SCOTTISH INDUSTRIAL HISTORY

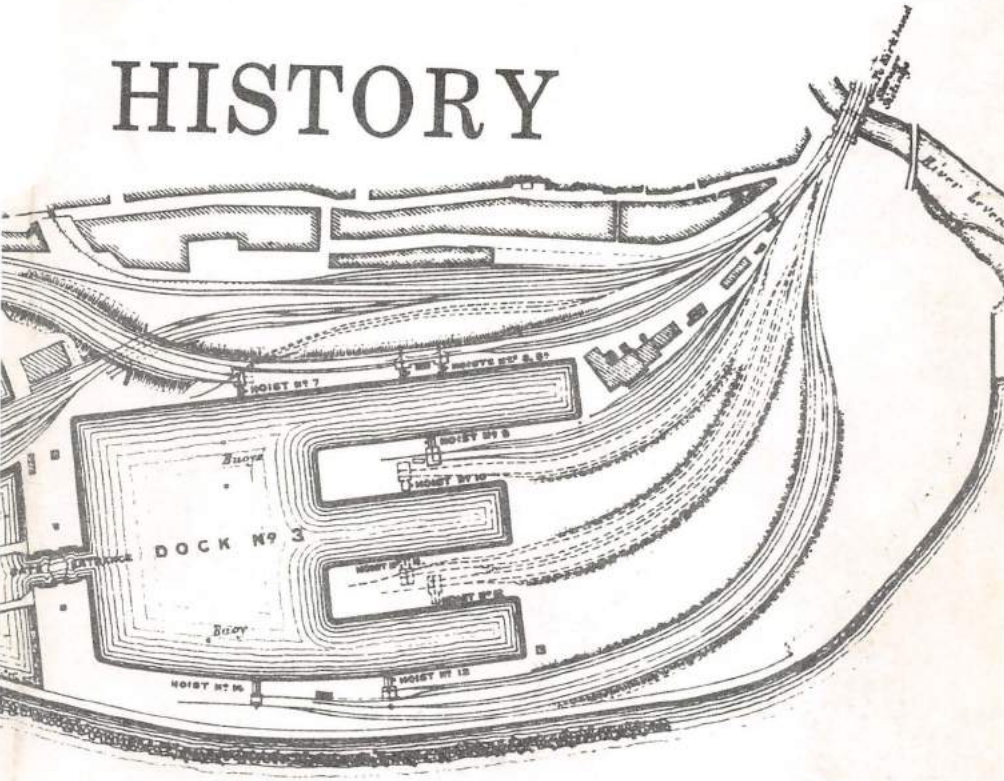

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Fig. 3 1 Inch = 3 Feet.

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Volume 5.2 1982

S C O T T I S H

I N D U S T R I A L

H I S T O R Y

Volume 5.2

1982

Scottish Industrial History is published twice annually by the Scottish Society for Industrial History, the Scottish Society for the Preservation of Historical Machinery and the Business Archives Council of Scotland.

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The cover illustration shows a plan of Methil Dock (from Minutes of Proceedings of the Institute of Civil Engineers, vol. CXCI, 1912-13, part one).

S C O T T I S H I N D U S T R I A L H I S T O R Y

Volume 5.2 1982

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SCOTTISH SALT MAKING IN THE 18TH CENTURY: A REGIONAL SURVEY[1]

by

Christopher A. Whatley

The Scottish sea salt industry has not been blessed with the same close attention which has been directed to so many other aspects of Scottish economic and social history in recent years. Yet, before the Union of 1707, salt was an important trading commodity.[2] During the negotiations which preceded that event, the question of the level of taxation to be imposed on both the imported and home-produced articles aroused heated debate, 'Great Quarrels' according to Daniel Defoe[3], and although it is considered to have been of little consequence, there were fears that a threat to the Union itself was posed by the existence of serious dissatisfaction with the way Scottish demands about taxation on this and other commodities were being treated.[4] Throughout Europe and indeed the wider world salt was an important economic, political and social touchstone, a great and often hated provider of state revenues, a cause of international conflict and, most of all, an essential life-supporting commodity.[5] Perhaps we should not so easily overlook Lord Belhaven's nightmare image of post-Union Scotland where English taxes would, amongst other things, cause the Scotsman to have to eat 'saltless Pottage'.[6] Salt was also a well-known and long-established industrial chemical.[7]

