 Steel Forged Plugs and 700 Wedges, all of unascertainable weight. Certain orders placed during the war may have been suspended for the duration and subsequently cancelled

C = All Great Eastern orders are secured via Macnees until the 1923 railway grouping. 'Other' is chiefly North British and Great North of Scotland

D = Natal, whose early orders were placed via the Crown Agents (to 1891) is classed under S. Africa

E = During the construction phase order for Rhodesia Railways and its stable mates were placed through Paulings, the near in-house contractor (see Chapters 3-4) and are classified under the Rhodesian column

F = Contractors includes British Firms operating abroad

G = All of London and North Eastern Railway

H = Large orders to Bengal Iron Co. (817 t.) for delivery over 3 years apportioned equally to each

J = Principally Rail Anchors for France, Belgium etc. Anchors are apportioned and not treated as subcontracts from the Anchor Co.

K = China, 247t, 1931/2; 239t, 1935/6. Chinese Govt. Purchasing Commission is subcontracted in theory but carved up in practice hence allocation to the "other exports" column in preference to "contractors"

L = Steel Sleeper Association work is apportioned and not treated as a sub-contract. Contractors includes Hudson of Gildersome, export members of SAXA, Anglo-Iranian Oil Company and the Sierra Leone Development Co.

M = of which 322 tons is for Sierra Leone Development Co.

Order books are used 1886-1929 (with delivery order dates and tonnages from 1893/4 determining the allocation of an individual order to a particular year(s)). From 1929 Sales Day Books are used. Steel sleeper keys were frequently booked through the Foundry Order Books as part of a larger contract. No attempt has been made to re-apportion these or similar minor fittings for iron sleepers to the Bolt Shop.

A3.25 RAIL ANCHORS

	Output (t)	A	B	C	D	E	F
1929-30	1085	50.5	77.5	28.0	100.0	34.0	30.6
1930-31	625	72.0	52.0	14.0	100.0	41.4	35.0
1931-32	750	95.5	100.0	0.0	0	40.8	35.0
1932-33	380	74.0	81.0	19.0	61.0	50.3	41.0
1933-34	330	95.0	54.5	0.5	1.5	33.5	24.0

Source: D/AF 221-225

A = % of output of Anchors which is sold to India
B = % of Bolt Shop exports to India represented by Anchors
C = % of output of Anchors which is sold to export markets not normally supplied, e.g. France, Japan, Belgium
D = % of Bolt Shop exports to markets as 'C' represented by Anchors
E = % of Bolt Shop sales represented by Anchors
F = % of Bolt Shop sales (t) represented by Anchors

A3.26A SUMMARY BOLT SHOP SALES (£)

	Home	Home Rails	South Africa	South America	Crown Agents	Rhodesia Benguela etc.	India	Other Exports	Contrac-tors	Total
1929-34	49	4209	978	6191	1332	5271	12554	3465	1718	35765
1934-39	134	1040	9063	706	1423	861	926	1667	206	16027
1939-45	31270	503	2856	514	1874	33	108	-	(8)	37162
1945-50	6681	25	16594	4025	8319	6025	-	247	2531	44447
1950-55	6018	116	-	-	15944	2275	-	17053	1459	42864
1955-60	2724	3	-	-	35140	1373	-	1722	1621	42583

A3.26B SUMMARY BOLT SHOP SALES %

	Home	Home Rails	South Africa	South America	Crown Agents	Rhodesia Benguela etc.	India	Other Exports	Contrac-tors
1929-34	0.1	11.8	2.7	17.3	3.7	14.6	35.1	9.7	4.8
1934-39	0.8	6.5	56.6	4.4	8.9	5.4	5.8	10.4	1.3
1939-45	84.2	1.3	7.7	1.4	5.0	0.1	0.3	-	(0.0)
1945-50	15.0	0.1	37.3	9.1	18.7	13.5	-	0.6	5.7
1950-55	14.0	0.3	-	-	37.2	5.3	-	39.8	3.4
1955-60	6.4	0.0	-	-	(58.2 ((82.5)	3.2	-	4.1	(28.1 ((3.8)

Source: D/AF 221-240

Notes: See Table A3.23 for detailed observations. Home includes War Office.

Contractors during the period 1939-45 except when other information is given are assumed to be acting for the service ministries etc. and are treated under the "Home" category in which War Office etc. direct orders are classified.

A = 1955-60 an ever larger portion of business was represented by subcontracts/supplying contractors and more of this was for Crown Agents' work. Thus 58.2% represents direct orders from the Agents but 82.5% their full share of business.

Rhodesia/Benguela includes railways owned by British companies within the Central African Federation and the Portugese African Colonies.

A3.27 SUMMARY BOLT SHOP OUTPUT (tons p.a.)

		---- Home Rails (B) etc. ----										
		Caled-onion	North Eastern	Great Eastern	Other	South Africa (A)	South America	Crown Agents	Rhod-esia/ Bengu-ela etc.	India	Contra-ctors/ Other exports	Total
1.4.1886-	31.3.89	57	-	-	-	33	438	-	-	541	18	1087
1889-	94	185	-	-	6	132	437	64	-	312	11	1145
1894-	99	193	227	3	2	3	91	-	20	56	13	608
1899-	1904	248	146	67	6	-	-	8	136	155	23	789
1904-	09	22	32	111	-	-	101	145	40	159	14	624
1909-	14	36	65	85	1	139	279	34	127	163	24	953
1914-	19	30	240	128	76	4	20	1	11	158	13	683
1919-	24	122	82	37	94	34	101	114	85	150	104	923
1924-	29	52		204	109	60	893	302	282	625	126	2653
1929-	34			291		54	365	73	188	641	304	1916
1934-	39			67		522	30	111	35	36	113	914

A3.27B SUMMARY OF BOLT SHOP OUTPUT %

	---- Home Rails (B) etc. ----									
	Caled-onion	North Eastern	Great Eastern	Other	South Africa (A)	South America	Crown Agents	Rhod-esia/ Bengu-ela etc.	India	Contractors/ Other exports
1886-1889	5.3	-	-	-	3.0	40.3	-	-	49.8	1.7
1889-1894	16.2	-	-	0.5	11.5	38.2	5.6	-	27.3	1.0
1894-1899	31.7	37.3	0.5	0.3	8.5	15.0	-	3.3	9.3	2.2
1899-1904	31.4	18.5	8.5	0.8	-	-	1.0	17.2	19.6	2.9
1904-1909	3.5	5.1	17.8	-	-	16.2	23.2	6.4	25.5	2.3
1909-1914	3.8	6.8	8.9	0.1	14.6	29.3	3.6	13.3	17.1	2.5
1914-1919	4.4	35.1	18.8	11.1	0.6	2.9	0.2	1.6	23.3	1.9
1919-1924	13.2	8.9	4.0	10.2	3.7	10.9	12.4	9.2	16.3	11.3
1924-1929	20		7.7	4.1	2.3	33.6	11.4	10.6	23.6	4.7
1929-1934			15.1		2.8	19.0	3.8	9.8	33.5	15.9
1934-1939			7.4		57.1	3.3	12.1	3.9	4.0	12.4

Sources:- D/AF 221-229, 304-306

Notes: Excludes various wartime special jobs (unquantifiable)
Orders are calculated from order books to 1929 - the dates and weights of delivery orders being used from 1893/94. From April 1929 Sales day books are used.
A small error through double counting in 1928/9 and 1929/30 may exist.

A = Natal is classed under S. Africa although its early orders were placed through the Crown Agents.

B = Very few orders were placed by home firms to 1939. The other home rails were chiefly the North British, Great North of Scotland and their successors, 1917-27.

A3.28A IRON AND STEEL SLEEPERS: Destination (% by weight)

	S. Africa	S. America	Crown Agents	Rhodesia Benguela etc.	India	Egypt	Other	War Office
1879-84	5.0	62.6	-	-	18.7	3.9	9.8	-
1884-89	2.5	47.6A	-	-	48.8	0.5	0.5	-
1889-94	30.1	27.4	0.1	-	41.8	0.4	0.3	-
1894-99	-	6.5	-	11.1	82.2	-	0.2	-
1899-1904	-	1.0	-	36.4	58.3	4.2	0.1	-
1904-09	-	24.2	6.5	11.6	57.6	0.1	0.1	-
1909-14	4.5	1.9	8.4	10.6	74.6	-	0.1	-
1914-19	NO USEFUL FIGURES AVAILABLE							n/a
1919-24	-	1.3	4.4	4.5	85.0	3.5	1.5	-
1924-29	-	0.1	19.8	48.5	16.1	13.8	1.8	-
1929-34	-	-	22.2	55.2	6.4	-	15.8	0.4
1934-39	-	-	51.0	10.4	2.8	-	35.8B	-
1939-45	-	-	-	-	3.1	-	2.0	94.9
1945-50	46.5	-	19.6	23.6	8.9	-	1.1	-
1950-55	14.3	-	36.3	23.6	7.8	7.8	6.0	4.3
1955-60	13.8	-	43.7	13.3	25.5	-	3.7	-

Source: D/AF 221-240, 265-270

Subcontracts from other S.S.A. members are apportioned where possible.
Where unidentified they are listed under "other".

A = Further S. American orders in 1888/90 unquantifiable
B = Largely China. For detail see Table 3.30 et seq.

A3.28B SLEEPERS % by weight (subcontracts not apportioned)

	S. Africa	S. America	Crown Agents	Rhodesian	India	Egypt	Other	War Office	Other S.S.A. firms
1929-34	-	-	22.2	45.8	6.4	-	15.8	0.4	9.4
1934-39	-	-	51.0	10.4	2.8	-	1.9	-	33.9
1939-45	-	-	-	-	3.1	-	2.0	94.9	-
1945-50	46.5	-	19.6	18.2	8.9	-	1.1	-	5.6
1950-55	12.3	-	36.3	15.3	7.8	7.8	1.2	4.3	15.0
1955-60	13.8	-	41.9	13.3	1.2	-	1.7	-	28.1

A3.29A BALANCE OF ORDERS. Iron Sleepers and Steel Sleepers (and fittings)

	Steels (tons p.a.)	Steel %	Cast/Wrought Iron (tons p.a.)	CCWI%	Total
1889-94	5730	15.0	32441	85.0	38171
1894-99	5120	13.1	34011	86.9	39131
1899-1904	8080	43.9	10335	56.1	18415
1904-09	13070	41.2	18665	58.8	31735
1909-14	13863	42.5	18763	57.5	32646
1914-19	4521	57.6	3323	42.4	7844
1919-24	10713	56.5	8250	43.5	18964
1924-29	9303	92.0	805	8.0	10108

Source: D/AF 265-272

Notes: No iron sleepers (but some fittings) supplied hereafter.
Various S. American Orders unquantifiable 1889/90.
Excludes large orders for light weight sleepers supplied to the French Government during the First World War - unquantifiable

NB Before the First World War the only large orders of steel sleepers for India were: 1889-94 23276 tons; 1900-01 2250 tons; 1912-14 31500 tons

Iron sleepers are heavier than steel sleepers

No earlier figures possible: steel sleepers not invented until 1885

A3.29B Iron Sleepers/Steel Sleepers

	Steel %	Iron %
1919-20	40.7	59.3
1920-21	89.1	10.9
1921-22	37.6	62.4
1922-23	73.7	26.3
1923-24	85.3	14.7

A3.30 IRON/STEEL SLEEPERS (Orders) BY WEIGHT, 1875-1929 (tons)

	S. Africa	S. America	Crown Agents	Rhodesia Benguela etc.	India	Egypt	British Companies & Contractors		Home Rails
1.4.1875-31.3.1876	-	-	-	-	730	-	-		-
1876- 1877	-	-	-	-	17088	-	-		-
1877- 1878	-	-	-	-	-	-	-		-
1878- 1879	-	606	-	-	7470	-	-		-
1879- 1880	-	306	-	-	97	2015	-		-
1880- 1881	-	831	-	-	53	1259	3469(A)	3444	-
1881- 1882	-	8799	-	-	-	-	-	5098	-
1882- 1883	6606	22979	-	-	8169	1051	51(A)	59	-
1883- 1884	-	49678	-	-	16297	821	867(A)	-	-
1884- 1885	4598	27771	-	-	41768	713	1958(A)	337	-
1885- 1886	-	36526	-	-	26373	363	8		-
1886- 1887	6	18521	-	-	73668	1239	152		-
1887- 1888	3334	57493	-	-	52618	-	-		-
1888- 1889	4249	86723	-	-	38439	84	74		-
1889- 1890	20731	46954(C)	-	-	7631	-	11		-
1890- 1891	34238	2129	-	-	17210	652	-		-
1891- 1892	2376	973	-	-	12043	-	-		-
1892- 1893	-	703	-	-	17526	-	321		-
1893- 1894	8	1452	238	-	25305	28	322		-
1894- 1895	-	1270	-	2702	20357	-	265		141(B)
1895- 1896	-	5339	-	-	48800	37	-		-
1896- 1897	-	4668	-	17452	53010	-	-		-
1897- 1898	1	253	-	-	17509	-	-		-
1898- 1899	-	1069	61	1626	21074	22	-		-
1899- 1900	-	472	-	15702	6456	85	-		-
1900- 1901	-	18	-	4396	13891	-	-		-
1901- 1902	-	-	-	483	17205	-	10		-
1902- 1903	-	364	-	7728	1668	32	6		-
1903- 1904	-	15	-	5214	14461	3786	96		-
1904- 1905	-	816	506	7213	14528	104	158		-
1905- 1906	-	659	2028	281	26488	-	-		-
1906- 1907	-	34065	-	577	28558	-	-		-
1907- 1908	-	1833	7631	-	8005	-	-		-
1908- 1909	-	1057	174	10250	13746	-	-		-
1909- 1910	7308	-	-	4007(G)	9038	-	-		-
1910- 1911	-	759	9000	1949	17855	-	-		100 (E)
1911- 1912	-	311	2522	10494	25946	-	-		-
1912- 1913	-	2002	152	-	39711	-	-		-
1913- 1914	-	11	2074	870	29168	-	-		-
1914- 1915(D)	-	-	4124	-	15810	-	-		-
1915- 1916(D)	-	190	572	-	9063	-	-		-
1916- 1917(D)	-	-	-	-	-	-	-		-
1917- 1918(D)	-	51	-	7	-	-	-		-
1918- 1919(D)	-	-	-	-	9402	-	1		-
1919- 1920	-	1170	-	-	18847	3279	-		-
1920- 1921	-	28	4177	-	4016	-	-		-
1921- 1922	-	-	-	-	30944	-	1462		-
1922- 1923	-	-	-	4278	11008	-	-		-
1923- 1924	-	-	-	7	15604	-	-		-
1924- 1925	-	-	500	4148	25	-	421(F)		-
1925- 1926	-	48	3128	6064	4896	5804	164(F)		-
1926- 1927	-	-	605	1587	642	1153	213(F)		-
1927- 1928	-	-	5760	11735	-	-	100)F)		-
1928- 1929	-	-	-	970	2563	-	-		-

Source: D/AF 265-271

Notes: The Middlesbrough Foundry Order Books on which the above is based occasionally contain details of orders executed in Glasgow. Glasgow ceased to make whole sleepers after the early 1890s but could manufacture cast iron pots thereafter.
Contracts for Rhodesia Railways etc. from Paulings are classified under Rhodesia.

