GOURLAYS
of
DUNDEE

THE RISE AND FALL OF A SCOTTISH SHIPBUILDING FIRM

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DUNDEE
ABERTAY HISTORICAL SOCIETY PUBLICATION No. 10
1964

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I. THE DUNDEE FOUNDRY

In the 18th Century industrial Dundee was expanding in two main directions. Textile works, needing abundant water, were stringing out along the lines of the burns, but the miscellaneous industries, especially those with heavy materials, were attracted to riverside sites, notably those to the east of the town. This eastern zone, a roughly parallel strip averaging only sixty or seventy yards in depth, was bounded to the North by Seagate and Blackscroft, and to the South by the river bank which ran roughly on the line of the modern Dock Street. As the years passed it was increasingly occupied by new enterprises: woodyards, whaling depots, shipyards, foundries and the like, a development which ruined the residential amenities and helped to drive the middle classes away from the traditional town houses.

Dundee Foundry - "East Foundry" as it was originally known - was established in this new industrial zone in about 1790 and was a pioneer in heavy engineering and machine making in Dundee. Within forty years there were others - Carmichaels, Douglas Foundry and Lilybank Foundry - all, like Dundee Foundry, prepared to take on almost any metal work from a simple casting to a complex piece of mill machinery or a steam locomotive. Collectively they reflect the impact of the Industrial Revolution and the growing employment of metal equipment in almost all branches of production and transport.

Though the activities of the Foundry in the first 30 years of its life are obscure, it is clear that by about 1820 it was turning its attentions towards the increasingly popular steam engines: in 1821, for example, " Mr Straton of the Dundee Foundry" supplied castings to Carmichaels for the engines of the ferry-boat Union. It was on the threshold of national prestige, for in the next two decades it was served by a group of distinguished engineers, their mentor and teacher being James Stirling, famous in engineering history for his resolute attempts to perfect the "air engine". The pioneers of heat engines in general had little theoretical basis for their work, indeed Carnot's Reflexions sur la Puissance Motrice du Feu of 1824 represented the first attempt to consider the whole cycle of operations within the engine, and Carnot clearly stimulated practising engineers to devise more effective methods of utilising the heat transmitted to the engine from the fire-box. Stirling's engine, designed and first patented in 1827, employed air instead of the more usual steam as its working substance, and embodied a "regenerator", a device whereby heat was alternately stored and released. Theoretically it represented a great advance towards the engineer's concept of the perfect cycle, and its actual efficiency in terms of the relationship between fuel used and power produced was, by the standards of the time, highly satisfactory. At least two air engines were installed in Dundee. One, of which little is known, drove machines in Chapelshade Works. The other, a 50 horse-power model, drove all the moving equipment in the Foundry itself for some years in the early 1840's. This engine was the subject of a paper by Stirling to the Institution of Civil Engineers in 1845 and was seen by Wilhelm von Siemens who reported on it by letter to his brother

Werner.(1) "From this meagre communication," wrote Werner, "it transpired that this machine was driven not by steam but by heated air. I found this idea exceptionally interesting for it seemed to form the basis for a profitable reshaping of the whole of machine technology." Its abandonment after a very few years of operation resulted from the then insoluble metallurgical problems in the construction of a durable heating chamber, but thirty years later eminent engineers still spoke of it with respect as "the celebrated engine of the Dundee Foundry".(2)

The bread and butter of the Foundry came from the sale of a wide range of engineering products to the local market, often in keen competition with neighbouring firms. Thus in June, 1829, the Dundee, Perth and London Shipping Company invited tenders for the engines and boilers for the tug William Wallace, the firm's earliest venture into steam. They accepted an offer of £1,200 from the Dundee Foundry, £60 lower than that from Carmichaels, but when new boilers where needed in 1832 both Dundee Foundry and Carmichaels were out-priced by Peter Borrie.(3) The spectacular growth of linen as a mechanised industry set up a great local demand for all kinds of mill equipment, a demand the Foundry was able to meet, and it is perhaps not without significance that Peter Carmichael, later to become the technical backbone of Baxter Brothers, was on the Foundry staff in the late 1820's. But unquestionably the Foundry made its most conspicuous contribution in the building of locomotives for the Dundee and Newtyle and the Arbroath and Forfar Railways. The former's Cash Book and Journal for 1834 records payments to the Dundee Foundry in respect of the stationary engines at Hatton and Balbeuchly Inclines and, on 31st October, the sum of £700 for the locomotives then called "Engine No. 3". Four years later Stirling was building the first locomotive for the Arbroath and Forfar. On the 10th December, 1838, according to the Arbroath and Forfar's Letter Book, he undertook to effect delivery of the Victoria, on which the Railway directors pinned great hopes, an attitude encouraged by Stirling who "greatly boasts of her superiority".