In recent years, historians outwith Scotland have made important advances in the study of salt and saltmaking, yet its place in Scotland's past has rarely been seriously considered except as an item in the country's balance of payments.[8] This criticism applies especially to the post-Union period where even the apparently simple question of what happened to the industry produces a marked yet apparently unnoticed diversity of responses.[9] At one extreme, there is the view that salt production peaked sometime in the early seventeenth century and declined thereafter in the face of competition from the cheaper, better quality English product until the industry was 'virtually wiped out' between 1780 and 1840[10], so completing the long drawn out misery which the loss of the Dutch market had begun almost two centuries beforehand. At the other end of the spectrum of opinion is a remarkably optimistic interpretation which describes the eighteenth century as the industry's 'heyday'.[11] The search for sound published material on the subject produces much confusion but little reward; as time

passes, the main sources upon which the interested reader has had to depend seem increasingly unreliable and unsatisfactory,[12] and in the past twenty years only one brief article of note has appeared.[13]

Much work has then to be done. What follows is a regional survey of the Scottish salt industry in the eighteenth century. By distinguishing between the country's main salt producing areas and focussing attention on the local markets for salt as well as the size and scale of the industry, it is hoped to demonstrate that a great deal of diversity of experience was in evidence. By accounting for these differences we will gain a richer understanding of the course of Scottish saltmaking in the eighteenth century and of the reasons why the patterns emerged as they did. Some illustrative material has been incorporated into the article, partly to aid understanding, partly because the paper began life as a public lecture,[14] and not least because industrial archaeologists have written off the possibility of discovering significant physical remains of the industry prematurely.[15] There are good reasons for abandoning this pessimism. Finally, it must be emphasised that this is a broad survey; short cuts will have to be taken and some fairly obvious paths must remain unexplored at this stage.[16]

The first objective must be the removal of several layers of impressionistic comment which have become an integral part of the industry's history. Descriptions of deserted and crumbling saltworks, even reference to the failure of Dr. Francis Swediaur and comment of the 'nauseous' flavour of Scottish salt may add colour to otherwise unconvincing accounts of the industry but they do not make for good industrial history. The survival of a mass of Salt Office papers amongst the Exchequer series in the Scottish Record Office provides us with much of the raw material with which to begin this task. Most important for present purposes are the quarterly Salt Charge Vouchers which were completed by the salt officers who were stationed at the country's several salt producing precincts and who had the responsibility of collecting the various salt duties which became payable in Scotland from 1713.[17] The vouchers name the individual salt works within each precinct, their proprietors and whether the pans were going or 'silent'. The officers also recorded the duty paid on salt which was categorised under either export, coastal or retail (essentially land) sale.[18] There are gaps in the series which begins in 1713 and ends in 1798 but even so there is enough data to allow us to conduct our analysis on a firmer and more quantified basis than has been possible so far. Indeed, by building this article on a comparison of the figures for 1716-17 and 1797-98,[19] we are using a bare minimum of the statistical data which the vouchers make available. It is important to recognise that they refer to sales and not to output figures and that there is a difference between the two. Contemporaries, for example, were very much aware that by the time salt stored in 'girnels' was sold something between one-seventh or one-eighth of the quantity of 'hot' salt which had been removed

from the pans would have disappeared.[20] Because of this liquescent quality, merchants preferred to buy salt which was over three months old.[21] Furthermore, there were frequent attempts made to defraud the revenue and 'run' salt; clearly such quantities of illicitly sold and/or consumed salt were not recorded by the salt officers. As it is unlikely that there were serious regional imbalances in these matters the problem need not concern us here; nonetheless, it has to be recognised. For present purposes, it will be assumed that there is a fairly close correlation between the movements in salt sales and output; however, it is not possible to date the closure of a saltworks precisely from salt sales material as salt left in the girnels could still be sold long after the pans had ceased to operate.