A = For Réunion, French colony, order by or through Livesey and Henderson

B = Caledonian

C = For 3 large S. American orders no tonnage was specified. These and other S. American orders were suspended and/or cancelled following the Baring Crisis

D = Unspecified military orders excluded. 4583 tons (+) were manufactured for the British and French Governments 1914/15, 2610 tons (+) 1915/16 etc. but many such orders are unquantifiable

E = London Underground

F = Anglo-Persian Oil Co. and 136 t. in 1922

G = 1952 t. of this may have been sublet to Bolckows

A3.31 STEEL SLEEPERS BY WEIGHT, 1929-60 (tons)

	H.M. Government	S. Africa	S. America	Crown Agents	Rhodesia. Benguela etc.	India	Egypt/ Sudan	British (K) Companies	Other SSA members	Total
1929-30	-	-	-	3629	5076	1003(A)	-	326	-	10034
1930-31	64	-	-	-	-	34	-	1506	1532(B)	3136
1931-32	-	-	-	-	1971	-	-	750	-	2721
1932-33	-	-	-	-	79	-	-	-	-	79
1933-34	-	-	-	-	370	-	-	-	-	370
1934-35	-	-	-	-	945	253(A)	-	-	-	998
1935-36	-	-	-	1832	-	-	-	-	2430(C)	4262
1936-37	-	-	-	-	-	-	-	176	653(C)	829
1937-38	-	-	-	-	-	-	-	-	-	0
1938-39	-	-	-	2813	-	-	-	-	-	2813
1939-40	-	-	-	-	-	-	-	-	-	0
1940-41	1380	-	-	-	-	-	-	-	-	1380
1941-42	2279	-	-	-	-	-	-	-	-	2279
1942-43	1755	-	-	-	-	-	-	-	-	1755
1943-44	1353	-	-	-	-	-	-	-	-	1353
1944-45	392	-	-	-	-	233	-	154	-	779
1945-46	-	4718	-	-	-	3230	-	490	-	8438
1946-47	-	6873	-	-	4047	-	-	165	-	11085
1947-48	-	7900	-	4530	-	-	-	-	-	12430
1948-49	-	3576	-	2314	4085	-	-	-	142(B)	10117
1949-50	-	4424	-	4747	2621	2023	-	-	3144(B)	16958
1950-51	-	3080	-	4434	-	8683	-	-	6500(B)	22897
1951-52	-	3177	-	8782	-	-	-	394	2831(B)	15184
1952-53	2351	7538	-	8321	1508	-	3040	-	-	22758
1953-54	2511	-	-	9736	7765	-	1987	878	5206(F) 134(E)	28218
1954-55	-	-	-	9329	7827	-	3659	129	2087(H) -	23031
1955-56	-	7350	-	4518	4936	-	-	419	1440(G) -	18663
1956-57	-	-	-	3487	2353	-	-	465	3635(J) 1414(E)	11354
1957-58	-	-	-	8937	2591	-	-	-	7659(J) 60(D)	19247
1958-59	-	3355	-	6962	-	958	-	411	7499(LJ) -	19185
1959-60	-	-	-	8530	457	-	-	-	80(E)	9067

Source: D/AF 221-245

A = Wrought Iron
B = Dorman Long for Rhodesia Railways - Anderston to finish
C = Dorman Long for China
D = Dorman Long for unknown destination
E = Steel Company of Wales for unknown destination
F = For Greece (for United Steel)
G = For Iraq (for United Steel)
H = For S. Africa (for United Steel)
I = For Indian(for United Steel)
J = For Pakistan (for United Steel)
K = Anglo Iranian Oil Co; Sierra-Leone Developments Co.

A3.32 SLEEPERS (tons p.a.)

	S. Africa	S. America	Crown Agents	Rhodesia etc.	India	Egypt	Other	Total
1.4.1879-84	1321	16509	-	-	4923	1029	2598	26380
1884-89	2437	45407	-	-	46573	480	506	95403
1889-94	11471	10442A	48	-	15943	136	131	38171
1894-99	0	2520	12	4356	32150	12	81	39131
1899-04	-	174	-	6705	10736	780	22	18415
1904-09	-	7686	2068	3664	18265	21	31	31735
1909-14	1462	619	2750	3464	24359	-	20	32654
1914-19	-	48	939	1	6855	-	n/a	n/a
1919-24	-	240	835	857	16084	656	292	18964
1924-29	-	10	1999	4901	1625	1393	180	10108

Certain orders unquantifiable, 1889-90

Source: D/AF 265-271

A3.33 STEEL SLEEPERS etc. SALES (£)

Notes as Table 3.31

	H.M. Govt.	S. Africa	S. America	Crown Agents	Rhodesia Benguela etc.	India	Egypt	British Companies	Other S.S.A.	Total
1929-30	-	-	-	43178	46345	10103	82826	3150	-	102776
1930-31	751	-	-	-	-	388	-	10919	2298	14356
1931-32	-	-	-	-	17930	-	-	5435	-	23365
1932-33	-	-	-	-	711	-	-	-	-	711
1933-34	-	-	-	-	3497	-	-	-	-	3497
1934-35	-	-	-	-	7551	2183	-	-	-	9734
1935-36	-	-	-	13971	-	-	-	-	4070	18041
1936-37	-	-	-	-	-	-	-	2402	1042	3444
1937-38	-	-	-	-	-	-	-	-	-	0
1938-39	-	-	-	29194	-	-	-	-	-	29194
1939-40	-	-	-	-	-	-	-	-	-	0
1940-41	32905	-	-	-	-	-	-	-	-	32905
1941-42	59636	-	-	-	-	-	-	-	-	59636
1942-43	40191	-	-	-	-	-	-	-	-	40191
1943-44	31171	-	-	-	-	-	-	-	-	31171
1944-45	8993	-	-	-	-	4600	-	4484	-	18077
1945-46	-	91105	-	-	-	64528	-	14379	-	170012
1946-47	-	136339	-	-	80264	-	-	5038	-	221641
1947-48	-	168126	-	93009	-	-	-	-	-	261135
1948-49	-	89731	-	60148	99299	-	-	-	842	250020
1949-50	-	115061	-	128175	70948	52596	-	-	18759	385089
1950-51	-	82539	-	115297	-	221732	-	-	35581	455149
1951-52	-	111601	-	325160	-	-	-	13819	19864	470444
1952-53	85613	324123	-	358406	66323	-	82826	-	-	917291
1953-54	92774	-	-	371405	316042	-	53910	31381	221629	5779 1092920
1954-55	20591	-	-	338231	275990	-	98910	1577	66860	- 802159
1955-56	-	257825	-	162862	287269	-	-	16042	56784	- 780782
1956-57	-	-	-	168047	104454	-	-	24991	144000	66071 507563
1957-58	-	-	-	421927	123739	-	-	-	298207	3133 847006
1958-59	-	179688	-	324419	-	43100	-	21384	363553	- 932144
1959-60	-	-	-	359561	19892	-	-	-	3470	382923

Source: D/AF 321-340

Note: Tonnage calculations enhance and monetary ones diminish the value of the various finishing contracts for Dorman Long

A3.34A ANALYSIS OF SALES OF STEEL SLEEPERS (%)

	H.M. Govt.	S. Africa	S. America	Crown Agents	Rhodesia Benguela etc.	India	Egypt	British Companies	Other S.S.A.
1929-34	0.52	-	-	29.84	47.33	7.25	-	13.48	1.59
1934-39	-	-	-	71.45	12.50	3.61	-	3.98	8.46(A)
1939-45	95.0	-	-	-	-	2.53	-	2.46	-
1945-50	-	46.61	-	21.84	19.45	9.09	-	1.51	1.52
1950-55	5.32	13.86	-	40.36	17.61	5.93	6.30	1.25	9.36
1955-60	-	12.68	-	41.64	15.52	1.25	-	1.81	27.10

A = China

A3.34B SUBCONTRACTS APPORTIONED

	H.M. Govt.	S. Africa	S. America	Crown Agents	Rhodesia Benguela etc.	India	Egypt	British Companies	Other Exports	Unknown
1929-34	0.52	-	-	29.84	48.92	7.25	-	13.48	-	-
1934-39	-	-	-	71.45	12.50	3.61	-	3.98	8.46	-
1939-45	95.0	-	-	-	-	2.53	-	2.46	-	-
1945-50	-	46.61	-	21.84	20.97	9.09	-	1.51	-	-
1950-55	5.32	15.65	-	40.36	19.09	5.93	6.30	1.25	5.93	0.16
1955-60	-	12.68	-	43.29	15.52	24.60	-	1.81	0.00	2.11

Notes: Iraq taken into Crown Agents Heading. India includes Pakistan

Crown Agents business (Table A3.33 related to A3.28) is comparatively more expensive postwar and particularly so pre-war.

A3.35 ANALYSIS OF ORDERS SECURED BY SSA 1945-30.9.1950

Place	Tonnage	%
S. Africa	130626	38.45
S. America	670	0.19
Crown Agents[A]	77279	22.73
Rhodesia/Benguela etc.	66945	19.71
India	16927	4.98
Pakistan	38438	11.31
Sudan	4357	1.33
Iran; Anglo-Iranian Oil	567	1.14
Other	3900	0.16
	339709	100

Source: D/AF 578. Peat Marwick's SSA file, 1951

A = Includes Ceylon and Palestine

A3.36 S.S.A. ORDERS, 1945-31.10.1948 (tons)

Orders	North East Coast	Colvilles	Steel Co. of Wales	United Steel	Total	%
Crown Agents	11456	5783	6808	9607	33654	13.22
India	3971	5954	3404	3393	16722	6.57
Rhodesia etc.	25288	12387	20271	9988	67934	26.68
S. Africa	32745	29642	42098	25708	130193	51.12
Sudan	-	2335	2022	-	4357	1.71
Iran	567	-	-	-	567	0.22
Other	-	-	845	394	1239	0.48
	74028	56101	75448	49090	254667	100
%	29.07	22.03	29.62	19.28		100
Allocation %	30.00	20.00	30.00	20.00		100

Source: D/AF 568, Dorman Long file, 15 Feb. 1949

A3.37 STEEL SLEEPER ASSOCIATION - Analysis of pre-war orders (Calendar year)

	Tonnage	Crown Agents & Empire	India	Other (Iran/China)
1936	9955	23%	14%	63%
1937	19654	100%	-	-
1938	8033	100%	-	-
1939	4770	100%	-	-

Crown Agents include 13568 t. for Iraq, 1937

Source: D/AF 565, Peat Marwick's S.S.A. file, 13 March 1947

A3.38 STEEL SLEEPER ASSOCIATION - Business, 1920-24

	SSA Orders (tons)	Anderston Orders (tons)	Distribution of Anderston Orders	
1920/1	34761	7418	80.5	India
1921/2	50488	12291	9.9	Crown Agents
1922/3	67829	13049	9.2	Rhodesia etc.
1923/4	71711	13306	0.4	Other

Source: D/AF 19

A3.39 STEEL SLEEPER ASSOCIATION - Business 1928-39 (Calendar year)

	Pool Tonnage	Other Tonnage	Total	Anderston's[A] Tonnage	Pool (£)
1928	52670	11041	63711	7873	20941
1929	21915	7071	27996	6554	9166
1930	37084	6108	43192	4950	13310
1931	34682	15510	50192	3792	8380
1932	6972	4168	11140	316	2082
1933	3359	71	3430	420	1019
1934	3060	-	3060	-	920
1935	9327	560	9887	2767	n/a
1936	9848	673	10521	176	n/a
1937	15772	-	15772	-	3702
1938	10026	-	10026	3522	3008
1939	4822	-	4822	-	n/a

A Excludes subcontracts

Source: D/AF 19, Commission Accounts; Peat Marwick returns

A3.40A WORK PASSING THROUGH FOUNDRY ORDER BOOKS (Occasional orders for unusual products, largely unquantifiable, are excluded)

tons p.a.

	Chairs	Fencing etc.	Segments	Tramway Furnish-ings	Fish-[B] plates	Links	Sleepers	Total
1879-84	24106A	2933	-	-	-	-	26308	53419
1884-89	9648A	2014	-	-	-	-	95403	107065
1889-94	7279	1715	-	-	-	-	38171A	47165
1894-99	18469	1524	300	-	-	-	39131	62124
1899-04	13980	1682	7825	2028	-	-	18415	43980
1904-09	12086	3207	147	6011	670	-	31735	53856
1909-14	9274	1981	2609	2277	3794A	366	32646	52962
1914-19	10881	418	1194	91	287	2048	n/a	n/a
1919-24	11974	228	-	184	884	405	18964	32639
1924-29	3948	616	504	87	2968	53	10108	18284C

A = Plus further orders unquantifiable

B = Fishplates are finished for Dorman Long . Tonnage enhances their value just as a monetary calculation of sales would diminish it

C = Drain pipes and light castings excluded as unquantifiable

All sleeper orders are booked through the Foundry Order Books even when not made in the foundry itself

A3.40B WORK PASSING THROUGH FOUNDRY ORDER BOOKS (Occasional orders for unusual products, largely unquantifiable, are excluded)

%

	Chairs	Fencing etc.	Segments	Tramway Furnish-ings	Fish-B plates	Links	Sleepers
1879-84	45.2A	5.5	-	-	-	-	49.4
1884-89	9A	1.9	-	-	-	-	89.0
1889-94	15.4	3.6	-	-	-	-	81.0
1894-99	29.7	2.5	4.8	-	-	-	63.0
1899-04	31.8	3.8	17.9	4.6	-	-	41.9
1904-09	22.4	6.0	0.3	11.2	1.3	-	58.9
1909-14	17.5	3.7	4.9	4.3	7.2	0.7	61.6
1914-19	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1919-24	36.7	0.7	-	0.6	2.7	1.2	58.1
1924-29	21.6	3.4	2.7	0.5	16.2	0.3	55.3 C

Source: D/AF 265-270

Notes as A3.40A

A3.41A ANALYSIS OF CHAIR ORDERS

tons p.a.

	Caled-onian	North British	(London &) North Eastern	Southern	Great East-ern	Other Home Rails	India	S. Africa	S. America	Other	Total
1879-84	900	5354	400	7325	2947	5850	107	-	-	1222	24105
1884-89	5275	1524	200	261	765	286	654	504	14	165	9648
1889-94	5020	100	800	464	-	605	70	118	92	12	7281
1894-99	11732	725	800	914	120	323	689	1154	2001	10	18468
1899-04	5650	133	1160	2510	740	845	472	750	-	1720	13980
1904-09	6100	1763	1940	-	-	532	1032	43	675	-	12086
1909-14	2760	1506	1900	1170	23	905	167	-	646	212	9289
1914-19	2978	2014	1324	300	400	3073	362	-	-	1390	11841
1919-24	2929	744	2233	1942	53	2599	82	972	10	412	11976
1924-29	1705	n/a	208	600	n/a	1028	1	213	107	5	3867

(i) *Running contracts for the Great Western, North Eastern etc., 1879-82 unquantifiable and excluded*

(ii) *"Southern" comprises the companies subsequently absorbed into the Southern Railway*

(iii) *North Eastern, North British and Great Eastern, inter alia, absorbed into the L.N.E.R. North Eastern figures relate to it alone to 1924 and then to the L.N.E.R.*

(iv) *Caledonian includes Highland and Glasgow and South Western from 1924.*

A3.41B ANALYSIS OF CHAIR ORDERS

%

	Caledonion	North British	(London &) North Eastern	(London &) Southern	Great Eastern	Other Home Rails	India	S. Africa	S. America	Other
1879-84	3.7	22.2	1.7	30.4	12.2	24.3	0.4	-	-	5.1
1884-89	54.7	15.8	2.1	2.7	7.9	3.0	6.8	5.2	0.1	1.7
1889-94	68.9	1.4	11.0	6.4	-	8.3	1.0	1.6	1.3	0.2
1894-99	63.5	3.9	4.3	5.0	0.7	1.8	3.7	6.3	10.8	0.1
1899-04	40.4	0.9	8.3	18.0	5.3	6.1	3.4	5.4	-	12.3
1904-09	50.5	14.6	16.0	-	-	4.4	8.5	0.4	5.6	-
1909-14	29.7	16.2	20.5	12.6	0.2	9.8	1.8	-	7.0	2.3
1914-19	25.1	17.0	11.2	2.5	3.4	26.0	3.1	-	-	11.7
1919-24	24.5	6.2	18.6	16.2	0.5	21.7	0.7	8.1	0.1	3.4
1924-29	44.1	n/a	5.4	15.5	n/a	26.6	0.0	5.5	2.8	0.1