It is not therefore surprising that the bright young men in this nursery of railway engineering were eagerly sought after by the railway companies themselves. James Gow left the Foundry in 1839 to become Resident Engineer and Superintendent of Mechanics on the Arbroath and Forfar, but the real fame in this field rested upon Patrick Stirling and Archibald Sturrock, both of whom served their apprenticeships in the Dundee Foundry and rose to the very peak of their profession as Locomotive Superintendents in great English railway companies. In the engineering world of the 1830's and 1840's, "Dundee Foundry" was a name to conjure with.

On the departure of the Stirlings the Foundry, with this enormous fund of goodwill, passed into the hands of new owners, Messrs Gourlay, Mudie and Company. They were in business by April, 1846, when they successfully tendered for the conversion of two Arbroath and Forfar locomotives to fit the "standard" gauge then being introduced.(4) It was a time of intense activity in the engineering world, with rapid mechanisation in both manufacturing and transport. But so far the pressures of standardisation and mass production had not forced founders and engineers to cluster together in few favoured locations: machines were still normally "custom built" to suit individual requirements, and there was still scope in every sizeable industrial region for a handful of adaptable engineering firms.

From time to time in earlier centuries, Scotland had buzzed with reports of the doings of a Gourlay:(5) Robert Gourlay, who was forced to do penance in St. Giles in 1574 for exporting grain contrary to the public weal; Oliver Gourlay, a Fife agricultural improver who, in 1780, assured St. Andrews Town Council that by constructing a road to his estate at their expense they would "eternize their

names"; his son, Robert Fleming Gourlay, who was known equally for his reform agitation, his three-volume work on Canada, and his attempt to horsewhip Lord Brougham in the Lobby of the House of Commons. There had been generations of peaceable Gourlays in Dundee: maltsters, meal-makers, glovers, and - the epitome of respectability - a Town Clerk. But the Gourlays who acquired part-ownership of the Dundee Foundry in 1846 were not of the Dundee branch. They came from Edinburgh, descending from a family which had contented itself with the modest livelihood provided by medicine and similar learned professions.(6)

Four brothers were, at one time and another, involved in the creation of this new Gourlay foothold in Dundee.(7) Of these, Alexander, who retired in 1864, and William, who retired in 1874, left no very distinctive mark. Of the other two, Gershom was clearly the business man and Henry the technician. Gershom, though a lawyer by training, seems to have been the chief "Gourlay" element in the firm of Gourlay, Mudie and Co., but when that firm was dissolved in 1853 his place at the Foundry was taken over by his brothers Henry and Alexander, whilst he went back to the law, joining D. S. Littlejohn in a legal partnership which lasted till 1864. By that time the Gourlays had gone into shipbuilding, and Gershom rejoined the family business in the place of his brother Alexander.

The reputation of the firm, both as engineers and shipbuilders, stemmed largely from the ability of Henry Gourlay. Though a member of the Institution of Engineers and Shipbuilders in Scotland and of the Institution of Naval Architects, he never featured prominently in their proceedings, indeed apart from a paper to the British Association in 1867 little is available for judgement of him except the circumstantial evidence of the firm's expansion and the respect with which he was treated by his contemporaries. These alone indicate that he was a great mid-Victorian engineer. Under his technical direction the Dundee Foundry "became one of the best-known marine engine works in the north-east of Scotland", and the impetus which he gave in this development persisted throughout the 19th Century. When J. A. Ewing wrote his article on steam power for the 9th Edition of the Encyclopaedia Britannica (1887), he used designs for a Gourlay double-ended marine boiler to illustrate the "most modern construction for high-pressure steam", and in some of its best periods (e.g. 1891) the Dundee Foundry supplied engines for ships built by other firms.

In general, however, the Foundry became ancillary to Gourlay's own shipyard. As a result its output reflected the instability of shipbuilding, with good phases, when up to 15,000 H.P. a year might be built, varying with bad when annual output might be only a few hundred horse-power.(8) It was in 1904, in one of these slumps, that Gourlays made their last real effort to diversify the demands on the Foundry by entering the expanding market for high speed engines for the generation of electricity. But by then the firm was nearing its end, and modern engine building is another of the "might have beens" in Dundee's economic history.

II. SHIPBUILDING

At their meeting on 1st May, 1854, the Harbour Trustees had before them a letter from Gourlays requesting the use of a piece of land on which to build an "Iron Vessel".(9) To the Trust's offer of a short let of up to six months, Gourlays responded with a counter-proposal for a three year lease, and when this had been effected in July, 1854, with a further proposal for five years. In brief, by the summer of 1854, Gourlays had become shipbuilding tenants of the Harbour Trust, occupying until 1870 a site at the east end of Marine Parade.