The sales figures strongly underline Professor Duckham's comment that the Forth was 'incomparably the chief theatre of production'.[22] Table 1 shows that in national terms at least the other salt producing regions were of little significance, with the Forth being responsible of over 95 per cent of sales in 1716-17 and not far below 90 per cent at the end of our period.

Table 1

Proportions of Scottish Salt Sales Attributable to the Main Producing Regions

Region	% 1716-17	% 1797-98
Ayrshire	2.69	5.47
Campbeltown	1.77	0.00
Dumfries and Galloway	0.17	0.00*
Forth	95.15	88.08
North-east	0.00	6.45
Orkney	0.22	0.00
Total	100.00	100.00

Source: Scottish Record Office, E 536/3 and 84, Salt Charge Vouchers, 1716-17 and 1797-98.

* Eight bushels were in fact recorded as being sold in the twelvemonth period.

It is possible that Dumfries and Galloway's lowly position might have been improved had salt made in Annandale been recorded along with that upon which duty was paid. The saltmakers there, mainly in Cummertrees and Ruthwell parishes, had been exempted from the payment of salt taxes in 1671 by the Scottish Parliament and had retained this concession after 1707. Consequently, the salt

officers had no interest in them. However, the evidence which is available indicates that salt making there was irregular, seasonal and productive of only small quantities of salt.[23]

The fortunes of the individual regions will be discussed in more detail below and thus some of the weakness involved in making comparisons based on two dates separated by eight decades will be removed. At this stage, however, it is worth commenting upon three other features from Table 1. First, there is the virtual disappearance of salt making from the more peripheral locations, such as Orkney and Dumfries and Galloway. Second, although Ayrshire lost its second place in the producers' league, the county did increase its share of total Scottish sales. This was an impressive performance which is further emphasised if it is considered that sales increased from over 6,500 bushels in 1716-17 to over 17,700 bushels in 1797-98. This represents an increase of 172 per cent which compares very favourably with a Scottish increase of a rather more pedestrian 33 per cent over the same period. The third noteworthy feature is the move into second place (but still a long way behind the Forth) by the north-eastern group of saltworks, which marks a completely new locational development for the Scottish salt industry. Indeed, it was more than this. None of these works, at Dundee, Usan, Montrose, Nigg, Peterhead and Portsoy was opened before 1793, the year in which the duties on coal sent coastwise were removed.[24] This was a doubly bitter blow to the Forth coal and saltmasters who, for the first time since the Union, were beginning to see real encroachments into territory over which they had a virtual monopoly in terms of the supply of legally purchased salt. The vigour which is implied by these latter two developments must serve as a useful corrective to those historians who have been inclined to write about the industry in terms of long-run decline. For the producers situated in the more distant locations, the eighteenth century was no heyday.

Accounting as it did for even less than 1 per cent of Scottish sales, the Dumfries and Galloway region (along with Orkney and, to a lesser extent, Campbeltown) stands out and Table 2, showing the location of the saltworks there in 1716-17, as well as the quantity of salt sold from them, underlines the earlier suggestion that from a national point of view this was an insignificant salt producing area.

With only one saltwork selling more than 150 bushels and an average sales figure of 57 bushels in what was a fairly typical year, the salt industry of Dumfries and Galloway was clearly conducted on a very different scale than that in most other parts of the country. On average, Scottish saltworks sold 4,606 bushels per annum (if Dumfries and Galloway are included) or 5,306 if the region is omitted. Scotland's largest saltwork in 1716-17 was at Cockenzie on the Forth and sold over 20,000 bushels; the smallest works was at Rascarrell, near Dumfries, where eight bushels of salt were sold. Thus, the region's works were, not surprisingly, small, usually single-pan units. There is more reason to suppose that the

Table 2

Dumfries and Galloway Saltworks and Sales, 1716-17

Location	Sales (bushels)
Stranraer precinct:	
Sand Mill	31
Port Nessock	178
Ardwell	46
Float	62
Port Spittle	45
Wigtown precinct:	
Dourie	31
Dumfries precinct	
Rascarrell	8
Total:	401