Source: D/AF 265-270

A3.42 FENCING AND POLE BASES

	TOTAL (tons p.a.)	S. Africa	Crown Agents	India	Other	% S. Africa	Crown Agents	India	Other
1879-84	2933	-	-	2195	738	-	-	74.8	25.2
1884-89	2014	8	14	1992	-	0.4	0.7	98.9	-
1889-94	1715	90	158	1413	54	5.3	9.2	82.3	3.2
1894-99	1524	-	272	1148	104	-	17.8	75.3	6.8
1899-04	1682	-	217	1447	18	-	12.9	86.0	1.1
1904-09	3207	19	49	3139	-	0.6	1.5	97.9	-
1909-14	1981	537	3	1441	-	27.1	0.2	72.7	-
1914-19	418	-	-	418	-	-	-	100.0	-
1919-24	228	-	-	228	-	-	-	100.0	-
1924-29	616	342	-	36	238	55.5	-	5.8	38.7

Source: D/AF 265-270

A3.43 FOUNDRY ORDERS (tons) - excluding sleepers

	Chairs	Fencing Posts	Tunnel[A] Segments	Tramway[B] Fittings	Stoker[C] Links	Fish[D] Plates	Other[F]	Pipes, Manholes, Domestic Lt. Castings
1.4.1875-31.3.1876	1273	-	-	-	-	-	-	-
1876- 1877	15408	-	-	-	-	-	-	-
1877- 1878	18011E	-	-	-	-	-	900	-
1878- 1879	24731E	-	-	-	-	-	-	-
1879- 1880	24558E	1834	-	-	-	-	50	-
1880- 1881	34126	-	-	-	-	-	629	-
1881- 1882	27763E	2040	-	-	-	-	445	-
1882- 1883	22675	8531	-	-	-	-	105G	-
1883- 1884	10555	2258	-	-	-	-	-	-
1884- 1885	15630	1027	-	-	-	-	-	-
1885- 1886	10157	2120	-	-	-	-	-	-
1886- 1887	7528	3331	-	-	-	-	-	-
1887- 1888	11444	1361	-	-	-	-	69	-
1888- 1889	3509	2230	-	-	-	-	3G	-
1889- 1890	3300	1785	-	-	-	-	-	-
1890- 1891	9981	921	-	-	-	-	-	-
1891- 1892	10501	1981	-	-	-	-	G	-
1892- 1893	6062	2806	-	-	-	-	-	-
1893- 1894	6550	1085	-	-	-	-	G	-
1894- 1895	10574	1439	6000	-	-	-	G	-
1895- 1896	17274	406	-	-	-	-	G	-
1896- 1897	5755	1676	9000	-	-	-	1126G	-
1897- 1898	27026	718	-	-	-	-	G	-
1898- 1899	31716	3380	-	-	-	-	504G	-
1899- 1900	13830	2682	13000	-	-	-	G	-
1900- 1901	2840	675	-	-	-	-	G	-
1901- 1902	21938	1083	-	3112	-	-	G	-
1902- 1903	9184	1296	11327	4185	-	-	G	-
1903- 1904	22108	2674	15050	2845	-	-	110G	-
1904- 1905	19379	3595	735	323	-	-	G	-
1905- 1906	13978	6780	-	11609	-	-	G	-
1906- 1907	8624	2623	-	6992	-	3000	34G	-
1907- 1908	6793	2736	-	1819	-	-	-	-
1908- 1909	11656	298	-	9318	-	350	-	-
1909- 1910	5423	2632	-	3880	-	-	G	-
1910- 1911	11501	1168	-	3291	236	1755G	G	-
1911- 1912	9871	2494	-	1675	-	6912	G	-
1912- 1913	9694	2168	6950	1024	-	5880G	-	-
1913- 1914	9961	1440	6099	1517	1595	2986	-	-
1914- 1915	19126	1788	4630	389	719	1435	GJ	-
1915- 1916	6865	214	735	4	2280	-	GJ	-
1916- 1917	4780	85	169	20	3964	-	GJ	-
1917- 1918	7077	-	437	-	2516	-	GJ	-
1918- 1919	21559	3	-	44	759	-	GJ	-
1919- 1920	15853	408	-	201	1489	191	-	-
1920- 1921	13254	40	-	439	34	-	183GH	-
1921- 1922	5428	221	-	180	396	-	-	-
1922- 1923	8789	379	-	72	74	1055	-	-
1923- 1924	16553	93	-	27	34	3175	8G	-
1924- 1925	6473	85	2500	205	35	4436	4G	-
1925- 1926	5753	5	-	132	56	6431	419H	n/a
1926- 1927	4650	91	18	3	54	3418	G	[1933]K
1927- 1928	1790	1438	-	30	54	544	G	[2050]K
1928- 1929	1072	1465	-	63	64	-	G	[c930]K

/Cont...

A3.43 FOUNDRY ORDERS (tons) - excluding sleepers (continued)

	Chairs	Fencing Posts	Tunnel[A] Segments	Tramway[B] Fittings	Stoker[C] Links	Fish[D] Plates	Other[F]	Pipes, Manholes, Domestic Lt. Castings
1.4.1929-31.3.1930	2167	1348	1020	-	256	-	-	1542
1930- 1931	1743	1643	1210	-	49	-	-	3721
1931- 1932	3186	1170	-	-	62	-	-	2023
1932- 1933	1900	139	-	-	33	-	-	128
1933- 1934	1010	326	-	-	124	-	-	751
1934- 1935	3321	1506	-	-	95	-	-	1500
1935- 1936	3185	560	-	-	68	-	-	1962
1936- 1937	4215	2041	2893	-	67	-	-	1600
1937- 1938	6888	1805	5753	-	61	-	-	1612
1938- 1939	4039	894	6778	-	73	-	-	878

Source: D/AF 265-270, Order book to 1929; D/AF 229, Sales Day Books from 1929

Orders, particularly those for tunnel segments, could be for delivery over extended periods

A = Virtually all for the London Underground plus the G.P.O.'s London underground railway, except 1913-14 which is for S. America

B = All for London County Council and its contractors bar one small order

C = All for Babcock and Wilcox

D = All fishplates are finishing work for Dorman Long and other local steel companies. Their tonnage is disproportionate to their value

E = Running contracts. Great Western, North Eastern, Lancashire and Yorkshire, Great Eastern

F = Includes: firebars; sashweights; iron frames for huts (Crown Agents); tank plates; floorplates; and sinkers. Many orders are unquantifiable. They do not, however, seem to be for significant quantities

G = Further quantities unquantifiable

H = Brake blocks for main line railways, 183t 1920/21, 215t 1925/26

J = Practice shot, stick bombs, miscellaneous castings for the War Office predominate

K = Figures for calendar years plus 15 mos. 1.1.1928 - 31.3.1929 estimated viz. Calendar year 1926: 1933t, Calendar year 1927: 2051t, Calendar year 1928: 795t. A proportinate part of the 1929 Calendar year tonnage of pipes 548t is apportioned to 1928/9. Pipe production commenced late 1925. (Source D/AF 511, A.B.M. file)

A3.44 CHAIR ORDERS

Other Home Rails = Principally Scottish after 1900

A = This is the first Caledonian order through the Foundry Order Book

B = A four year contract of 1 October 1879 (D/AF 265, p.74) apportioned to 1879/80 - 1883/4 may have continued to 1885.

C = Plus running order for points and crossings chairs 1.4.1879 and 31.12.1881.

D = Plus running order for Chairs 1.9.1878 - 31.12.1879

E = Plus running order for points and crossings chairs for one year, 1879/80 and six months, 1881/2.

F = Plus 2 year order for 11600 - 14000 tons taken to be 12800 and split between the two years

G = Also 12 months points and crossings chairs.

H = Constituents and subsidiaries of the Southern Railway cr. 1923, e.g. London and South Western, London Brighton and South Coast, South Eastern and Chatham.

J = Plus further tonnage unspecified.

K = Egypt

L = London and North Eastern from 1926/7

M = North British Pattern for delivery to a contractor [?] at Whitehaven for North British use? The other Scottish lines consumed 950 tons, 1904-09; 2800 tons, 1909-14; 10174 tons 1914-19; and 3680 tons, 1919-24.

N = France

Part 1 of 5

	1875/6	1876/7	1877/8	1878/9	1879/80	1880/1	1881/2	1882/3	1883/4	1884/5	1885/6
Caledonian	-	-	-	-	-	-	500A	2000	2000	6000	6343
North British	-	4500	8000	8000	8000	4693	4693	4693	4693	B	3000
Great Eastern	1000	-	-	4500	7000	5000	2550	121	67	3035	2
"Southern" H	-	8000	7900	5150	6980	6770	17340	5530	6	1107	-
North Eastern	-	-	-	2000	C	1000C	1000	-	-	-	-
Midland	-	-	-	1000	-	-	-	-	-	-	-
Great Western	-	-	-	D	D	2545	1163	315	346	925	-
Lancashire & Yorkshire; London & North Western	-	2328	1780	3343	1920E	-	E	-	1000	-	-
Other Home Rails	-	-	-	-	300	2000	4750	4865	2150	370	-
Contractors/ Home Firms	-	62	-	628	338	3135	124	4240	59	-	21
S. America	-	54	-	110	-	-	-	-	-	24	-
S. Africa	-	-	-	-	-	-	-	-	-	153	791
India	-	-	-	-	-	134	-	265	134	3192	-
Crown Agents	273	464	-	-	-	319	-	-	-	-	-
Australia	-	-	331	-	-	-	-	-	-	824	-
Foreign	-	-	-	-	-	-	393N	5396N	-	-	-

A3.44 (part 2 of 5)

	1886/87	1887/8	1888/9	1889/90	1890/1	1891/2	1892/3	1893/4	1894/5	1895/6	1896/7
Caledonian	6740F	6400	890	2700	9500	5100	3400	4400	6000	13000	506
North British	119	4500M	-	-	-	-	500	-	-	1600	-
Great Eastern	522	300G	-	-	-	-	-	-	-	-	-
"Southern" H	-	-	200	18	-	2200	100	-	4000	-	-
North Eastern	-	-	1000	-	-	1000	1000	2000	-	-	-
Midland	-	-	-	-	-	-	-	-	-	-	-
Great Western	-	-	-	-	-	-	-	-	-	-	-
Lancashire & Yorkshire; London & North Western	-	-	-	241	50	-	-	-	-	-	-
Other Home Rails	-	-	-	188	-	1400	50	100	-	-	40
Contractors/ Home Firms	108	-	7	107	107	123	654	-	474	-	146
S. America	-	-	42	-	-	400	10	50	20	20	3882
S. Africa	-	220	1354	46	264	278	-	-	-	-	1132
India	39	24	16	-	-	-	348	-	32	2654	56
Crown Agents	-	-	-	-	-	-	-	-	-	-	-
Australia	-	-	-	-	-	-	-	-	48	-	-
Foreign	-	-	-	-	60	-	-	-	-	-	-

A3.44 (part 3 of 5)

	1897/8	1898/9	1899/00	1900/01	1901/2	1902/3	1903/4	1904/5	1905/6	1906/7	1907/8
Caledonian	15160	24000	-	2250	15000	2000	9000	8500	6000	3000	4000
North British	1928	99	666	-	-	-	-	2655	3180	2982	-
Great Eastern	-	600	3700	-	-	-	-	-	-	-	-
"Southern" H	200	370	3500	-	1500	-	7550	-	-	-	-
North Eastern	1000	3000	1000	-	2000	1601	1200	2200	1500	1500	2500
Midland	-	-	-	-	-	-	-	-	-	-	-
Great Western	-	-	-	-	-	-	-	-	-	-	-
Lancashire & Yorkshire; London & North Western	-	-	-	-	-	-	-	-	500	-	-
Other Home Rails	55	875	240	20	350	65	2500	1400	-	-	-
Contractors/ Home Firms	25	-	460	93	400	25	70	60	-	313	10J
S. America	6085	-	-	-	-	-	-	1092	2120	-	167
S. Africa	2263	2377	3118	-	-	634	-	214	-	-	-
India	310	395	82	-	109	637	1531	3258	678	829	116
Crown Agents	-	-	-	-	-	-	257	-	-	-	-
Australia	-	-	-	-	-	-	-	-	-	-	-
Foreign	-	-	1064K	477K	2579K	4222K	-	-	-	-	-

A3.44 (part 4 of 5)

	1908/9	1909/10	1910/11	1911/12	1912/3	1913/4	1914/5	1915/6	1916/17	1917/8	1918/9
Caledonian	9000	-	6000	2500	2000	3300	3700	3100	3000	2020	3070
North British	-	2429	400	3530	-	1170	8387	75	110	580	918
Great Eastern	-	-	-	116	-	-	-	-	-	-	2000
"Southern" H	-	150	-	200	3500	2000	-	-	-	-	1500
North Eastern	2000	1750	2500	2500	1500	1250	3570	1300	-	750	1000
Midland	-	-	-	-	-	-	-	-	-	-	-
Great Western	-	-	-	-	-	-	-	-	-	-	-
Lancashire & Yorkshire; London & North Western	-	-	-	-	-	-	-	-	-	-	210
Other Home Rails	350	-	2000	600	1000	600	1500	1750	1638	2600	7540
Contractors/ Home Firms	25	40	262	25	-	-	152	-	32	1102	1732
S. America	-	-	258	400	1629	944	-	-	-	-	-
S. Africa	-	-	-	-	-	-	-	-	-	-	-
India	281	-	81	-	57	597	1809	42	-	-	-
Crown Agents	-	-	-	-	8	-	8	-	-	25	3589
Australia	-	-	-	-	-	-	-	-	-	-	-
Foreign	-	1054J	-	-	-	-	-	473	-	-	-

A3.44 (part 5 of 5)

	1919/20	1920/1	1921/2	1922/3	1923/4	1924/5	1925/6	1927/7	1927/8	1928/9
Caledonian	3900	2432	1450	3484	3379	3153	2778	1175	1150	269
North British	573	550	650	665	1280	344	-	-	-	-
Great Eastern	-	265	-	-	-	-	-	-	-	-
"Southern" H	2500	5600	-	1608	-	-	-	3000	-	396
North Eastern	3500	750	1922	1000	3993	-	-	300	-	-
Midland	3000	-	-	-	-	-	-	-	-	-
Great Western	-	-	-	-	-	-	-	-	-	-
Lancashire & Yorkshire; London & North Western	197	200	-	20	-	-	-	-	-	-
Other Home Rails	1780	700	215	1070	2670	1085	2602	-	-	-
Contractors/ Home Firms	347	1675	116	380	686	731	329	172	333	390
S. America	44	-	-	5	-	411	39	-	70	17
S. Africa	-	-	-	545	4314	839	-	-	224	-
India	-	326	-	-	86	-	4	-	-	-
Crown Agents	12	756	1075	12	205	10	1	3	13	-
Australia	-	-	-	-	-	-	-	-	-	-
Foreign	-	-	-	-	-	-	-	-	-	-

Source: D/AF 265-270

The specialisation of the domestic market after the formation of C.I.C.A. will be apprecited. How much of the Caledonian work executed at Glasgow passed through these Foundry Order Books is uncertain. It may be that it was brought into the account only when C.I.C.A. was formed and had an interest in the quantity of members' orders.

The sharp reduction in chair orders around 1888-90 may well be due to the pressure of business for sleepers. There is little evidence that new firms were tempted into the industry to supply chairs.