This decisive step in the extension of the firm's activities showed a fine sense of opportunity. The period was one in which British overseas trade was expanding fast - in terms of shipping entered and cleared at British ports it rose by two-thirds between 1847 and 1860 - and Britain was supplying at least 60% of the entire world's modern merchant shipping. Demand for new ships was, in consequence, highly encouraging to builders, whilst other factors enabled them to offer remarkably steady prices. A shrewd engineer in a seaport could hardly fail to recognise the economic attractions of shipbuilding. Similarly the traditional faith of shipowners and builders in wood was beginning to yield in face of the claims of iron. In 1850 only sixty-one iron ships were built in all the yards in the United Kingdom: in 1854, when Gourlays decided to build their "Iron Vessel", the corresponding figure was 188, and it is symbolic of their opportunism that Gourlays concentrated all their efforts on iron from the start. Iron ships had been built on the Tay before this time, but the pioneers either failed (for example, Borrie), or abandoned shipbuilding (for example, Carmichaels), and from 1842 to 1854 wood alone had been used by the Dundee shipyards.(10)

Similarly, Gourlays went straight into steam and screw propulsion. When they first came to Dundee the country's annual production of steamships (as measured by tonnage) was rarely more than one-tenth of that of sailing ships, but by about 1850 steam was gaining rapidly in favour, and by 1853-4 the ratio of new steamers to new sailing ships had risen to the order of one to three. The other great dispute - that between the merits of paddle and screw - had been subjected in 1845 by a somewhat shame-faced Admiralty to one of the most hilarious experiments in British marine history. Two vessels of equal tonnage and engine power, Alecto (paddle) and Rattler (screw), had been tethered stern to stern by a massive cable. Alecto was allowed to start first, but within minutes of both ships going "Full Ahead" she was slipping backwards at 2 knots, her paddles threshing the water in futile rage.(11) Before they turned to shipbuilding Gourlays were directly involved in these important technical changes in the industry. They supplied the 70 H.P. engine for Correo, a screw steamer built at Dundee by Browns, thus contributing to the introduction of the screw Dundee shipbuilding and, no doubt, observing the results with keen interest.

But whilst they came to the industry uninhibited by tradition they were able to avail themselves of the pool of trained shipyard labour which their predecessors had created. As technicians, Gourlays led a revival of initiative in Dundee shipbuilding: as employers they stepped into the shoes of the old brigade - Adamsons and the Calmans - who were either just out of business or were wasting away.

In the earliest years their ships were destined largely for the coasting trade. The first, Pavo, plied between Arbroath and Newcastle, but it was as builders for the Dundee, Perth and London Shipping Co. that they made their most significant contribution to this branch of shipping. (12) D.P. and L. had used paddle-steamers since 1834 but had looked principally to the Clyde, especially to

Napiers, for their ships. Hence the commissioning in 1856 of a screw steamer from Gourlays was as much a departure for D.P.and L. as it was a triumph for the Dundee shipyard and it inaugurated an association between the two firms in which bargaining seems to have been reduced to the bare minimum required by business etiquette. Thus in 1862 Gourlays' offer of a vessel on the stocks for 18,250 was met by a counter-offer of 18,000, and when, four months later, Gourlays suggested a sister ship for 18,250, D.P. and L. again accepted subject to the deduction of the odd 250. As a result of such cordial negotiations, eight steamboats were added to the D. P. and L. fleet between 1856 and 1868, and it was not until the 1870's and 1880's that the Dundee yards began to compete seriously for D.P and L. favours.

London, the first of this series built for D.P. and L., was destined to add further to the laurels of her builders. On 20th November, 1865, the Directors of D.P. and L. received the alarming news that London had been hit amidships in collision with the collier Harvest Queen and had sank in the river off Monifieth. They immediately raised an action in the Admiralty Court against the owners of Harvest Queen and entered into agreement with a Civil Engineer - a Mr Page - to raise London from the river bed. But hopes where dashed when, by the middle of 1866, the Court held that both ships were responsible, Page withdrew from his attempts at salvage, the Harbour Trust presented claims for lighting the wreck, and the Admiralty threatened to blow it up as a hazard to navigation.

In this crisis the Manager of D.P. and L. pressed Henry Gourlay to attempt salvage operations. Years later he wrote of his reactions: "I was very unwilling to do so, as I had the management of both engineering and shipbuilding departments on my shoulders, and I had no experience in lifting vessels. My firm had, however, been under great obligations to the Company (i.e. D.P. and L.) and it was not easy to refuse anything to so kindly a man as Mr Couper."(13) Accordingly on 20th September, 1866, Henry Gourlay attended a meeting of the D.P. and L. Board and agreed to try his hand on the understanding that he received half the value of the ship if he succeeded, and met half the cost of the attempt if he failed. His attempt and success made headline news. He hired Queen from the Company and adapted her gearing so that the engines drove two huge centrifugal pumps capable of moving 6oo tons of water in less than an hour. After a series of frights and alarms, when it looked as if they would finish with two wrecks on their hands instead of one, the salvage went off beautifully with London rising from the river bed looking - in Gourlay's words - "like some great monster we had fished up from the depths of the sea". Two years later a payment of 900 was accepted from the owners of Harvest Queen in full settlement. The reconditioned London went back into D.P. and L. service and, renamed Hull in 1892, remained in their fleet till 1909.