Source: S.R.O., E 536/3. Salt Charge Vouchers, 1716-17.

following valuation, of Galdenoch saltworks in 1741, is not typical of what was to be found in the south-west:

> The two dwelling houses at the Salt pan are valued at Two pound Sterling. The pan house & peat house and a larger Hole digged [sic] in the rock ... ten shillings.[25]

The salt making process in Annandale involved even less in the way of permanent structures; there, crudely refined sea-sand or sleech was boiled in lead pans which were four feet long, three feet wide and five inches deep.[26] From at least as early as 1665, pans at Wemyss in Fife were considerably larger than this, measuring eighteen feet by ten feet and with a depth of fifteen inches.[27] In all of the saltworks of the south-west coast peat and turf was used to fire the pans.

It was not only its small size and scale of operation which distinguished the salt industry of the Solway and the Rhins from that of Ayrshire and the Forth. The peat-using saltmakers, governed of course by the availability of their fuel, worked only on a seasonal basis, during the summer months. In Annandale, the salters were dependent on the sun and low tides and worked for perhaps as few as twelve or fourteen days.[28] The bulk of Scotland's salters worked irrespective of the time of year. It is true that production was more likely to be interrupted during the winter months when pan roofs blew off and severe storms could even cause the panhouses to require substantial rebuilding. Bucket pots

(where water was gathered) could be filled with seaweed and other superfluous matter which had to be cleared out and coal pits were more likely to flood. Seasonal stoppages could and did occur when the 'leaders' who carried the coal from the pits to the saltpans went off to sow seed and to reap their harvest, but the job of saltmaking was to all intents and purposes a full-time occupation.[29] In the south-west, however, it was very much a secondary, part-time occupation and certainly those who made salt do not appear to have been governed by the same restrictive laws which applied to salters elsewhere in the country.[30] It was common for tenant farmers to rent a saltwork as part of a lease of a farm or other enterprise. In 1741, for example, Patrick McNeilly took a lease of the lands and corn mill of Meikle Galdenoch along with 'liberty to Build and keep up a Salt pan'[31], while a later lessee of the same lands and saltpan no longer had the mill but was obliged to keep a small boat 'upon his shore for fishing'.[32] The Annandale salters were also primarily tenants of small farms who treated saltmaking as 'subsidiary to other occupations of more certain profit'.[33]

Given the tiny quantities which were being produced in the area, it may, at first sight appear superfluous to discuss the local markets for salt. There are, however, two good reasons for doing so: first, saltmaking on the north side of the Solway and especially round the coasts of the Rhins appears to have been carried on for some time after production on the south (English) side had ceased.[34] Furthermore, it may be worth revising the interpretation which partly accounts for the survival of the industry in the area by linking continued salt production with the growing trade in salted meat, bacon and hams.[35]

If the latter proposition was true, one would expect to have seen an increase in salt production in Dumfries and Galloway. In fact it fell off, slowly at first but fairly rapidly after the middle of the eighteenth century. In 1760-61, 135 bushels of salt were sold from the four works then in existence; ten years later two works shared 36 bushels of salt between them.[36] In addition to this, the quantity of salt sold was too small to be of any real commercial significance - it took four bushels of salt to preserve just one barrel of pork[37] - and the poor quality of Scots salt meant that if it was used by meat traders at all it was probably only in the last resort. Most Scottish marine salt was used in Galloway and elsewhere by the less critical domestic consumer for private preserving and culinary purposes. Some small quantities of salt from the Forth workds were used by fishermen in the waters of the North Sea and Iceland.[38] The lower end of the commercial market, ship's stores, also provided a small but useful outlet for the Scottish product. It is notable that appeals from Dumfries and Galloway for the repeal of salt duties were based largely on a desire to obtain cheap and legal supplies of Liverpool rock and 'bay' salt rather than cheaper Scots salt.[39]