A3.45 FOUNDRY OUTPUT (tons)

	Home Rail Chairs (A)	Other Chairs (B)	Pole Bases (G)	Segments	Plates/ Manholes	Pipes	Lever Boxes etc.	Misc. (C)	Total
1928-9	1065	538	1448	-	-	585	-	683	4318
1929-30	1633	586	1443	1070	1013	712	-	661	7210
to 9.1930	611	190	898	1155	1118	900	-	241	5114
				MISSING					
1936-37	2033	1212	2145	4258	382	1395	-	229	11655
1937-38	4010	2956	1727	5750	327	1402	-	275	16451
1938-39	3616	140	1022	6299	175	798	-	290	12344
1939-40	3395	1862	681	5950	1995D	733	-	926	15547
1940-41	1632	853	450	1633	467	31	1	724E	5792
1941-42	2814	2698	31	1423	448	208	-	373	7997
1942-43	3213	3206	1164	-	139	92	35	498	8345
1943-44	7215	2042	12	-	263	48	152	942F	10585
1944-45	7937	1797	98	-	457	24	120	227	10663
1945-46	8460	1633	713	-	153	-	90	188	11238
1946-47	10281	1963	815	-	309	438	183	224	14216
1947-48	10296	2433	375	198	295	864	247	215	14920
1948-49	12493	2093	513	1192	336	762	210	226	17828
1949-50	11994	3397	1813	241	113	631	175	257	18577
1950-51	10273	2511	1348	456	-	939	293	238	16053
1951-52	12928	1469	684	1930	-	727	185	212	18138
1952-53	7908	2407	422	3510	-	850	151	235	15487
1953-54	6234	912	242	2726	-	544	111	264	11039
1954-55	3981	1507	160	703	-	816	84	211	7466
1955-56	2938	1920	56	59	-	1377	122	317	6792
1956-57	5177	1104	65	834	-	986	149	369	8687
1957-58	5495	868	100	250	-	546	118	364	7741
1958-59	3045	404	11	96	-	296	26	222	4103
1959-60	1790	577	45	1544	6	672	6	261	4906

Source: D/AF 311-327, 632

Totals derived from aggregating monthly totals (rounded to nearest ton), not from adding up previous columns

A = British main lines, London Transport, British Railways etc.
B = Includes Irish railways
C = Includes LCC/LTPB Tramway fittings which fall off sharply after 1930
D = Dover Gratings contracts - for airfield use
E = Includes 112 tons tramway castings
F = Includes 482 tons L.M.S. Brake Blocks
G = Largely for export to S. Africa, the colonial empire etc. via Bullers & Siemens contractors. Insufficient evidence to provide a proper analysis.

A3.46 FOUNDRY SUMMARY %

	Home Rail Chairs	Other Chairs	Pole Bases	Segments	Plates/ Manholes	Pipes	Lever Boxes etc.	Misc.
1929-34	33.5	5.7	18.1	8.7	320		-	2.1
1934-39A	28.0	13.9	13.0	29.7	1.7	12.9	-	0.7
1934-39B	25.9	12.9	13.2	31.0	2.5	12.6	-	1.9
1939-45	44.3	21.1	4.1	15.3	6.4	1.9	0.5	6.3
1945-50	69.6	15.0	5.5	2.1	1.6	3.5	1.2	1.5
1950-55	60.6	12.9	4.2	13.7	-	5.7	1.2	1.7
1955-60	57.2	15.1	0.9	8.6	0.0	12.0	1.3	4.8

Source: D/AF 311-327,632;
D/AF 221-229

A = Production from Sales Day Books
B = Production from Output Books from 1936

A3.47 FOUNDRY PRODUCTION (tons) from Sales Day Books

	Home Rail Chairs	Other Chairs	Pole Bases	Segments	Plates/ Manholes	Pipes	Lever Boxes etc.	Misc.	Total
1929-30	1487	680	1348	1020	1542		-	256	6333
1930-31	1518	225	1643	1210	3721		-	49	8366
1931-32	3086	100	1170	-	2023		-	62	6441
1932-33	1811	89	139	-	109	19	-	33	2200
1933-34	652	358	326	-	355	396	-	124	2211
1934-35	2256	1065	1506	-	194	1306	-	95	6422
1935-36	1741	1444	560	-	218	1744	-	68	5775
1936-37	2850	1365	2041	2893	228	1372	-	67	10816
1937-38	3984	2904	1805	5653	166	1446	-	61	16028
1938-39	3654	385	894	6778	94	784	-	73	12640

Source: D/AF 221-229

Note: Most orders for Associated Builders Merchants, 1930-32 comprised a mixture of pipes and manholes. Disaggregating these from the Sales Day Books has not been attempted.

Sales of scrap have been discounted from the sales tonnage thus the totals of monthly figures for foundry sales (weight) in D/AF 221 et seq. will not tally exactly with these tables.

Differences governing the treatment of commodities manufactured in one department for use in another may explain some disparities between tables A3.45 and A3.47 as will delays between manufacture, delivery orders and payment, particularly in respect of pipes and segments.

A3.48A WAGES AS % OF SALES, 1884-1962 (Excludes apportioned management wages)

	Glasgow		Middlesbrough			
	Machine Shop	Foundry	Foundry	Points/ Crossings	Sleeper Shop	Bolt Shop
1.7.1884-30.6.1885	22.2	12.2	13.5	13.9	5.4	-
1885- 1886	20.3	11.2	13.8	14.4	5.5	-
1886- 1887	19.1	13.1	13.8	17.5	7.3	39.7
1887- 1888	21.4	12.0	14.9	12.4	6.5	33.7
1888- 1889	30.8	13.6	13.0	14.0	5.7	22.4
1889- 1890	23.4	12.3	14.1	11.9	5.0	17.9
1890- 1891	26.9	20.0	14.5	11.9	4.7	18.5
1891- 1892	29.4	22.5	16.0	13.5	6.2	20.3
1892- 1893	32.6	25.4	16.0	15.8	6.9	30.3
1.7.1893-31.3.1894	37.1	20.1	16.0	18.5	11.4	27.5
1.4.1894-31.3.1895	35.2	16.9	17.9	16.9	7.4	26.5
1895- 1896	30.1	15.7	16.1	14.6	7.9	26.0
1896- 1897	31.6	17.5	15.2	17.5	6.6	21.3
1897- 1898	36.5	15.7	15.2	14.4	7.0	24.8
1898- 1899	40.7	18.3	15.7	16.1	8.3	27.5
1899- 1900	46.5	20.9	16.1	15.7	7.7	28.3
1900- 1901	34.8	16.7	16.1	11.7	6.2	23.0
1901- 1902	40.8	14.8	13.3	13.6	8.8	23.3
1902- 1903	31.0	17.8	21.1	19.8	7.4	20.1
1903- 1904	45.9	15.9	19.9	15.9	10.8	23.8
1904- 1905	52.2	21.0	18.2	16.1	9.5	23.5
1905- 1906	43.4	32.2	19.8	19.0	8.6	26.1
1906- 1907	42.1	29.4	18.1	19.9	8.3	23.3
1907- 1908	45.0	27.5	13.9	16.9	6.0	22.6
1908- 1909	56.8	25.6	18.5	17.4	14.0	27.7
1909- 1910	40.8	37.5	22.4	16.7	9.0	17.7
1910- 1911	38.0	36.1	17.2	20.6	13.6	21.0
1911- 1912	29.3	35.1	20 3	22.7	9.8	21.4
1912- 1913	30.8	31.1	18.9	18.4	8.9	17.4
1913- 1914	26.1	36.9	14.1	15.7	9.4	18.4
1914- 1915	26.7	32.6	21.5	15.8	8.5	19.9
1915- 1916	43.9	29.3	19.6	23.3	6.5	25.8
1916- 1917	39.3	30.0	23.4	26.4	5.5	26.9
1917- 1918	41.2	39.2	23.6	33.1	5.2	32.7
1918- 1919	38.1	37.0	25.5	45.3	14.4	31.2
1919- 1920	53.5	36.3	20.6	25.8	5.9	19.5
1920- 1921	38.8	37.1	14.2	17.6	5.7	15.8
1921- 1922	36.2	40.2	17.6	23.0	10.0	24.6
1922- 1923	46.3	35.3	20.4	27.4	8.5	24.0
1923- 1924	47.3	31.5	23.3	25.6	16.4	18.1
1924- 1925	48.8	31.7	23.5	21.9	11.7	19.7
1925- 1926	48.1	48.0	23.1	22.9	16.2	32.1
1926- 1927	46.3	51.0	55.5	22.1	15.0	18.2
1927- 1928	42.3	63.6	41.6	17.0	11.5	18.8
1928- 1929	48.6	n/a	47.0	18.3	10.2	23.1
1929- 1930	67.5	-	49.8	48.8	7.9	24.5
1930- 1931	51.3	-	53.1	25.2	36.2	27.9
1931- 1932	-	-	49.6	48.6	9.7	27.8
1932- 1933	-	-	51.8	63.8	21.9	37.8
1933- 1934	-	-	64.5	77.9	16.4	30.4
1934- 1935	-	-	43.1	30.7	12.5	32.5
1935- 1936	-	-	45.9	28.8	20.5	26.5
1936- 1937	-	-	44.7	26.6	58.9	24.6
1937- 1938	-	-	31.1	27.2	n/a	24.1
1938- 1939	-	-	30.6	23.3	7.2	32.5

/Cont...

A3.48A (continued)

	Glasgow		Middlesbrough			
	Machine Shop	Foundry	Foundry	Points/ Crossings	Sleeper Shop	Bolt Shop
1.4.1939-31.3.1940	-	-	32.5	19.4	n/a	38.6
1940- 1941	-	-	31.3	27.4	9.0	22.6
1941- 1942	-	-	35.2	15.6	7.9	39.9
1942- 1943	-	-	33.7	18.5	10.6	26.9
1943- 1944	-	-	30.0	20.7	12.7	13.2
1944- 1945	-	-	33.2	20.7	30.1	19.3
1945- 1946	-	-	31.8	35.2	11.0	22.3
1946- 1947	-	-	39.1	34.7	8.5	20.3
1947- 1948	-	-	33.9	40.5	7.8	24.6
1948- 1949	-	-	32.8	41.0	9.8	45.6
1949- 1950	-	-	35.7	30.0	6.1	40.0
1950- 1951	-	-	33.9	33.6	6.7	39.9
1951- 1952	-	-	32.9	26.6	5.2	41.3
1952- 1953	-	-	34.3	23.1	3.7	34.4
1953- 1954	-	-	33.2	23.6	3.7	31.9
1954- 1955	-	-	45.8	21.2	4.8	32.1
1955- 1956	-	-	42.5	17.2	4.2	61.7
1956- 1957	-	-	38.9	18.1	6.1	70.6
1957- 1958	-	-	45.8	11.6	4.3	36.5
1958- 1959	-	-	60.8	24.8	5.4	49.3
1959- 1960	-	-	72.1	37.0	6.2	44.6
1960- 1961	-	-	56.7	38.1	6.5	-
1961- 1962	-	-	69.5	43.9	6.4	-

Calculated from Private Ledgers

A3.48B WAGES AS % COSTS OF PRODUCTION

	Glasgow		Middlesbrough			
	Machine Shop	Foundry	Foundry	Points/ Crossings	Sleeper Shop	Bolt Shop
1952-53	-	-	36.9	30.5	4.2	35.4
1953-54	-	-	35.1	28.9	4.1	33.6
1954-55	-	-	44.3	25.1	5.4	31.0
1955-56	-	-	40.4	24.8	4.5	41.4
1956-57	-	-	37.8	21.3	6.8	46.3
1957-58	-	-	40.3	16.9	4.7	44.2
1958-59	-	-	46.4	30.0	5.8	39.8
1959-60	-	-	51.2	33.1	6.3	38.5
1960-61	-	-	46.3	34.7	6.8	-
1961-62	-	-	49.6	37.1	6.6	-

A3.49 AVERAGE WAGES AS % SALES

	Glasgow		Middlesbrough			
	Machine Shop	Foundry	Foundry	Points/ Crossings	Sleeper Shop	Bolt Shop
1884-89	22.5	12.2	13.7	14.1	5.7	28.3+
1889-94±	28.2	15.3	14.8	13.5	5.5	21.3
1895-99	34.3	16.8	15.7	15.8	7.2	24.5
1899-04	38.6	17.1	17.5	14.9	8.1	23.5
1904-09	46.8	27.3	17.5	17.8	8.4	24.2
1909-14	39.6	41.1	17.5	17.9	9.7	18.9
1914-19	39.9	33.7	22.7	27.3	6.3	28.0
1919-24	43.7	36.5	17.6	22.6	8.1	19.7
1924-29	46.8	46.0	34.8	19.8	12.8	21.8
1929-34	-	-	47.0	28.0	9.9	27.7
1934-39	-	-	36.5	26.4	11.7	27.2
1939-44	-	-	32.4	19.7	10.2	21.8
1944-49	-	-	33.3	32.6	9.8	24.8

/Cont...

A3.49 (continued)

	Glasgow		Middlesbrough			
	Machine Shop	Foundry	Foundry	Points/ Crossings	Sleeper Shop	Bolt Shop
1949-54	-	-	34.0	26.6	4.6A	37.3
1954-59	-	-	45.3	16.9	4.9	45.6

+ 3 years; ± 4 years 9 mos.; A the renewal of plant with increased automation, as well as the vast increase in business may explain this fall

A3.50 SALES OF GLASGOW BUSINESS (£)

	Machine Shop	Foundry	Sleeper Shop	Total
1.7.1884-30.6.1885	33541	164644	36256	234441
1885- 1886	36373	131433	21333	209139
1886- 1887	32260	63622	7534	103416
1887- 1888	35459	98997	15978	150434
1888- 1889	29623	68226	11895	109744
1889- 1890	39763	163320	36823	239903
1890- 1891	32129	28286	2411	62826
1891- 1892	21877	16858	-	38735
1892- 1893	22949	15099	-	38048
1.7.1893-31.3.1894	12160	15657	-	27817
1.4.1894-31.3.1895	19159	28214	-	47373
1895- 1896	27872	44712	-	72584
1896- 1897	32199	32454	-	64653
1897- 1898	23301	37304	-	60605
1898- 1899	20033	36387	-	56420
1899- 1900	24470	31824	-	56294
1900- 1901	33482	41827	-	75309
1901- 1902	25923	46416	-	72339
1902- 1903	36184	38370	-	74554
1903- 1904	20938	36204	-	57142
1904- 1905	16907	28202	-	45109
1905- 1906	23932	28978	-	52910
1906- 1907	22481	32366	-	54847
1907- 1908	18802	29936	-	48738
1908- 1909	13371	24803	-	38174
1909- 1910	23247	21541	-	44788
1910- 1911	12893	22304	-	35197
1911- 1912	18350	25557	-	43907
1912- 1913	30877	30202	-	61080
1913- 1914	24437	33290	-	51727
1914- 1915	20762	29480	-	50242
1915- 1916	23817	34851	-	58668
1916- 1917	33223	39531	-	67754
1917- 1918	40321	37481	-	77802
1918- 1919	52549	39790	-	92339
1919- 1920	46564	60520	-	107084
1920- 1921	65622	74171	-	139793
1921- 1922	35235	26267	-	61502
1922- 1923	20424	17242	-	37666
1923- 1924	18414	23041	-	41455
1924- 1925	21355	20576	-	41931
1925- 1926	23628	14036	-	37664
1926- 1927	18866	7059	-	25925
1927- 1928	21033	10929	-	31962
1928- 1929	17046	2242 (3 mos)	-	19288
1929- 1930	11175	-	-	11175
1930- 1931	9898	-	-	9898

NB £639 of sales 1931/2 are credited to the machine shop which had, in effect, started to close down before the end of the previous financial year. This is included in 1930/1 for the above table.

 Source: Private Ledgers

A3.51 AVERAGE SALES (Glasgow)
£ p.a.

	Machine Shop	Foundry	Sleepers	Total
1884-89	33451	105384	18599	157434
1889-94+	27132	50362	n/a	85712
1894-99	24513	35814	-	60327
1899-04	28199	38928	-	67127
1904-09	19099	28857	-	47956
1909-14	21961	22779	-	44740
1914-19	34134	36227	-	70361
1919-24	37252	40248	-	77500
1924-29	20386	(10968+ (12909±	-	31354

+ 4 yrs. 9 mos.; ± 4 yrs. 3 mos.