By the time of the raising of London, Gourlays had become the biggest of the five effective shipbuilding firms at Dundee, employing about 300 men against 220 at Stephens and 200 at Brown and Simpsons.(14) Their output from 1861 to 1867 approached 14,000 tons, all of iron, and only about one-sixth of it sail. By comparison, Brown and Simpson's total of 5,000 tons was nearly all sail and at least half wood; and of Stephen's 10,000 tons more than half was wooden whalers with only auxilary steam engines. The other two yards were both very small and built exclusively in wood and sail. But what is more important than mere quantitative growth is the technical enterprise displayed by Gourlays in these early years. Though no Tayside yard challenged Stephens in whaler construction, the installation by Gourlays of an engine and screw propeller in the whaler Tay in 1858 was an historic innovation which Stephens were to copy with oustanding success.(15) Similarly it was Henry Gourlay who, at the British Association in 1867, presented a masterly assessment of the merits and defects of iron as a medium for whaler construction. In their Dalhousie of 1858 Gourlays introduced the compound engine to

Tayside shipbuilding; they made remarkably early experiments of steel in ships; and when, in the boom years of the 1860's, the jute manufacturers began to ship their own raw material, it was Gourlays who built Dundee for Gilroy and Co.(16) Launched in 1867, this Dundee of 1,295 tons was the biggest ship so far built on the Tay, and an interesting commentary on the progress of Dundee shipbuilding over the previous fifty years, for in 1817 Tay of 350 tons, launched from "Mr Calman's dock", had represented the peak in size.(17)

III. CAMPERDOWN YARD

Meanwhile the Harbour Trust was reclaiming land down river from the existing shipyard area and, after a series of frustrations, Camperdown Dock was finally opened in 1865. East of this again lay new ground, a portion of which was offered by public roup on 18th December, 1869, and let to Gourlays (the only bidders) at £430 19/- a year. This new site had the double merit of lying further down river and of providing space for longer slipways than the original yard at Marine Parade, and in view of the current trends in ship length and tonnage it is not surprising that Gourlays seized this opportunity to make the short move to a more adaptable site. Here the firm remained until its final dissolution, though contiuing to use the old Dundee Foundry as its general engineering works.

As in 1854, the decision was splendidly timed. After two decades of generally solid prosperity the British economy was on the eve of the great boom of the early 1870's in which, stimulated by the opening of the Suez Canal and by the expansion of world trade, shipbuilding participated up to the hilt. Initially ship construction costs rose with the swell of the boom, but ship-owners, sensitive to the encouraging rise in freights, kept up a steady flow of orders for new vessels. Hence by 1874 British yards as a whole were turning out 50% more tonnage than in 1871, and even in relatively slack years such as 1876 and 1879 their output was comfortably above the average of the previous decade.

At Camperdown Yard Gourlays continued their own upward trend in both size of ships and in overall tonnage. In 1871, the first full year there, five vessels were launched, all of 1,000 tons or more,(18) and at the end of the year there was the encouraging spectacle of four more on the stocks. Nevertheless, even locally their continued growth was by no means uncontested. Their old loyal patrons, the D.P. and L. Shipping Company, now normally invited competitive tenders, and on two occasions, in 1873 and 1874, W.B. Thompson (the Caledon Yard) secured contracts for which Gourlays had tendered, one of them for re-fitting a ship which Gourlays had built.(19) It was, however, competition within an industry of healthy overall growth, and though the national economic boom ended by 1874-5, Dundee's shipbuilding output touched a new record level in 1876, seven of the twenty-three launches coming from Gourlay's yard.

In the long run, however, shipbuiding mirrored the economic looks of the nation, and by the turn of the decade the radiant health of the early 1870's gave way to the furrows of uncertainty. A combination of technical changes, slack years and personal decisions led to the final extinction of most of the "old guard" in Dundee shipbuilding, the wood and sail men who had served their apprenticeship when Victoria was a girl, and, apart from the brief appearance of Pearces, the Dundee industry in the late 19th Century was dominated by Gourlays, Thompson and Stephens. By now Stephen's yard at Dundee had virtually become a specialist branch of the main activities on the Clyde; Thompson and Gourlays, both essentially general merchant shipbuilders, moved closely in step in their exploitation of changing techniques and materials.

Gourlays' share of the widely fluctuating Dundee total in the last two decades of the 19th Century can be shown statistically (20):

Ship Building Tonnage		
Year	% of Dundee total (Average for 1881-85 = 100)	Gourlay
1881	113	59
1882	119	35
1883	152	57
1884	72	56
1885	44	26
1886	21	60
1887	85	32
1888	67	40
1889	110	45
1890	147	47
1891	117	48
1892	132	41
1893	38	76
1894	54	9
1895	48	67
1896	38	67
1897	77	59
1898	87	46
1899	107	57
1900	129	32

In the twenty years here surveyed, of the 291,000 tons of shipping built at Dundee, Gourlays were responsible for 136,000, but, as the figures show, their proportion varied greatly year by year from this overall average of 47%.