There were two main reasons why a few small salt producers were able to hang on in the south-west. First, the effect of the 'Salt Laws' was to keep up the price of the English product in relation to Scottish salt.[40] Second, it is highly likely that there were isolated pockets of the region where distance and prohibitive transport costs must have cut them off from the main centres of distribution of salt, most notably Dumfries, to which salt was usually sent when it was shipped from the Forth to the region.[41] It is significant that the works in the eastern part of the region, nearer to Dumfries, were the first to close while those which survived longest were situated in bleak spots such as Ardwell and Galdenoch on the western seaboard of the Rhins. This interpretation is supported by evidence that even in Cumberland, which was relatively near to the main centre of English salt production in Cheshire, local problems of the supply of salt were such that the opening of some new saltworks could be justified in the first decades of the eighteenth century.[42]

Accounting for the rapid demise of the industry is a little more difficult but it seems likely that a convincing explanation would have to take at least two factors into account. First, a rise in the price of peat in the second half of the century,[43] and, second, the availability, certainly after around 1770 when the Forth saltmasters formed themselves into the Salt Association, of supplies of Scots salt at a price which they kept deliberately low, partly in order to compete with English salt, imported legally or otherwise, in the latter case via Ireland where the salt duties did not apply. By shipping salt to the south-west, they also ensured that excess salt in the east was removed, so assisting the members of the Association to maintain high prices in their main market.[44] Only the Annandale salters survived into the nineteenth century, selling an inferior product which sold at half of the price of ordinary common salt. In spite of its crude method of production, the salt from here, which gave bacon and hams a 'peculiar sweetness', was apparently used in significant quantities by the less critical meat curers.[45]

While little documentary evidence has survived from the Orkney saltworks, all the indications are that the circumstances of supply, and to a large extent demand, were similar to those of the south-west. Work was seasonal and output was small, although sales and thus output levels were somewhat higher than those of their southern counterparts.

Table 3

Orkney Saltworks and Sales, 1716-17

Location	Sales (bushels)
Flotta	174
Calfsound (Eday)	370
Total:	544

Source: S.R.O., E 536/3, Salt Charge Vouchers, 1716-17.

The salt was either sold locally or used as a means of exchange with which to purchase meal from neighbouring islands.[46] While the Orkney industry did not survive long after the middle of the eighteenth century, its existence in the first place clearly demonstrates another aspect of seventeenth century land commercialisation as landowners and their agents from the 1630s restricted tenants and cottagers from using peats and turf to boil small quantities of sea-water privately[47] and formalised the process within a marginal income producing estate saltwork. Evidently, traditional methods of saltmaking were carried on throughout the western coastal and island parts of Scotland in the eighteenth century, in spite of being disliked by factors who objected to the digging up of pasture lands which fuel gathering involved. Even in 1801, John Girvin could remark upon the numbers of people boiling water for salt in kettles and a number of villages where there were boilers, 'common to the whole inhabitants, for evaporating the sea water'.[48]

The series of the Salt Charge Vouchers from Orkney is incomplete and thus it is difficult to chart the course of decline there with much certainty. By the mid-1750s though there was only one works left, at Cusvie on Eday, operated by (or certainly owned by) James Fea. It may be that peat costs were rising, but a more likely cause of the closure of the local industry was the tendency for increasing supplies of salt for the islands to be provided by off-loading or 're-entering' salt which had been taken from the Forth by North Sea and Iceland fishing fleets but had not been used. After the appropriate duties had been paid, necessary as this salt had originally been shipped free of duty, it could be sold just like any other Scots salt.[49]

The Campbeltown precinct included two small saltworks during the eighteenth century, the peat-fired and small-scale unit at Portnahaven on Islay and the larger coal-fired works at Marypans on the Kintyre peninsula. No salt sales were recorded from the Portnahaven pan operated by John McKay in 1716-17 but the next

available figures, from 1718-19, show just how small the operation was, especially when one contrasts this with the 3,171 bushels sold at Marypans. Output at Portnahaven appears to have ceased in the 1720s, marking the end of what had been a lively Islay industry; in 1696 there had evidently been three pans working on the island (the other two being at Ardlarach) with plans in hand to construct another.[50]