Calculated from Private Ledgers

A3.52 GLASGOW SALES (Analysed)

	%			Index (1884/5 = 100)		
	Machine Shop	Foundry	Sleeper	Machine Shop	Foundry	Total (A)
1884-89	21.2	66.9	11.8	99.7	64.0	79.4
1889-94	31.7	58.5	9.6	80.9	30.6	43.2
1894-99	40.6	54.9	-	73.1	21.8	30.4
1899-04	42.0	58.0	-	84.1	23.6	33.9
1904-09	39.8	61.2	-	56.9	17.5	24.2
1909-14	49.1	50.9	-	65.5	13.8	22.6
1914-19	48.5	51.5	-	101.8	22.0	35.5
1919-24	48.1	51.9	-	111.1	24.4	39.1
1924-29	65.0	35.0	-	60.8	6.7	15.8
1924-28	61.7	38.3	-	63.3	8.0	17.3

(A) excludes sleeper shop

Calculated from Private Ledgers

A3.53 SALES OF MIDDLESBROUGH BUSINESS (£)

	Foundry	Points/ Crossings	Sleeper Shop	Bolt Shop	Total	Index (1884/5 = 100)
1.7.1884-30.6.1885	316790	59474	144964	-	521228	100.0
1885- 1886	255097	44061	174831	-	473989	90.0
1886- 1887	265829	29150	106539	6393	407911	78.3
1887- 1888	207903	50277	135678	13514	407372	78.2
1888- 1889	254502	45183	148844	24439	472968	90.7
1889- 1890	292330	68404	328582	36813	726129	139.3
1890- 1891	256456	63416	366440	29815	716127	137.4
1891- 1892	64010	45486	148503	23707	281706	54.0
1892- 1893	89718	39265	102610	17671	249264	47.8
1.7.1893-31.3.1894	63265	21380	39755	11969	136369	34.9
1.4.1894-31.3.1895	70882	37495	53217	10581	172175	33.0
1895- 1896	135943	37897	48824	12147	234811	45.0
1896- 1897	257670	45191	118369	27985	449215	86.2
1897- 1898	177062	58621	79126	20341	335150	64.3
1898- 1899	124917	49783	43822	14725	233247	44.7
1899- 1900	133082	52558	68462	14123	268225	51.5
1900- 1901	133250	79231	67104	20200	299785	57.5
1901- 1902	130259	59757	50715	13857	254588	48.8
1902- 1903	130584	43076	68914	18366	260940	50.1
1903- 1904	178688	77502	54981	18156	329327	63.2
1904- 1905	194183	70068	63531	16957	344739	66.1
1905- 1906	155944	54640	112686	14336	337606	64.7
1906- 1907	168959	57634	118324	19078	363995	69.8
1907- 1908	200408	56595	210219	17339	484561	93.0
1908- 1909	128092	60802	75021	15926	279841	53.7
1909- 1910	94025	55251	84783	24202	258261	49.5
1910- 1911	150662	39257	53207	17573	260699	50.0
1911- 1912	101423	37687	119052	22673	280835	53.9
1912- 1913	179211	55638	133030	32374	400253	76.8
1913- 1914	270132	69581	152697	32477	524887	100.7
1914- 1915	167390	65275	129410	30319	392394	75.3
1915- 1916	156878	36944	149326	26893	370041	71.0
1916- 1917	103229	41517	400097	39219	584062	112.1
1917- 1918	156185	45643	660273	49884	911985	175.0
1918- 1919	162215	37095	86895	35652	321857	61.7
1912- 1920	258813	66856	199916	62411	587996	112.8
1920- 1921	528366	106140	376466	77860	1088832	208.9
1921- 1922	318075	58162	153282	48448	577967	110.9
1922- 1923	139884	36358	208676	41855	426733	81.9
1923- 1924	99758	38638	112458	65525	316379	60.7
1924- 1925	96555	47598	130500	59332	333985	64.1
1925- 1926	77350	65189	88655	49239	280433	53.8
1926- 1927	51461	53401	108236	67287	280385	53.8
1927- 1928	66157	89188	187041	85067	427453	82.0
1928- 1929	39939	110363	58562	82357	291221	55.9
1929- 1930	54066	72898	113114	74805	314883	60.4
1930- 1931	69536	50994	7622	35539	163691	31.4
1931- 1932	49031	9134	30944	42810	131919	25.3
1932- 1933	12075	6504	772	16527	35878	6.9
1933- 1934	17539	4723	3589	22052	47903	9.2
1934- 1935	52052	16366	9762	12271	90451	17.4
1935- 1936	50484	33113	18278	27061	128936	24.7
1936- 1937	90353	37220	3515	21448	152536	29.3
1937- 1938	151803	41725	16	19926	213470	41.0
1938- 1939	121730	59205	36741	12779	230455	44.2
1939- 1940	161788	62748	12	12929	237477	45.6
1940- 1941	87192	57443	30243	29835	204713	39.3
1941- 1942	94050	104062	67868	19937	285917	54.9

/Cont...

A3.53 SALES OF MIDDLESBROUGH BUSINESS (£) (continued)

	Foundry	Points/ Crossings	Sleeper Shop	Bolt Shop	Total	Index (1884/5 = 100)
1942- 1943	103449	106846	55947	40808	307052	58.9
1943- 1944	128120	112103	66482	93180	399885	76.7
1944- 1945	128410	95294	31113	62910	317727	61.0
1945- 1946	141209	48690	183451	51528	424878	81.5
1946- 1947	215250	57676	223343	63212	559481	107.3
1947- 1948	265913	51781	307044	60981	685719	131.6
1948- 1949	332283	58268	250724	36487	677766	128.1
1949- 1950	343801	86892	386215	42180	859088	164.8
1950- 1951	320743	72194	460095	46300	899334	172.5
1951- 1952	381408	100777	509772	43414	1035370	198.6
1952- 1953	383725	126234	944325	54680	1508964	289.5
1953- 1954	326596	120078	1098932	44174	1589780	305.0
1954- 1955	216362	147908	803172	64830	1232273	236.4
1955- 1956	233211	214467	788320	34577	1270576	243.8
1956- 1957	299781	234490	527514	35185	1096971	210.5
1957- 1958	261125	447652	889641	79821	1678240	322.0
1958- 1959	148112	178533	936302	49099	1312046	251.7
1959- 1960	166391	90422	384448	56665	697826	133.9
1960- 1961	237900	72635	498915	-	809450	155.3
1961- 1962	208911	65487	240052	-	514450	98.7
1.4.1962-30.9.1962	73395	44935	42638	-	160968	61.8

Source: Private Ledgers

A3.54 AVERAGE SALES (Middlesbrough)

£ p.a.

	Foundry	Points/ Crossings	Sleeper	Bolts	Total p.a.
1884-89	260024	45629	142171	*(14782)	456694
1889-94+	161216	50095	207556	25258	444125
1894-99	153295	45797	68672	17156	284920
1899-1904	141173	62425	62035	16940	282573
1904-09	169517	59948	115956	16727	362148
1909-14	159091	51483	108554	25860	344987
1914-19	149180	42595	285200	36393	516068
1919-24	268971	61231	210160	59220	599581
1924-29	66292	73148	114599	68656	322695
1929-34	40449	28851	31208	38347	138855
1934-39	93284	37526	13662	18699	163170
1939-44	114920	88640	44110	39338	287009
1944-49	216614	62342	199135	55024	433114
1949-54	351255	101235	679868	46510	1178507
1954-59	231718	244610	788990	52702	1318021
1959-62±	196171	78137	333158	n/a	623627

+ 4 yrs. 9 mos.; ± 3 yrs. 6 mos.; * 3 years

Calculated from Private Ledgers

A3.55 MIDDLESBROUGH SALES (Analysed)

	%				Index (1884/5 = 100)				
	Foundry	Points/ Crossings	Sleeper	Bolts	Foundry	Points/	Sleeper	Bolts	Total
1884-89	56.9	10.0	31.1	1.9	82.1	76.7	98.1	n/a	87.6
1889-94+	36.3	11.3	46.7	5.7	50.9	84.2	143.2	93.8	85.2
1894-99	53.8	16.1	24.1	6.0	48.4	77.0	47.4	63.7	54.7
1899-04	50.0	22.1	22.0	6.0	44.6	105.0	42.8	62.9	54.2
1904-09	46.8	16.6	32.0	4.6	53.5	100.8	80.0	62.1	69.5
1909-14	46.1	14.9	31.5	7.5	50.2	86.6	74.9	96.0	66.2
1914-19	28.9	8.8	55.3	7.1	47.1	76.2	196.7	135.1	99.0
1919-24	44.9	10.2	35.1	9.9	84.9	103.0	145.0	219.9	115.0
1924-29	20.5	22.7	35.5	21.3	20.9	123.0	79.1	254.9	61.9
1929-34	29.1	20.8	22.5	27.6	12.8	48.5	21.5	142.4	26.6
1934-39	57.2	23.0	8.4	11.5	29.4	63.1	9.4	69.4	31.3
1939-44	40.0	30.9	15.4	13.7	36.3	149.0	30.4	146.1	55.1
1944-49	40.6	11.7	37.4	10.3	68.4	104.8	137.4	204.3	102.3
1949-54	29.8	8.6	57.7	3.9	110.9	170.2	469.0	171.4	226.1
1954/59	17.6	18.6	59.9	4.0	73.1	411.3	544.3	195.7	252.9
1959-62±	31.5	12.5	53.4	2.6	61.9	131.4	229.8	n/a	119.6

+ 4 yrs. 9 mos.; ± 3 yrs. 6 mos.

Note: the basis for the "Bolts" index is to assume 1888/9 as the first full year of Bolts production and project backward the then bolts output as a proportion of total output to 1884/5 giving a theoretical bolts output thus of £26932.

Calculated from Private Ledgers

A3.56 DEPARTMENTAL TRADING RESULTS (Profit/Loss) (Glasgow) (£)

	Machine Shop	Foundry	Tiebar/Sleepers	Total
1.7.1884-30.6.1885	10139	18195	4020	32354
1885- 1886	9176	20045	3672	32893
1886- 1887	9518	11314	673	21505
1887- 1888	9903	19840	2839	32582
1888- 1889	4746	8858	2025	15629
1889- 1890	8024	19287	2772	30083
1890- 1891	5734	1456	195	7385
1891- 1892	2597	232	-	2829
1892- 1893	2873	276	-	3149
1.7.1893-31.3.1894	519	644	-	1163
1.4 1894-31.3 1895	1980	2256	-	4236
1895- 1896	4284	4844	-	9128
1896- 1897	3105	2242	-	5347
1897- 1898	1324	3191	-	4515
1898- 1899	697	1407	-	2104
1899- 1900	715	530	-	1245
1900- 1901	2686	2041	-	4707
1901- 1902	-1010	6629	-	5619
1902- 1903	2726	3818	-	6544
1903- 1904	-868	4007	-	3139
1904- 1905	-2875	1509	-	-1366
1905- 1906	-1735	-654	-	-2389
1906- 1907	190	58	-	248
1907- 1908	-1181	-100	-	-1281
1908- 1909	-3314	-1102	-	-4416
1909- 1910	-5803	-2897	-	-8700
1910- 1911	-8420	-2516	-	-10936
1911- 1912	-5416	-2375	-	-7791
1912- 1913	-3827	-631	-	-4458
1913- 1914	-3613	-1110	-	-4723
1914- 1915	-2792	578	-	-2214
1915- 1916	-1747	1579	-	-168
1916- 1917	-1374	-2122	-	-3496
1917- 1918	3161	752	-	3913
1918- 1919	6027	1244	-	7271
1919- 1920	1811	3831	-	5642
1920- 1921	1411	-1374	-	37
1921- 1922	-4688	-3127	-	-7815
1922- 1923	-3566	-819	-	-4385
1923- 1924	-1903	659	-	-1244
1924- 1925	-2410	-1551	-	-3961
1925- 1926	-1465	-3469	-	-4934
1926- 1927	-4594	-3008	-	-7602
1927- 1928	-1358	-3194	-	-4552
1928- 1929	-3809	-1277 (3 mos.)	-	-5085
1929- 1930	-4726	-	-	-4726
1930- 1931	-4666	-	-	-4666
1931- 1932	(123)	-	-	(123)

Note: £1963 was written off the general profit and loss accounts 1911/12 - 1914/15 in respect of gas engines, not off the departmental account.

Source: Private Ledgers

A3.57 AVERAGE DEPARTMENTAL TRADING PROFITS (Glasgow) (£ p.a.)

	Machine Shop	Foundry	Tiebars/Sleepers	Total
1884-89	8696	15650	2646	26993
1889-94+	4157	4609	n/a	9391
1894-99	2278	2788	-	5066
1899-1904	850	3405	-	4255
1904-09	-1783	-58	-	-1841
1909-14	-5416	-1906	-	-7322
1914-19	655	406	-	1061
1919-24	-1387	-166	-	-1553
1924-29	-2727	-2500 -2941±	-	-5227

+ 4 yrs. 9 mos.; ± 4 yrs. 3 mos. Calculated from Private Ledgers

A3.58 GLASGOW TRADING PROFITS (Analysed)

	% made by:			Index (1884/5 = 100)		
	Machine Shop	Foundry	Tiebars/ Sleepers	Machine Shop	Foundry	Total
1884-89	32.2	58.0	9.8	85.8	86.0	83.4
1889-94	44.3	49.1	(6.6)	41.0	25.3	29.0
1894-99	45.0	55.0	-	22.5	15.3	15.7
1899-04	20.0	80.0	-	8.4	18.7	13.2
1904-09	(-) 96.8	(-) 3.2	- loss	-17.6	-0.3	-5.7
1909-14	(-) 74.0	(-) 26.0	- loss	-53.4	-10.5	-22.6
1914-19	61.7	38.3	-	6.5	2.2	3.3
1919-24	(-) 90.3	(-) 10.7	- loss	-13.7	-0.9	-4.8
1924-29	(-) 52.2	(-) 47.8	- loss	-26.9	-13.7	-16.2

Calculated from Private Ledgers

A3.59 GLASGOW PROFITS AS % SALES (Average)

	Machine Shop	Foundry	Tiebar/Sleepers	Total
1884-89	26.0	14.9	14.2	17.1
1889-94	15.3	9.2	-	11.0
1894-99	9.3	7.8	-	8.4
1899-1904	3.5	9.5	-	6.3
1904-09	-9.3	-0.2	-	-3.8
1909-14	-24.7	-8.4	-	-16.4
1914-19	1.9	1.1	-	1.5
1919-24	-3.7	-0.4	-	-2.0
1924-29	-13.4	-22.8	-	-16.7