Certain of the peaks stand out in sharp relief. Their very high total for 1881 consisted of only three vessels, of which Merton Hall was the most striking. Of well over 4,000 tons, she was built for Alexander and Radcliffe of Liverpool (the "Hall Line") and, as was appropriate for the greatest ship so far launched on the Tay, her christening by Henry Gourlay's daughter was accompanied by champagne and mutual congratulations.(21) The next year saw her sister ship, Aston Hall, and 1883, a year of magnificent total output, Eden Hall and Peveril, both also for the Liverpool Register.

Then came a serious slump. Apart from two small contracts from London and one from Australia. Gourlays were building from 1884 to 1888 entirely for local owners, notably William Thomson, Bruce, Loch Line and D.P. and L., and few of these new ships approached the size for which Gourlays' yard was equipped. The two years 1885 and 1886 rank among the worst ever experienced in Tayside shipbuilding. Gourlays built only three ships, with an aggregate tonnage of little more than 4,000.

If quantity was lacking, quality was thoroughly maintained. Thus in 1883 Camperdown Yard produced for D.P. and L. the second Dundee. An all-steel vessel, her saloon fittings included sofas "upholstered in blue Utrecht velvet" which "would form excellent beds at a pinch", and a sumptuous ladies' cabin which

"recognises the penchant of the sex for social intercourse."(22) Two years later this was replaced by a third Dundee, so christened on 7th November, 1885, by Miss Mary Jameson of Perth. Embodying all the most modern characteristics of construction, this vessel had the added distinction of electric lighting throughout, installed by Richard Miller of St. Enoch Square, Glasgow, under the guidance of Alfred Ewing, recently returned from Tokyo to Dundee to become Professor of Engineering in University College. Electric lighting was in its infancy - the earliest use on ships had been made only six years earlier - and though the early installations presented great problems in the maintaining of a stable supply, the lights on Dundee "were very steady, and gave general satisfaction."

Valuable as these local orders were in holding together a nucleus of skilled labour, it became increasingly clear as the years passed that even if all local owners bought from Dundee yards there would not be enough orders to sustain an industry of significant dimensions.Hence recovery at Gourlays from the slump of the mid 1880's came with the resumption of "outside" orders; indeed from 1889 to the end of their existence Gourlays built overwhelmingly and at times exclusively for owners in England and overseas. Thus the fine total for 1890, 11,616 tons, was for English, French and Australian owners. It included a new record, the first 5,000 tonner to be built at Dundee, and the biggest ship Gourlays built until their Marwarri and Bengali of 1899-1900.

In this phase, therefore, Gourlays can be regarded as a producing unit in the international ship market, in direct and open competition with the great yards of the Clyde and the Tyne, but sharing with them in the periodic booms in British shipbuilding as a whole. In some years, for example 1890, Gourlays had no contract at all with a Scottish customer. Instead their orders came from South Africa, South America, India, Russia, Australia, Finland, Turkey and from "a Greek Gentleman of Marseilles, Monsieur Nicolas Couppas".

A firm so geared to the world market is exposed to the global winds of economic change, and in the early 1890's crises in distant lands - Argentina, the United States, the Mediterranean countries - cut the flow of foreign orders to Gourlay's yard, and in these moments of slack Dundee and other Scottish owners came to the rescue. A slack shipyard will offer favourable prices, a fact of which local customers took advantage. So of the total of 8,685 tons launched by Gourlays in 1892, 3,343 was represented by Iona for William Thomson & Sons of Dundee, and 1,737 by another London for D.P. and L. This London was of steel construction, rigged as a fore-and-aft schooner with 300 nominal horse-power of steam and capable of about 16 knots. Her passenger accommodation was up to the lavish standard for which Gourlays were becoming famous: a music-room luxuriously embellished with scenes from the works of Sir Walter Scott; an abundance of rosewood pilasters and gilded cornices; and electric lighting by Messrs Lowden of Dundee. A further 1,201 tons in the same year was represented by Dungeness for the partners who, the year following, became the Clyde Shipping Company of Glasgow. It is testimony to the stoutness of her construction that she remained in operation with Clyde Shipping Company until 1926 and then, as Inebolou Stambul, served Turkish owners for another nine years, finally foundering in a hurricane off Smyrna in November, 1935.

Similarly, the great bulk of the tonnage built in 1893 was taken up by the 3,838 ton Matin for R. A. Mudie & Sons of Dundee, though the engine-shops had a rather better year with orders from London and Newcastle-upon-Tyne. But in spite of this faint streak of sunshine, Gourlays were clearly in a deep slump, and 1894 was far and away the leanest year they had known in their career as shipbuilders. Their total output was only three small paddle-boats, one for the Dundee Pleasure Boat

Company and the other two for Joseph Constant of London, acting as agent for the Turkish Government. The New Year brought no cheer: one vessel only was under construction (then labeled "No. 162" and eventually sold to Singapore as Juno) and the order book was completely blank. When at full capacity, Gourlays employed 500 men and boys: there were weeks in this slump when not more than one-tenth of these were taking a full pay packet from the shipyard.