Calculated from Private Ledgers

A3.60 GLASGOW PROFITS AS % SALES

	Machine Shop	Foundry	Tiebars/Sleepers	Total
1.7.1884-30.6.1885	30.23	11.05	11.09	13.80
1885- 1886	25.33	15.25	17.21	15.73
1886- 1887	29.50	17.78	8.93	20.79
1887- 1888	27.93	20.04	17.77	21.66
1888- 1889	16.02	12.98	17.02	14.24
1889- 1890	20.18	11.81	7.53	12.54
1890- 1891	17.85	5.15	8.09	11.75
1891- 1892	11.87	1.38	-	7.30
1892- 1893	12.52	1.83	-	8.28
1.7.1893-31.3.1894	4.27	4.11	-	4.18
1894- 1895	10.33	8.00	-	8.94
1895- 1896	15.37	10.83	-	12.58
1896- 1897	9.64	6.91	-	8.27
1897- 1898	5.68	8.55	-	7.45
1898- 1899	3.48	3.87	-	3.73
1899- 1900	2.92	1.67	-	2.21
1900- 1901	8.02	4.88	-	6.25
1901- 1902	-3.90	14.28	-	7.77
1902- 1903	7.53	9.95	-	8.78
1903- 1904	-4.15	11.07	-	5.49
1904- 1905	-17.00	5.35	-	-3.03
1905- 1906	-7.25	-2.26	-	-4.52
1906- 1907	0.85	0.19	-	0.45
1907- 1908	-6.28	-0.33	-	-2.63
1908- 1909	-24.78	-4.44	-	-11.57
1909- 1910	-24.96	-13.45	-	-19.42
1910- 1911	-65.31	-11.28	-	-31.07
1911- 1912	-29.51	-9.29	-	-17.74
1912- 1913	-12.39	-2.09	-	-7.30
1913- 1914	-14.78	-3.33	-	-9.13
1914- 1915	-13.45	1.96	-	-4.41
1915- 1916	-7.34	4.54	-	-0.29
1916- 1917	-4.14	-5.37	-	-5.16
1917- 1918	7.84	2.01	-	5.03
1918- 1919	11.47	3.13	-	7.87
1919- 1920	3.89	6.33	-	5.27
1920- 1921	2.15	-1.85	-	0.03
1921- 1922	-13.31	-11.94	-	-12.70
1922- 1923	-17.46	-4.75	-	-11.64
1923- 1924	-10.34	2.86	-	-3.00
1924- 1925	-11.29	-7.53	-	-9.45
1925- 1926	-6.20	-24.71	-	-13.10
1926- 1927	-24.35	-42.60	-	-29.32
1927- 1928	-6.46	-29.22	-	-14.24
1928- 1929	-22.35	-56.96 (3 mos.)	-	-26.36
1929- 1930	-42.30	-	-	-42.30
1930- 1931	-50.40	-	-	-50.40

Source: Private ledgers

A3.61 DEPARTMENTAL TRADING RESULTS (Profit/Loss) (Middlesbrough) (£)

	Foundry	Points/ Crossings	Tiebar/ Sleeper	Bolts	Total	Index
1.7.1884-30.6.1885	67117	9946	24622	-	101685	100
1885- 1886	50020	5777	21436	-	77233	76.0
1886- 1887	52595	4304	17769	-1468	73180	72.0
1887- 1888	81974	9529	18097	-1949	107651	105.9
1888- 1889	54730	9083	25047	1430	90290	88.8
1889- 1890	42140	14747	48092	2911	107890	106.1
1890- 1891	53023	12587	52242	504	118356	116.4
1891- 1892	4718	7254	16821	29	28822	27.8
1892- 1893	11589	5224	4316	-1023	20106	19.8
1.7.1893-31.3.1894	9581	2643	3241	-55	15410	20.2
1.4.1894-31.3.1895	9881	5937	2343	30	18191	17.9
1895- 1896	24774	6221	6224	1597	38816	38.2
1896- 1897	48418	8109	14245	3502	74274	73.0
1897- 1898	29429	12702	4294	45	46470	45.1
1898- 1899	15096	8302	3367	482	27247	26.8
1899- 1900	3363	7153	2489	-636	12369	12.2
1900- 1901	16099	12370	3362	-649	31182	30.7
1901- 1902	18702	7333	1184	1931	29150	28.7
1902- 1903	10832	5585	3075	2449	21941	21.6
1903- 1904	16279	12037	363	1541	30220	29.7
1904- 1905	14090	12921	1316	-32	28295	27.8
1905- 1906	16880	8242	3616	1453	30191	29.7
1906- 1907	15782	7046	152	550	23530	23.1
1907- 1908	18507	5175	3455	-1232	25905	25.5
1908- 1909	14786	4277	134	180	19377	19.1
1909- 1910	8564	3850	-563	1205	13056	12.8
1910- 1911	14133	628	496	-427	14830	14.6
1911- 1912	5122	1801	4367	302	11592	11.4
1912- 1913	10085	4094	6475	2838	23492	23.1
1913- 1914	30070	7877	7213	2090	47250	46.5
1914- 1915	20748	8924	4659	3526	37857	37.2
1915- 1916	11536	4037	17372	7202	40147	39.5
1916- 1917	7287	4770	72993	9490	94540	93.0
1917- 1918	3753	7401	86066	22375	119595	117.6
1918- 1919	5570	3246	3275	-1236	10828	10.6
1919- 1920	28393	7681	4463	5643	46180	45.4
1920- 1921	42168	6924	29879	5101	84072	82.7
1921- 1922	94620	6068	5574	1639	107901	106.1
1922- 1923	8070	461	9770	864	19165	18.8
1923- 1924	-5132	2928	748	6031	4575	4.5
1924- 1925	-3344	5532	825	5724	8737	8.6
1925- 1926	-2847	10828	2994	-492	10483	10.3
1926- 1927	-11519	14841	1923	6732	11977	11.8
1927- 1928	-6221	23527	3596	1802	22704	22.3
1928- 1929	-3841	29496	-916	1736	26475	26.0
1929- 1930	-6807	18629	3363	-143	15042	14.8
1930- 1931	-11979	10416	-1306	-942	-3811	-3.7
1931- 1932	-3914	-1053	-2886	-138	-7991	-7.9
1932- 1933	-3037	-3310	-207	-3278	-9832	-9.7
1933- 1934	-3518	-2847	-719	-3321	-10405	-10.2
1934- 1935	923	-1144	-400	-1089	-1710	-1.7
1935- 1936	-479	573	-594	-2066	-2566	-2.5
1936- 1937	-1816	1404	-170	-1705	-2287	-2.2
1937- 1938	5473	2419	-65	1	7828	7.7

/Cont...

A3.61 DEPARTMENTAL TRADING RESULTS (Profit/Loss) (Middlesbrough) (£)

(continued)

		Foundry	Points/ Crossings	Tiebar/ Sleeper	Bolts	Total	Index
1938-	1939	6532	6759	702	-2579	11414	11.2
1939-	1940	13360	5636	11	-2361	16646	16.4
1940-	1941	2527	486	1035	1166	5214	5.1
1941-	1942	-1616	9541	7045	-6198	8772	8.6
1942-	1943	-806	22753	3874	4375	30196	29.7
1943-	1944	1686	27429	16902	29163	75180	73.9
1944-	1945	-1599	14329	2261	21633	36624	36.0
1945-	1946	-1034	-1121	6669	13599	18113	17.8
1946-	1947	8813	7299	6328	7401	29841	29.3
1947-	1948	14986	-6536	24525	5421	38396	37.8
1948-	1949	42657	-2505	17142	-8035	49259	48.4
1949-	1950	23291	26803	39889	-1006	89038	87.6
1950-	1951	21327	6086	49668	-1287	75794	74.5
1951-	1952	46132	24895	85140	-6503	149664	147.2
1952-	1953	26365	30472	114235	-1503	169569	166.8
1953-	1954	18089	21842	110386	2186	152503	150.0
1954-	1955	-7192	22875	80508	-2420	93771	92.2
1955-	1956	-11718	65705	55101	-17030	92058	90.5
1956-	1957	-7588	35210	53833	-18488	62964	61.9
1957-	1958	-35874	140541	65430	-6074	164023	161.3
1958-	1959	-45832	34788	62925	-13255	38626	38.0
1959-	1960	-67612	-10833	7664	-9064	-79845	-78.5
1960-	1961	-53299	-7661	19246	-	-41714	-41.0
1961-	1962	-83588	-11984	4160	-	-91412	-89.9
1.4.1962-30.9.1962		7524	-3370	12826	-	16980	33.4

Note: Changing accounting practices render these figures not directly comparable. Particularly until 1928 commissions paid out were passed through the departmental trading accounts whereas commissions received were taken into the general profit and loss account and not apportioned. Further revisions occur in the period after 1946.

Source: Private Ledgers

A3.62 AVERAGE DEPARTMENTAL TRADING PROFITS (Middlesbrough) £ p.a.

	Foundry	Points/Crossings	Sleepers	Bolts	Total
1884-89	61283	7728	21394	-662*	90008
1889-94+	25484	8938	26255	498	61176
1894-99	25520	8254	6095	1131	41000
1899-04	13055	8896	2095	927	24972
1904-09	16009	7532	1735	184	25460
1909-14	13595	3650	3598	1202	22044
1914-19	9779	5676	36873	8266	60593
1919-24	33624	4812	10087	3856	52379
1924-29	-5554	16845	1684	3100	16075
1929-34	-5851	4367	-351	-1564	-3399
1934-39	2127	2002	-105	-1488	2536
1939-44	3030	13169	5773	5229	27202
1944-49	12765	2293	11385	8004	34447
1949-54	27041	22020	79864	-1623	127314
1954-59	-21641	59824	63559	-11453	90288
1959-62±	-56279	-9671	12542	n/a	-55997

+ 4 yrs. 9 mos.; ± 3 yrs. 6 mos.; * 3 yrs.

Calculated from Private Ledgers

A3.63 MIDDLESBROUGH TRADING PROFITS (Analysed)

	% made by:				Index (1884/5 = 100)				
	Foundry	Points/ Crossings	Sleepers	Bolts	Foundry	Points	Sleepers	Bolts	Total
1884-89	68.1	8.6	23.8	-0.5	91.3	77.7	86.9	n/a	88.5
1889-94	41.7	14.6	42.9	0.8	38.0	89.9	106.6	30.9	60.2
1894-99	62.2	20.1	14.9	2.8	38.0	83.0	24.8	70.2	40.3
1899-04	52.3	35.6	8.4	3.7	19.5	89.4	8.5	57.6	24.6
1904-09	62.9	29.6	6.8	0.7	23.9	75.7	7.0	11.4	25.0
1909-14	61.7	16.6	16.3	5.5	20.3	36.7	14.6	74.7	21.7
1914-19	16.1	9.4	60.9	13.6	14.6	57.1	149.8	513.4	59.6
1919-24	64.2	9.2	19.3	7.4	50.1	48.4	41.0	239.5	51.5
1924-29	-34.6	104.8	10.5	19.3	-8.3	169.4	6.8	192.5	15.8
1929-34		overall loss			-8.7	43.9	-1.4	-97.1	-3.3
1934-39	83.9	78.9	-4.1	-58.7	3.2	20.1	-0.4	-92.4	2.5
1939-44	11.1	48.4	21.2	19.2	4.5	132.4	23.4	324.8	26.8
1944-49	37.1	6.7	33.1	23.2	19.0	23.1	46.2	497.1	33.9
1949-54	21.2	17.3	62.7	-1.3	40.3	221.4	324.4	-100.8	125.2
1954-59	-24.10	66.3	70.4	-12.7	-32.2	601.5	258.1	-711.4	88.8
1959-62		overall loss		n/a	-83.9	-97.2	50.9	n/a	-55.1

Bolts: 1888/9 is taken as the base year and adjusted as in table A3.55
= £1610

Calculated from Private Ledgers

A3.64 MIDDLESBROUGH PROFITS AS % SALES (AVERAGE)

	Foundry	Points/Crossings	Tiebars/Sleepers	Bolts	Overall
1884-89	23.6	16.9	15.0	(-4.5)+	19.7
1889-94	15.8	17.8	12.6	2.0	13.8
1894-99	16.6	18.0	8.9	6.6	14.4
1899-04	9.2	14.3	3.4	5.5	8.8
1904-09	9.4	12.6	1.5	1.1	7.0
1909-14	8.5	7.1	3.3	4.6	6.4
1914-19	6.6	12.5	12.9	22.7	11.7
1919-24	12.5	7.9	4.8	6.5	8.7
1924-29	-8.4	22.9	1.5	4.5	5.0
1929-34	-14.5	15.1	-1.1	-4.1	-2.4
1934-39	2.3	5.3	-0.8	-8.0	1.6
1939-44	2.6	14.9	13.1	13.3	9.5
1944-49	5.9	3.7	5.7	14.5	6.5
1949-54	7.7	21.8	9.3	-3.5	10.8
1954-59	-9.3	24.5	9.3	-21.7	6.8
1959-62	-28.7	-12.4	3.8	n/a	-9.0

+ 3 years

Calculated from Private Ledgers

A3.65 MIDDLESBROUGH PROFITS AS % SALES

	Foundry	Points/ Crossings	Tiebars/ Sleepers	Bolts	Total
1.7.1884-30.6.1885	21.2	16.7	17.0	-	19.5
1885- 1886	19.6	13.1	12.3	-	16.3
1886- 1887	19.8	14.8	16.7	-23.0	17.9
1887- 1888	39.4	19.0	13.3	-14.4	26.4
1888- 1889	21.5	20.1	16.8	5.9	19.1
1889- 1890	14.4	21.6	14.6	7.9	14.9
1890- 1891	20.7	19.8	14.3	1.7	16.5
1891- 1892	7.4	15.9	11.3	0.1	10.2
1.7.1892-30.6.1893	*12.9*	*13.3*	*4.2*	*-5.8*	*8.1*
1.7.1893-31.3.1894	15.1	12.4	8.2	-0.5	11.3
1.4.1894-31.3.1895	13.9	15.8	4.4	0.3	10.6
1895- 1896	18.2	16.4	12.7	13.1	16.5
1896- 1897	18.8	17.9	12.0	12.5	16.5
1897- 1898	16.6	21.7	5.4	0.2	13.9
1898- 1899	12.1	16.7	7.7	3.3	11.7
1899- 1900	2.5	13.6	3.6	-4.5	4.6
1900- 1901	12.1	15.6	5.0	-3.2	10.4
1901- 1902	14.4	12.3	2.3	13.9	11.4
1902- 1903	8.3	13.0	4.5	13.3	8.4
1903- 1904	9.1	15.5	0.7	8.5	9.2
1904- 1905	7.3	18.4	2.1	-0.2	8.2
1905- 1906	10.8	15.1	3.2	10.1	8.9
1906- 1907	9.3	12.2	0.1	2.9	6.5
1907- 1908	9.2	9.1	1.6	7.1	5.3
1908- 1909	11.5	7.0	0.2	1.1	6.9
1909- 1910	9.1	7.0	-0.7	5.0	5.1
1910- 1911	9.4	1.6	0.9	-2.4	5.7
1911- 1912	5.1	4.8	3.7	1.3	4.1
1912- 1913	5.6	7.4	4.9	8.8	5.9
1913- 1914	11.1	11.3	4.7	6.4	9.0
1914- 1915	12.4	13.7	13.4	11.6	9.6
1915- 1916	7.3	10.9	11.6	26.8	10.8
1916- 1917	7.1	11.5	18.2	24.2	16.2
1917- 1918	2.4	16.2	13.0	43.9	13.1
1918- 1919	3.4	8.8	3.8	-3.5	3.4
1919- 1920	11.0	11.5	2.2	9.0	7.9
1920- 1921	8.0	6.5	7.9	6.6	7.7
1921- 1922	29.8	10.4	3.6	3.4	18.7
1922- 1923	5.8	1.3	4.7	2.1	4.5
1923- 1924	-5.2	7.6	0.7	9.2	1.4
1924- 1925	-3.5	11.6	0.6	9.7	2.6
1925- 1926	-3.7	16.6	3.4	-1.0	3.7
1926- 1927	-22.4	27.8	1.8	10.0	4.3
1927- 1928	-9.4	26.4	1.9	2.1	5.3
1928- 1929	-9.6	26.7	-1.6	2.1	9.1
1929- 1930	-12.6	25.6	3.0	-0.2	4.8
1930- 1931	-17.4	20.4	-17.1	-2.7	-2.3
1931- 1932	-8.0	-11.5	-9.3	-0.3	-6.1
1932- 1933	-25.2	-50.9	-26.9	-19.8	-27.4
1933- 1934	-20.1	-60.3	-2.2	-15.1	-21.7
1934- 1935	1.8	-7.0	-4.1	-8.9	-1.9
1935- 1936	-1.0	-1.7	-3.3	-7.6	-2.0
1936- 1937	-2.0	3.8	-4.8	-8.0	-1.5
1937- 1938	3.6	5.8	A	0.0	3.7
1938- 1939	5.4	11.4	1.9	-20.2	5.0
1939- 1940	8.3	9.0	A	-18.3	7.0
1940- 1941	2.9	0.8	3.4	3.9	2.5

/Cont...