The climb from the trough of 1893 was slow, both globally and in the Camperdown Yard. Ship repairing and refitting helped to provide employment in both the Yard and the Foundary, though as Gourlays had vigorously pointed out some years earlier, the graving dock facilities were sadly deficient and a lot of this work was lost to other ports.(24) In fact it was not until 1897 that new orders, the real index of shipbuilding health, were again decisively rising. Gourlays' participation in this revival revealed - perhaps indeed resulted from - a willingness to accept orders for a wide range of ships. Thus in the three years 1898-1900 their products included a luxury passenger ship for Finnish owners, reinforced for navigation in the ice-ridden waters of the Baltic; five trawlers, the smallest of them only 128 tons; two monsters of over 5,000 tons each for Brocklebanks; and a 195 ton pleasure boat for the owners of Morecambe Pier.

Though contracts were concluded with a wide range of customers, a significant feature of Gourlay's order-book in the years about the turn of the Century is the amount of building done for British railway companies. Of the thirty vessels built between 1902 and 1908, nine were for the Great Eastern, the Great Central, and the London and South-Western. This was a highly competitive market with exacting engineering standards and rigid terms of contract. Thus in the early months of 1903 the Great Central considered eight tenders for a paddle-steamer for the ferry service between Hull and New Holland. Having eliminated one tender on the grounds that it did not completely satisfy the specifications, the Great Central's Board placed the order with Gourlays, whose offer of £16,720 was over £1,000 lower than the next most attractive, and £2,000 to £3,000 lower than offers from nationally-known shipbuilders in the North of England and on the Clyde.

It is something of a paradox that though in their early days Gourlays were among the Scottish pioneers in the use of the screw propeller, towards the end of their career they achieved something of a reputation for small paddle-steamers of this kind. Another example was Eagle, launched in 1898, and the twenty-eighth ship built by them for the General Steam Navigation Company of London. Apart from D.P. and L. in the early days, no other shipowner showed anything like this unswerving loyalty. Certainly there were other occasional repeat orders, but in general Gourlays relied on picking up orders where they could. Clearly the firm lived by its versatility, its keenly trimmed prices, and its growing reputation in high quality passenger accommodation. Possibly its peak achievement in this last respect was in Brussels, launched in 1902 for the Great Eastern Railway for use on the Harwich packet service. Boasting a state room "understood to be reserved for the use of Royalty", she became (according to the Advertiser) "known to travellers as one of the most sumptuously fitted steamers afloat".

IV. ".....AND COMPANY"

Gershom Gourlay, the last of the original group of brothers, withdrew from active participation in the firm in1889, and moved to Edinburgh in 1892 and died there ten years later. A man of retiring disposition, he had taken relatively little part in the social or municipal life of Dundee, but for years he was the strong tower at Gourlays, and when he died in 1902 the Dundee Advertiser did no more than justice in saying that the town's status in shipbuilding owes more to him than to any other individual. On his retirement, his two sons, Henry Garrett and Charles Gershom, were joined by James Gordon Lyon, but the legal structures of the firm remained unchanged until 1904. It was then converted into a private joint stock company under the Companies Act of 1900 with the style of Gourlay Brothers and Company Dundee).(25) The two Gourlay brothers, H. G., of 5 Whitehouse Gardens, Edinburgh, C. G., of "Myrtlebank", Broughty Ferry, became the first directors. The capital was divided into 4,000 5% 10 cumulative preference shares and 1,000 10 ordinary shares,(26) and of these Charles Gershom Gourlay held 2,271 preference and 400 ordinary. His wife, two other Edinburgh Gourlays, and William Fyffe (the firm's cashier) held single shares, and, apart from 500 unallocated preference shares, the rest were held by H. G. Gourlay and J. G. Lyon.(27)

The Second Return of Allotments (for April, 1904 to April, 1905) shows that these remaining 500 had been allocated to Thomas Millar of Cullercoats, Northumberland, who, since the 1880's, had been with the firm of Sir W. G. Armstrong, Whitworth & Co. in their shipyard at Walker-on-Tyne. In 1905 Millar moved north to live at 5 Fintry Place, Broughty ferry, but his stay was brief. A Circular Letter put out by the Company on 13th February, 1907, announced his resignation as a managing director, and in the professional directories for that year his address is given as 81 St. Vincent Street, Glasgow.

In the new structure, therefore, Charles Gershom Gourlay was the dominant financial member, and a Minute of Agreement of April, 1904, provided that no other member of the firm might sell or transfer shares without his consent. Equally clearly, Thomas Millar was brought from the Tyne to reorganise the technical side of the business. The changes he effected can be summarised by this passage from the Dundee Year Book for 1905: "Not only have many of the erections been entirely reconstructed, but the yard is to be electrified. When the new machinery, much of which will be made by the firm's own workmen, is introduced, Camperdown Shipyard will be undoubtedly the most up-to-date establishment on the east coast of Scotland. Messrs Gourlay have also taken out a licence to enable them to provide new vessels with Parsons patent turbine." As we have seen the firm had, in the previous twenty-five years, operated increasingly in the highly competitive field of world shipbuilding. Dundee's only built-in asset was its labour supply, and consequently any Dundee firm which sought to hold its place must bring its technical efficiency to the highest possible level.

The record of the previous years proved the need for vigorous rejuvenation. In 1904 Gourlay's yard had been virtually closed, its total output being the 364 ton Neptune for a Dundee owner and two minute tugs for the Great Central Railway. Labour relations had been bad. In 1902-4 the Yard experienced a three week strike by the joiners, demarcation disputes, a 14-week engineering strike, and innumerable minor vexatious incidents.(28) Salvation from complete closure in the Autumn of 1904 came with contracts from the Lord Provost of Dundee for two 4,360 ton cargo steamers for his firm, Charles Barrie and Son. These, together with four small orders, brought the output for 1905 to the handsome total of nearly 12,000 tons, providing a more cheerful environment in which Millar might effect his reconstruction.

The upward trend persisted into 1906 which, measured by output, was one of the best in Gourlays' history. Over 12,600 tons of shipping was launched, all for London or overseas customers, and the Minute Book of the Company gives no hint that this was, indeed the swan song. Yet in 1907 output ominously sank back to 6,276, almost all of it represented by the 5,700 ton Ulimaroa, and of the three vessels built in 1908 two were finished under the supervision of the Liquidator. Significantly, all three were for overseas owners.

At an Extraordinary General Meeting on 8th June, 1908, it was resolved that "by reason of its liabilities" it was advisable to wind up the company. The next morning both Dundee newspapers carried the formal statement, announcing "with regret" that a circular had been issued calling a meeting of creditors, but adding the cheering postscript that there were good hopes of reconstruction of the firm and the continuance of the shipyard. Some sixty-five creditors met two days later in Lamb's Hotel under the chairmanship of Thomas Bamforth, Manager of the Carron Company, and set up a committee of five to co-operate with Richard Brown, an Edinburgh C.A., who had been officially appointed as Liquidator.(29)

The inevitable question, "What had gone wrong?", can be answered in general terms. To justify the cost of re-equipping the yard in 1905 a steady flow of orders and a smooth flow of production were equally necessary. In both respects the year 1906 seemed to auger well and showed a good profit - though the high output was achieved only by taking on a wide variety of jobs - but 1907 failed to fulfil the promise on either count. Of the two ships launched, the first, Ulimaroa, ran into trouble. Delays in fitting out proved "a source of considerable expense to the builders", and on her trial she went aground off West Ferry and had to be taken to the Tyne for dry-docking and survey. The next to leave the stocks, Baron Gautsch (for Austrian Lloyd), became the subject of such sharp exchanges about delays in delivery and shortcomings in engine performance that Gourlays were involved in the heavy cost of modifying her engines in Trieste, her home port.(30) Titania, for a Finnish owner, was on the stocks when the Liquidator took over, but the final instalment on this ship was already assigned to two Dundee business men as security for guarantees given by them to the British Linen Bank to cover Gourlays' overdraft.(31)

The Minutes of the Annual General Meeting of 26th September, 1907, provide a summary of the company's troubles. The extensive alterations to the yard had eaten into the resources and involved borrowing; reconstruction had dislocated the smooth flow of production and had combined with the high prices of raw materials in 1906-7 to push up the cost of building above the estimated levels. Even so, the continuance of a brisk demand for ships might have saved the firm, and in these terms one could argue that Goulays sank in a slump in British shipbuilding at large. In each of the three years 1905-7, British shipyards produced over a million tons of new merchant shipping, "unprecedented activity" as the Economist Commercial History for 1905 called it. With building on this scale demand was temporarily satisfied, and by the end of 1907 shipbuilders' order books were emptier than they had been for a decade. A fall in freights of the nature of 20% damned any prospect of immediate revival, so "the three fat years in shipbuilding were followed by three unusually lean ones".(32)

In 1854 and in 1869 the firm's courage had been justified by events: by sustained spells of shipbuilding activity of the kind for which Gourlays were specially adapted. By the early 1900's technical change in the industry forced them to a third vital decision, but this time events moved against them. The "lean years" proved fatal. The company was still burdened with the cost of re-equipping

the yard, its reputation was shaken, and orders dried up. So whilst he was completing the outstanding contracts, the Liquidator tried in vain to find a purchaser for the Yard and Foundary as going concerns. At the end of his trusteeship he had about 21,000 in hand to meet the claims of the creditors. It worked out at a fraction over d in the .(33) A month later, on 23rd June, 1910, Lord Cullen's Interlocutor formally pronounced the dissolution of the Company and authorised the Liquidator to destroy the books.