A3.65 MIDDLESBROUGH PROFITS AS % SALES (continued)

	Foundry	Points/ Crossings	Tiebars/ Sleepers	Bolts	Total
1.4.1941-31.3.1942	-1.7	9.2	10.4	-31.1	3.1
1942- 1943	-0.8	21.3	6.9	10.7	9.8
1943- 1944	1.3	24.5	25.4	31.3	18.8
1944- 1945	-1.2	15.0	7.3	34.4	11.5
1945- 1946	-0.7	-2.3	3.6	26.4	4.3
1946- 1947	4.1	12.7	2.8	11.7	5.3
1947- 1948	5.6	-12.6	8.0	8.9	5.6
1948- 1949	12.8	-4.3	6.8	-22.0	7.3
1949- 1950	6.8	30.8	10.3	-2.4	10.4
1950- 1951	6.6	8.4	10.8	-2.8	8.4
1951- 1952	12.1	24.7	16.7	-15.0	14.5
1952- 1953	6.9	24.1	12.1	-2.7	11.2
1953- 1954	5.5	18.2	10.0	4.9	9.6
1954- 1955	-3.3	15.5	10.0	-3.7	7.6
1955- 1956	-5.0	30.6	7.0	-49.3	7.2
1956- 1957	-2.5	15.0	10.2	-52.5	5.7
1957- 1958	-13.7	31.4	7.4	-7.6	9.8
1958- 1959	-30.9	19.5	6.7	-27.0	2.9
1959- 1960	-40.6	-12.0	2.0	-16.0	-11.4
1960- 1961	-22.4	-10.5	3.9	-	-5.2
1961- 1962	-40.0	-18.3	1.7	-	-17.8
1.4.1962-30.9.1962	10.25	-7.5	30.1	-	10.5

A = Minimal sales no useful calculation possible

A3.66 GLASGOW/MIDDLESBROUGH SALES

	£ p.a.			%	
	Glasgow	Middlesbrough	Total	Glasgow	Middlesbrough
1884-89	157434	456694	614128	34.5	65.5
1889-94+	85712	444125	529837	19.3	80.7
1894-99	60327	284920	345247	17.5	82.5
1899-1904	67127	282573	349690	19.2	80.8
1904-09	47956	362148	410104	11.7	88.3
1909-14	44740	344987	389727	11.5	88.5
1914-19	70361	516068	586429	12.0	88.0
1919-24	77500	599581	677081	11.4	88.6
1924-29	31354	322695	354049	8.9	91.1

+ 4 yrs. 9 mos.

A3.67 COMMISSIONS (£)

	Received	Paid	Net	PAID Glasgow Foundry (A)	Middlesbrough Foundry (B)	Switches Crossings (C)	Sleepers (D)	Bolts (E)
1884-85	2793	2694	99	638	1730	0	225	-
1885-86	2258	7824	-5566	2578	3864	649	415	-
1886-87	1296	16919	-15623	490	14205	83	2064	0
1887-88	4770	12556	-7786	385	8578	1526	2023	0
1888-89	2655	8215	-5560	1792	3832	679	1347	0
1889-90	5735	14268	-8533	3679	2069	3580	4374	4
1890-91	9116	14272	-5156	531	2596	2952	7354	326
1891-92	2015	8084	-6069	19	800	1593	5613	59
1892-93	3686	6730	-3044	23	1356	1444	3251	96
(9 mos.)1893-94	1695	3600	-1905	4	1696	443	950	116
1894-95	665	4746	-4081	11	1792	1277	1351	60
1895-96	5050	8032	-2982	0	3736	1869	641	131
1896-97	5227	12093	-6866	-	7589	1534	2484	216
1897-98	5429	9222	-3793	22	3433	2793	2319	388
1898-99	4728	4501	+227	0	2923	606	963	9
1899-00	4780	5094	-314	0	2178	878	1736	0
1900-01	3421	3624	-203	7	1384	604	1629	0
1901-02	4098	7727	-3629	1	2810	3533	1383	0
1902-03	2630	3850	-1220	201	610	1635	1184	70
1903-04	3300	3439	-139	78	295	1838	626	489
1904-05	3294	4762	-1468	100	1676	1492	980	514
1905-06	3580	5407	-1827	100	2241	730	1881	206
1906-07	3403	3380	+23	26	1859	462	759	274
1907-08	4016	3580	+436	0	2560	310	337	331
1908-09	2147	5439	-3292	0	2114	325	2651	299
1909-10	2331	4216	-1885	37	803	1302	1550	372
1910-11	3315	4178	-863	0	2011	1024	930	470
1911-12	4275	6560	-2285	29	1755	991	3173	574
1912-13	5385	9648	-4263	0	3991	1866	3249	486
1913-14	6334	17026	-10692	17	10004	2792	3456	483
1914-15	6054	11113	-5059	4	4290	3378	3047	297
1915-16	3487	6995	-3508	1	4689	1186	941	22
1916-17	1698	2910	-1212	4	1447	1266	105	5
1917-18	1115	2210	-1095	-	466	1527	-	97
1918-19	692	1485	-793	5	621	575	-	20
1919-20	1514	5050	-3536	-	1377	1189	2154	171
1920-21	4007	7296	-3289	-	2000	1536	3308	357
1921-22	2703	12170	-9467	-	3804	2001	4837	1283
1922-23F	2712	5147	-2435	-	521	1165	3233	197
1923-24F	5520	5043	+477	-	684	1324	2394	540
1924-25F	2946	6364	-3418	-	684	2622	2496	520
1925-26	2514	5372	-2858	-	380	3558	951	328
1926-27	1419	2942	-1523	-	5	2184	280	414

ACCOUNTING POLICIES CHANGE

	Foundry G		Points J		Sleepers		Bolts		K
	In	Out	In	Out	In	Out	In	Out	Net
1927-28	324	74	1718	4778	2114	381	461	250	-1298
1928-29	14	254	1069	5106	130	625	72	865	-5565
1929-30	1699	1638	1801	4091	905	1306	625	939	-2944
1930-31	675	821	839	2356	307	352	5	333	-2114
1931-32	2821	2030	81	447	354	407	90	551	-89
1932-33	663	52	15	258	16	17	1	180	+188
1933-34	220	122	-	131	-	22	107	211	-159

/Cont...

A3.67 COMMISSIONS (£) (continued)

	Foundry G		Points J		Sleepers		Bolts		K
	In	Out	In	Out	In	Out	In	Out	Net
1934-35	1005	317	174	518	11	72	371	89	+565
1935-36	1434	204	299	1014	-	199	239	900	-345
1936-37	1158	554	433	1285	22	32	28	437	-667
1937-38	942	690	622	1770	68	-	81	132	-879
1938-39	807	479	606	1630	-	119	164	72	-783
1939-40	571	1263	593	1223	18	-	5	95	-1394
1940-41	245	614	162	725	1	9	279	437	-1098
1941-42	18	678	258	819	-	68	46	245	-1488
1942-43	33	552	205	928	-	347	94	113	-1608
1943-44	12	714	188	1198	-	232	49	542	-2437
1944-45	-	790	175	1148	9	127	138	323	-2066
1945-46	7	880	603	2393	K	1173	120	188	-3836
1946-47K	-	1138	665	963	-	1197	821	952	-2764
1947-48	-	1277	307	906	-	1627	386	849	-3966
1948-49	-	1784	646	1527	-	1390	404	334	-3985
1949-50	-	1779	940	1753	-	2403	18	156	-5133
1950-51	-	1643	38	1548	-	3071	76	103	-6253
1951-52H	-	2266	358	1790	-	2887	-	170	-6755

Source: Private ledgers

Notes: see after A3.68

A3.68 COMMISSIONS PAID OUT AS % SALES (Middlesbrough only)

	Foundry	Switches/Crossings	Tiebars/Sleepers	Bolts
1884-85	0.5	0	0.2	-
1886-86	1.5	1.5	0.2	-
1886-87	5.3	0.3	1.9	0
1887-88	4.1	3.0	1.5	0
1888-89	1.5	1.5	0.9	0
1889-90	0.7	5.2	1.3	0.0
1890-91	1.0	4.7	2.0	1.1
1891-92	1.2	3.5	3.8	0.2
1892-93	1.5	3.7	3.2	0.5
1893-94 (9 mos)	2.7	2.1	2.4	1.0
1894-95	2.5	3.4	2.5	0.6
1895-96	2.7	4.9	1.3	1.1
1896-97	2.9	3.4	2.1	0.8
1897-98	1.9	4.8	2.9	1.9
1898-99	2.3	1.2	2.2	0.1
1899-1900	1.6	1.7	2.5	0
1900-01	1.0	0.8	2.4	0
1901-02	2.2	5.9	2.7	0
1902-03	0.5	3.8	1.7	0.4
1903-04	0.2	2.4	1.1	2.7
1904-05	0.9	2.1	1.5	3.0
1905-06	1.4	1.3	1.7	1.4
1906-07	1.1	0.8	0.6	1.5
1907-08	1.3	0.5	0.2	1.9
1909-09	1.7	0.5	3.5	1.9
1909-10	0.9	2.4	1.8	1.5
1910-11	1.3	2.6	1.7	2.7
1911-12	1.7	2.6	2.7	2.5
1912-13	2.2	3.4	2.4	1.5
1913-14	3.7	4.0	2.3	1.5
1914-15	2.6	5.2	2.4	1.0
1915-16	3.0	3.2	0.6	0.1
1916-17	1.4	3.0	0.0	0.0
1917-18	0.3	3.3	-	0.2
1918-19	0.4	1.6	-	0.1
1919-20	0.5	1.8	1.1	0.3
1920-21	0.4	1.4	0.9	0.5
1921-22	1.2	3.4	3.2	2.6
1922-23F	0.4	3.2	1.5	0.4
1923-24F	0.7	3.4	2.1	0.8
1924-25F	0.7	5.5	1.9	0.9
1925-26	0.5	5.5	1.1	0.7
1926-27	0.0	4.1	0.3	0.6
1927-28	0.1	5.4	0.2	0.3
1928-29	0.6	4.6	1.1	1.0
1929-30	3.0	5.6	1.2	1.3
1930-31	1.2	4.6	4.6	0.9
1931-32	4.1	4.9	1.3	1.3
1932-33	0.4	4.0	2.2	1.1
1933-34	0.7	2.8	0.6	1.0
1934-35	0.6	3.2	0.7	0.7
1935-36	0.4	3.1	1.1	3.3
1936-37	0.6	3.5	0.9	2.0
1937-38	0.5	4.2	-	0.7
1938-39	0.4	2.8	0.5	0.6
1939-40	0.8	1.9	-	0.7

/Cont...

A3.68 COMMISSIONS AS % SALES (Middlesbrough only) (continued)

	Foundry	Switches/Crossings	Tiebars/Sleepers	Bolts
1940-41	0.7	1.3	0.0	1.5
1941-42	0.7	0.8	0.1	1.2
1942-43	0.5	0.9	0.6	0.3
1943-44	0.6	1.1	0.3	0.6
1944-45	0.6	1.2	0.4	0.5
1945-46	0.6	4.9	0.6	0.4
1946-47	0.5	1.7	0.5	1.5
1947-48	0.5	1.7	0.5	1.4
1948-49	0.5	2.6	0.6	0.9
1949-50	0.5	2.0	0.6	0.4
1950-51	0.5	2.1	0.7	0.2
1951-52H	0.6	1.8	0.6	0.4

Source: Private Ledgers

Notes: "Commissions" include legitimate payments to agents such as Macnees or to employees such as Cargill for the wire weaving machinery business he brought with him as well as payments to other members of cartels. The absence of either a full set of commission accounts or of private journals renders a proper breakdown impossible. How commission payments were accounted for changes, with changes in accounting standards, over the life of the company.

Outgoings generally exceed receipts, for the latter are, largely, payments to Anderston through cartels and, as is explained in the text, Anderston as a major manufacturer would expect to pay out more than it received through the Chair Association and through certain other cartels.

The tables A3.67 and 68 provide circumstantial evidence for developments outlined in the text.

(A) After 1891 the Glasgow Foundry largely retreated to local chair orders and Caledonian Railway ones, particularly for points and crossings chairs which, although "arranged" did not come within the commission payments system of the Chair Association.

(B) The absolute and proportionate collapse in commissions at the turn of the century appears to result from the temporary departure of Patent Nut and Bolt from the Chair Association.

(C) Reduced rates of commission may result from increased competition at points from 1900 with the expansion of makers and the arrival of new-comers to the business but the match is imperfect. Payments to Macnees may explain why commissions under this heading are proportionately higher than elsewhere.

(D) The continuance of the Sleeper Association seems to provide a steady stream of commission payments largely irrespective of the quantity, price and profitability of business.

(E) A natural delay from the inception of the Bolt Shop to its becoming competition explains the lack of commissions until 1890. It may be assumed that between 1898 and 1903 collusion arrangements were at a low ebb.

(F) The collapse of the Chair and Segment Associations, the revision of the Sleeper Association and the rise of the Switches and Crossings Association may all be detected from the commission figures for these years.

(G) The weakened performance of the foundry helps explain its becoming a net recipient of commission payments hereunder.

(H) Figures not extracted from private ledger no.3. As explained at note K, their importance as indicators of trading developments had diminished.

(J) The strength of Anderston's position in SAXA helps explain the strong net outflow of funds hereunder.

(K) The steady rise in the net payments made by Anderston reflects not just inflation and an increased level of business, but the revivor of the cartels. Payments of annual fees to full time secretaries are, it is assumed, included within commission payments. With a shortage of materials and an excess of business, the reverse of the situation of the 1920s/30s, the Associations could revert to setting minimum price levels and directly allocating work (see text). Mutual commission payments diminished in relative and absolute importance and in many instances ceased.

A3.69 CAPITAL, PROFITS AND RETURN ON CAPITAL

	(1) Issued Capital £	(2) Capital + Reserve £	(3) Share-holders' Funds £	(4) Gross Profit £	(5) Net Profit £	Gross Return on (1) %	Gross Return on (2) %	Gross Return on (3) %	Net Return on (1) %
At 1.7.1885	180000	182146	n/a	137828	133550	76.6	75.7	n/a	74.2
1886	180000	197146	n/a	123236	111369	68.5	67.7	n/a	61.9
1887	180000	205146	274827	97658	83037	54.3	49.5	n/a	46.1
1888	180000	203066	277492	115828	102709	64.3	57.0	42.1	57.1
1889	180000	205000	252928	117802	98120	65.4	58.0	42.5	54.5
1890	180000	205000	286613	145064	133700	80.6	70.8	57.4	74.3
1891	180000	205000	309879	138266	127729	76.8	67.4	48.2	71.0
1892	180000	205000	239473	35404	31806	19.7	17.3	11.4	17.7
1893	180000	205000	233655	30474	27457	16.9	14.9	12.7	15.3
1.4.1894	180000	200000	218234	19259	17261	14.3pa	12.5pa	11.0pa	12.8pa
1895	180000	200000	224854	23871	23340	13.3	12.0	10.9	13.0
1896	180000	200000	254031	53749	50945	29.9	26.9	23.9	28.3
1897	180000	205000	289618	85721	81087	47.6	42.9	33.7	45.0
1898	180000	205000	n/a	57398	51914	31.9	28.0	19.8	28.8
1899	180000	205000	n/a	35632	30867	19.8	17.4	n/a	17.1
1900	180000	205000	n/a	20427	16141	11.3	10.0	n/a	9.0
1901	180000	205000	244929	40791	37066	22.7	19.9	n/a	20.6
1902	180000	205000	247872	40380	35123	22.4	19.7	16.5	19.5
1903	180000	205000	240380	32995	27909	18.3	16.1	13.3	15.5
1904	180000	205000	236811	38115	33386	21.2	18.6	15.9	18.5
1905	180000	205000	227097	31363	24115	17.4	15.3	13.2	13.4
1906	180000	205000	228120	32716	27905	18.2	16.0	14.4	15.5
1907	180000	205000	223319	28560	23385	15.9	13.9	12.5	13.0
1908	180000	205000	224634	30061	25023	16.7	14.7	13.9	13.9
1909	180000	205000	219192	17725	13798	9.8	8.6	7.9	7.7
1910A	180000	195000	200327	7633	4158	4.2	3.7	3.5	2.3
1911C	180000	195000	198922	8282	7136	4.6	4.2	4.1	4.0
1912C	180000	195000	199664	8834	6517	4.9	4.5	4.4	3.6
1913	180000	195000	212066	24808	20381	13.8	12.7	12.4	11.3
1914	180000	195000	234205	49611	40460	27.6	25.4	23.4	22.5
1915	180000	205000	235962	42561	29867	23.6	21.8	18.2	16.6
1916	180000	207500	238560	44464	29489	24.7	21.7	18.8	16.4
1917	180000	210000	245636	94002	31644	52.2	45.3	39.4	17.6
1918	180000	215000	255641	126978	34455	70.5	60.5	51.7	19.1
1919	180000	220000	234682	22991	2942	12.8	10.7	9.0	1.6
1920	180000	220000	258165	52281	33307	29.0	23.8	22.3	18.5
1921	180000	230000	272258	86715	34490	48.2	39.4	33.6	19.2
1922	180000	240000	320760	109618	67814	60.9	47.7	40.3	37.7
1923	180000	250000	318320	24266	17144	13.5	10.1	7.6	9.5
1924	180000	250000	307928	15524	10249	8.6	6.2	4.9	5.7
1925	180000	250000	300937	13115	8650	7.3	5.2	4.3	4.8
1926	180000	250000	303036	13713	9412	7.6	5.5	4.6	5.2
1927	180000	250000	300909	11316	6845	6.3	4.5	3.7	3.8
1928	180000	250000	303866	23191	10001	12.9	9.3	7.7	5.6
1929	180000	250000	310357	28405	17665	15.8	11.4	9.3	9.8
1930	150000	222500	288841	17512	9982	9.7	7.0	5.6	5.5
1931	150000	220000	260652	-1992	-5273	-1.3	-0.9	-0.7	-3.5
1932	150000	218000	254852	-1135	-3236	-0.8	-0.5	-0.4	-2.2
1933D	120000	189000	223758	-2819	-4348	-1.9	-1.3	-1.1	-2.9
1934E	120000	190000	223047	-3189	-4742	-2.7	-1.7	-1.4	-4.0
1935	90000	160000	204935	4337	2792	3.6	2.3	1.9	2.3
1936	90000	158000	202451	2353	895	2.6	1.5	1.1	1.0
1937	90000	158000	196394	1997	451	2.2	1.3	1.0	0.5
1938	90000	158000	197873	10441	7533	11.6	6.6	5.3	8.4
1939	90000	160000	204228	14173	11285	15.7	9.0	7.2	12.5

/Cont...

A3.69 CAPITAL, PROFITS AND RETURN ON CAPITAL (continued)

	(1) Issued Capital £	(2) Capital + Reserve £	(3) Share-holders' Funds £	(4) Gross Profit £	(5) Net Profit £	Gross Return on (1) %	Gross Return on (2) %	Gross Return on (3) %	Return on (1) %
At 1.4.1940	90000	152500	204944	19352	7578	21.5	12.1	9.5	8.4
1941	90000	152500	201500	7131	4195	7.9	4.7	3.5	4.7
1942	90000	152500	205465	9879	6438	11.0	6.5	4.9	7.2
1943	90000	154000	211919	31551	8029	35.1	20.7	15.4	8.9
1944	90000	156000	218545	77468	10175	86.1	50.3	36.6	11.3
1945	90000	158000	224334	38970	11714	43.3	25.0	17.8	13.0
1946	90000	167500	240221	20641	10217	22.9	13.1	9.2	11.4
1947F	90000	123500	206396	31290	12842	34.8	18.7	13.0	14.3
1948	90000	128500	211491	37973	15969	42.2	30.7	18.4	17.7
1949	90000	131000	238856	52292	20923	58.1	40.7	24.7	23.2
1950	90000	136000	290412	93025	42025	103.4	71.0	38.9	46.7
1951	135000	187500	304519	77938	30630	86.6	57.3	26.8	34.0
1952	135000	202500	380113	152841	57802	113.2	81.5	50.2	42.8
1953	135000	217500	433908	172451	54318	127.7	85.2	45.4	40.2
1954	180000	277500	468453	157462	54251	116.6	72.4	36.3	40.2
1955	180000	290000	460742	98752	40851	54.9	35.6	21.0	22.7
1956	180000	290000	470650	96033	39907	53.4	33.1	20.8	22.2
1957	180000	315000	451789	62871	20627	34.9	21.7	13.4	11.5
1958	250000	365000	544200	162158	71084	90.1	51.5	35.9	39.5
1959	250000	365000	490121	404440	17736	16.2	11.1	7.4	7.1
1960G	62500	179700	222889	-74412	-81249	-29.8	-20.4	-15.2	-32.5
1961H	62500	163096	163096	-48294	-55765	-77.3	-26.9	-21.7	-89.2
1962H	62500	75150	49033	-102214	-115041	-163.5	-62.7	-62.7	-184.1
1963H	62500	38253	38253	3148	1871	5.0	4.2	6.4	3.0

Source: Private Ledgers, Minute Books

Return on capital for the year ending 30.6.X is on capital at 1.7.X-1.
The IMPERIAL TAXES SUSPENSE ACCOUNT created 1918 is regarded as a liability rather than a hidden reserve although its nature is to be both with a shifting centre of balance.

(1) The capital is assumed to be paid up from 1.7.1884

(2) Issued capital plus reserve funds

(3) Issued capital plus reserve funds, plus hidden reserve funds and any capital or revenue reserves

(4) Trading results plus interest, dividends received and commissions

(5) As (4) less depreciation, national insurance, income tax and directors' fees, i.e. the sum available for dividends.

A £10000 taken from reserves to provide for bad debts

B £100000 overdraft

C No depreciation Depreciation halved 1908/09 - 1909/10

D 1932/3 £12745 profit on investments is placed: £1000 to reserve, £3760 for extra depreciation, the balance to the profit/loss account

E 1933/4 £9148 profit on investments is placed: £1000 to reserve; rest to the profit/loss account

F Bonus dividend of £45000 (50%) paid from reserves

G Hereafter the reserve fund position becomes more complex and the General Reserve and Capital Reserve funds are, where appropriate, included

H Overdrafts of £39400 in 1961, £115573 (and a deficiency of £26117 at the profit and loss account) in 1962.

A3.70 CAPITAL AND PROFITS AS STATED UNDER REVISED ACCOUNTING CONVENTIONS (£)

	Departmental	Trading	Net	Net Current Assets	Shareholders' funds (after appropriation)
1945-46	18996	9122	10767	n/a	n/a
1946-47	29841	11945	13393	"	"
1947-48	38396	15991	17340	"	"
1948-49	49259	20419	21761	"	"
1949-50	89038	41031	42865	"	268225
1950-51	75794	29405	31681	146382	280724
1951-52	149664	142835	58852	221896	355970
1952-53	169569	175797	55631	260222	409439
1953-54	152503	159007	55554	279645	434791
1954-55	93771	99237	42163	261955	420905
1955-56	92058	95781	41220	187976	435437
1956-57	62964	64217	22727	183015	434164
1957-58	164023	163333	73184	266018	524131
1958-59	38626	41872	19836	227549	476537
1959-60	-79845	-75520	-79149		
1960-61	-41714	-42872	-54265		
1961-62	-91412	-96658	-113541		
1.4.1962-30.9.1962	+16980	n/a	n/a		

Source: Private Ledgers, minute books
Annual reports and accounts

A3.71 EXPENDITURE ON NEW PLANT, MACHINERY, BUILDINGS etc.

	Middlesbrough		Glasgow	
	Plant/Tools	Ground/Buildings	Plant/Tools	Ground/Buildings
1915-16	-	-	2769	-
1916-17	1882	-	114	-
1917-18	-	8	223	250
1918-19	192	-	814	-
1919-20	-	979	1374	-
1920-21	153	-	-	-
1921-22	832	8	434	-
1922-23	950	6578	125	-
1923-24	6614	-	-	-
1924-25	824	-	-	-
1925-26	1248	-	60	247
1926-27	2484	-	45	-

/Cont...

A3.71 EXPENDITURE ON NEW PLANT, MACHINERY BUILDINGS ETC. (continued)

	Middlesbrough		Glasgow	
	Plant/Tools	Ground/Buildings	Plant/Tools	Ground/Buildings
1927-28	483	-	247	-
1928-29	1017	1890	-	-
1929-30	1000	16	-	-
1930-31	1227	71	-	-
1931-32	-	532	-	-
1932-33	-	-		-
1933-34	1763	36		-
1934-35	-	-	Closed	Closed
1935-36	-	-		
1936-37	329	18		
1937-38	290	-		
1938-39	80	-		
1939-40	68	-		
1940-41	-	-		
1941-42	60	-		
1942-43	1159	2932		
1943-44	1009	40		
1944-45	914	121		
1945-46	5613	6640		
1946-47	3859	6461		
1947-48	8876	1105		
1948-49	11587	2400		
1949-50	3006	38		
1950-51	1032	2324		
1951-52	4659	-		
1952-53	5875	-		
1953-54	3882	373		
1954-55	2308	-		
1955-56	6239	-		
1956-57	10028	18498		
1957-58	13894	1781		
1958-59	-	1145		

A3.72 DIVIDENDS % (less tax) PAID IN RESPECT OF THE YEARS:

1884-85	50.00			1925-26	6.25	
1885-86	58.33			1926-27	6.25	
1886-87	43.75			1927-28	6.25	
1887-88	50.00			1928-29	7.50	
1888-89	50.00			1929-30+	8.00	
1889-90	66.67			1930-31	4.00	
1890-91	66.67			1931-32	4.00	
1891-92	16.67			1932-33+	4.00	
1892-93	16.67			1933-34	4.00	
1893-94	8.33	actual	11.11 p.a.	1934-35+	4.00 + 4.16	A
1894-95	10.83			1935-36	4.00 + 4.16	A
1895-96	25.00			1936-37	4.00 + 3.33	A
1896-97	45.83			1937-38	6.67	
1897-98	30.00			1938-39	10.00	
1898-99	18.33			1939-40	7.50	
1899-1900	10.00			1940-41	5.0	
1900-01	18.75			1941-42	6.25	
1901-02	20.83			1942-43	7.50	
1902-03	16.67			1943-44	10.00 + 5 bonus	B
1903-04	19.58			1944-45	15.00	
1904-05	15.83			1945-46	15.00 + 3.33	A
1905-06	16.67			1946-47	15.00 + 54.16	A
1906-07	13.33			1947-48	15.00 + 4.16	A
1907-08	11.25			1948-49	15.00 + 4.16	A
1908-09	10.00			1949-50	15.00 + 4.16	A
1909-10	5.00			1950-51	21.25 + 3.75	A
1910-11	4.17			1951-52	30.00 + 1.88	A
1911-12	3.75			1952-53	30.00	
1912-13	10.00			1953-54	40.00 + 5.00	A
1913-14	16.67			1954-55	40.00 + 10.00	A
1914-15	16.67			1955-56	45.00	
1915-16	16.67			1956-57	40.00	
1916-17	18.33			1957-58	44.72	
1917-18	18.33			1958-59	27.77	
1918-19	10.00			1959-60±	0 + 5.00	C
1919-20	15.00			1960-61	0 + 5.00	C
1920-21	15.00			1961-62	0 + 0	
1921-22	15.00					
1922-23	15.00					
1923-24	10.00					
1924-25	7.50					

A3.72 (continued)

± £187500 (15/- per £1 share) repaid 23 March 1960

+ £30000 capital repaid, ie. £1 per share on £6 shares during this financial year

A = Tax free bonuses from profits on sale of investments etc.

B = 60th Anniversary

C = Tax free bonus of 3d. per 5/0 share (5%) on capital of £62500, i.e. 3.45% on £90000 capital

No interim dividends paid 1926-46

From 1951 to 1959 the dividend shewn is that payable on old capital (£90000) whereas the capital was £135000 in respect of 1951-53, £180000 1954-57, £250000 1958-59

A3.73 SHARE PRICE (% of par.)

Calendar year

1906	117	1946	135	
1907	150, 117	1947	154	
1908	-	1948A	192-221	
1909	117	1949A	212-201	
1910	125-133	1950	200	
1911	117	1951	248	
1912	117		New Capital	Original Capital
1913	100	1952	162½	244
1914	100	1953	150-161-143-151	225-303
1915	-	1954	150-185	300-370
1916	117-121	1955	165	330
1917	121	1956	160-175	320-350
1918	125	1957	166-175	332-350
1919	119-142-121	1958	175-100-118-110-128	350-278-326-306-354
1920	108	1959	105-108-105	292-300-292
1921	115	1960	100	n/a
1922	-			
1923	123			
1924	125-129, 146			
1925	140, 110			
1926	-			
1927	102			
1928	96-102			
1929	100-101			
1930	100-97			
1931	91-80			
1932	81			
1933	77			
1934	81-75			
1935	75-71-75			
1936	70-119-108-112			
1937	113-107			
1938	108			
1939	107			
1940	100			
1941	75-83			
1942	83			
1943	83-96			
1944	117			
1945	133			

Source: Minute books

A excludes certain private transactions

A3.74 CARTEL MEMBERSHIP

	Chairs				
	1886	1914	1924	c.1935	1947
Anderston	✓	✓	✓	✓	✓
Head Wrightson	✓	✓	✓	✓	✓
Pease & Partners etc.	✓	✓	✓	✓	✓
Smith Patterson	✓	✓	✓	✓	✓
Patent Nut & Bolt/GKN	✓	✓	✓	C	✓
British Hydraulic	A	✓/C	A	A	A
MacFarlane Strang	B	✓/C	✓/C	A	A
Melvin	?	✓/C	✓/C	✓/C	✓
Howie	?	C	C	C	✓
Railway & General	A	X/C	C	C	✓
Taylor Bros.	B	C	C	C	✓
Tees Side Bridge	B	B	X	✓	✓
Cochranes	B	B	X	✓	✓
Stanton	B	B	B	C	✓
Williamson	?	C	X	?	?

A = not in business/closed

B = in business but not making this product

C = not a member but working in conjunction

X = competitive

Y = amalgamated with other member

	Switches and Crossings				
	1924	1935	1939	1950	1950s
Anderston	✓	✓	✓	✓	✓
Darlington	✓	✓	✓	✓	✓
Isca	✓	✓	✓	✓	✓
Summerson's	✓	✓	✓	✓	✓
Patent Shaft	✓	✓	✓	✓	B
White's	C	✓	✓	✓	✓
Edgar Allen	B	X	✓	✓	✓
Railway & General	C/✓	C/✓	C/✓	C/✓	X
Taylor Bros.	C/✓	C/✓	C/✓	C/✓	C

A3.74 CARTEL MEMBERSHIP (continued)

	Steel Sleepers					
	1914	1924	1929	c.1935	1947	1950s
Anderston	✓	✓	✓	✓	✓	✓
Bolckow's	✓	✓	✓	Y	Y	Y
Ebbw Vale	✓	✓	✓	A	A	A
GKN/GKB/SCOW	✓	✓	✓	✓	✓	B
Workington/USC	✓	✓	✓	✓	✓	✓
Braithwaite's	B	✓	B	B	B	B
Dorman's	B	✓	✓	✓	✓	✓
Colville's	B	X	X	✓	✓	✓