The physical dissolution of Gourlays was already under way. In May, 1909, the equipment of both Yard and Foundary were sold by public auction, and within a few years all vestiges of shipbuilding at Camperdown Yard were obliterated as the harbour trust began the new works which ultimately became George V. Wharf. For a few years the local press printed brief obituaries as the older members of the Gourlay family died: Gershom's widow in 1913 and his son, Henry Gershom, in 1915. As time passed it became necessary to remind readers of the Gourlay connection with Dundee, for neither the shipyard nor the family had left any visible memorial. Yet in their day their influence had ranged from Dundee to the ends of the earth. Almost 230 ships went down the Tay from one or other of their yards. Like their fellow shipbuilders, Stephens, they had provided employment for the menfolk of Dundee for two generations, and, in consequence, had helped to balance and diversify an otherwise lopsided local economy. The discord and confusion which marked their end do not detract from their earlier reputations as masters of their trade in an era when mastery in British shipbuilding meant mastery of the world.

"We cannot claim very much for what we have done in comparison with the great firms on the Clyde, but we think that we have kept our position in Dundee, and we have done something to make Dundee a successful shipbuiding port. That is all the credit we claim." So spoke Henry Gourlay at the launch of Merton Hall in 1881. He must have been a modest man.

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3. Dundee, Perth and London Shipping Company (hereafter cited as D.P. and L.) Minutes, 22 June, 1829, and 10 April, 1832.

4. Arbroath and Forfar Railway Minutes, 16 April, 1846.

5. Rogers, The Scottish House of Gourlay, 1888, passim. Though financed by a member of the Gourlay family, this book contains no references to the members who form the subject of the present study.

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7. ***Jubilee of Dundee Shipbuilding Firm***, in Dundee Year Book (hereinafter cited as D.Y.B.), 1904, pp. 127-8.

8. All the output statistics of engines and ships are derived (except where otherwise indicated) from the annual surveys of Dundee shipbuilding in the Dundee Advertiser and the annual D.Y.B.

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19. D. P. and L. Minutes, 9 April, 1873 and 18 June, 1874.

20. Calculated from the Annual Survey of Shipbuilding in D.Y.B. 1881-1900.

21. A full account of this appears in D.Y.B. 1881, pp. 85-7

22. D.Y.B. 1883, p. 117.

23. D.Y.B. 1885, pp. 63-4

24. ***Report to the Harbour Trustees,*** by Mr Cunningham, printed in D.Y.B. 1883, p.103.

25. The Certificate of Incorporation (No. 5550) and the subsequent official documents are preserved in the Offices of the Registrar of Companies, Edinburgh.

26. Memorandum of Association, Article V.

27. Return of Allotments, 31 March, 1904 to 25 April, 1904

28. Dundee Advertiser, passim.

29. The Courier and Argus, 12 June, 1908. It appears from the Carron Company's records that the debt to them was only some 700.

30. Note for Mr Richard Brown, preserved in the papers relating to the liquidation process in Court of Session Records (Record Office, Edinburgh).

31. Ibid

32. J. H. Clapham, An Economic History of Modern Britain, Vol. III., 1938, p. 58.

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Textile production in Britain can be said to have its roots as an industry at the beginning of the 18th century, when Thomas Crotchet and George Sorocold established what is thought to be the first factory built in Britain. It was a textile mill with a waterwheel as its source of power, the latest machinery, and even accommodation for the workers. As well as possibly being the first sweatshop in the modern sense, it was the beginning of the end for traditional textile production. For hundreds of years the spinning and weaving of cloth had been done manually by men, women and children in their Valuations for private technology firms are rising at a slower clip than they were six months ago. On November 24th Jet, an e-commerce competitor to Amazon, announced that it had raised $350m (valuing the firm at $1.5 billion), a big sum for a loss-making startup, but a lower one than it had first hoped for.Â In September Baillie Gifford, a Scottish wealth-management firm few in Silicon Valley have heard of, led a round of funding for Thumbtack, which helps skilled workers find jobs, valuing the startup at $1.25 billion. With investors, until recently, throwing money at them, the unicorns have got into the habit of burning through their cash in an attempt to buy market share. Start by marking â€œThe Rise and Fall of British Shipbuildingâ€ as Want to Read: Want to Read savingâ€¦ Want to Read. Currently Reading. Read. The Rise and Fall of B by Anthony Burton.Â The nation that built mighty battleships and great and beautiful ocean l At the beginning of the twentieth century Britain stood proud among the maritime nations of the world, with the biggest merchant fleet and the biggest shipbuilding industry. As the century reaches its end, Britain is reduced to a merchant fleet that stands at number thirty-eight in the world listings. The nation that built mighty battleships and great and beautiful ocean liners, has now all but abandoned attempts to compete for new orders. In the early days shipbuilding was more craft than industry, but with the steam age