The saltworks at Marypans mark a sharp contrast with those peat-fired works we have surveyed so far. Not only was output higher but the availability of coal freed it from the reliance on an unusual summer or late-summer 'window' which could be imposed on this and other peat-using processes which required large supplies of dry peat.[51] The saltworks and the colliery which accompanied it were the central items of the lease and not, as in the cases we have seen so far, part of a diversified rural holding. Salt making here was a full-time round the year business which required a regular workforce and attentive management. The saltwork, as one of Scotland's earliest manufacturing businesses, has not attracted the attentions of business historians yet,[52] but even a brief survey of the concerns of management involved in them suggests that a fairly sophisticated level of business and administration skills were necessary. Coal had to be delivered to the pans regularly and in precisely measured quantities, for the salters' payment was partly based on the quantity of salt they could make for a given quantity of coal. Continued production at the pans required the frequent attentions of smiths, who had to repair leaks and replace plates, joiners and masons, the latter being hired to replace hearths and rebuild chimneys. The materials which these tradesmen used, in particular iron, including pan plates, had to be readily available. Work and especially payment for it had to be regular, especially for the salters; the west coast, with no long and widespread saltmaking tradition as on the east, suffered from a chronic shortage of suitable labour. 'East coast men' with saltmaking experience were much sought after; lack of skilled labour created serious problems. Their serf-like status should not be allowed to conceal the degree of skill and concentraion as well as the large element of responsibility which was associated with this arduous and time-consuming job.[53]

Once made, of course, the salt had to be sold, and in the case of Marypans, marketed. Sales appear to have been made on a wider basis than was the case in Dumfries and Galloway and Orkney. In 1716-17, for example, 1,200 bushels were exported, presumably to Ireland, with whom the west coast saltworks had some slight trading connections. The growing strength of Liverpool and its trade in rock salt ensured that, even before the Union, Scottish exports to Ireland were only small and infrequent.[54] Although the bulk of the remainder of Marypans salt (51 per cent) was sold either to local consumers or to land carriers, 21 per cent was sent coastwise to unstated destinations but presumably to small ports in the vicinity of the pans. Throughout the works' broken history coastwise sales played a significant part in its sales pattern.

Unfortunately, the Duke of Argyll's papers are presently inaccessible to researchers and thus a quantitiy of relevant material stored at Inveraray Castle has not been examined. It is therefore not possible to do more than outline the course which the works followed. The colliery and salt works were given up in the late 1740s and lay wasting until 1759 when a small partnership tried unsuccessfully to revive the industry. They gave up around 1763.[55] Given the nature of the business problems outlined above, the partnership seems in theory at least to have been well-suited for the task in hand. It comprised Samuel Mitchell, one-time shoemaker but latterly a lessee and manager of the Eglinton saltpan in Saltcoats, and two 'merchants', William Mitchell from Paisley and William Orr of Kilbirnie in north Ayrshire.[56] While there seems to be little doubt that saltmaking ceased because the coalpit flooded, whether this was accidental or deliberate[57] and what the state of the market for salt was is less certain and awaits future investigation.

Ayrshire's saltworks were all coal-fired full-time businesses. In 1716-17 there were five in operation if the saltwork on Arran (Buteshire) is included. There was a large range of sales figures, with those from the Duchess of Hamilton's pan on Arran and that at Saltcoats belonging to the Earl of Eglinton being considerably smaller than the rest.

Table 4

Ayrshire Saltworks and Sales, 1716-17

Location	Sales (bushels)
Ayr precinct:	
Craigie	2,365
Turnberry	850
Irvine precinct:	
Saltcoats (Eglinton)	381
Saltcoats (Cunninghame)	2,724
Arran	237
Total:	6,557

Source: S.R.O., E 536/3, Salt Charge Vouchers, 1716-17

Both the saltworks on Arran and at Saltcoats (Eglinton) were capable of producing a great deal more salt than is indicated by these figures, but nonetheless they shared common critical problems

which combined to interrupt the saltmaking process and, one suspects, to raise costs more than was the normal case elsewhere. Both were plagued by poor and inadequate supplies of coal. Purchasing coal from more distant pits, which was often done by Eglinton lessees, or employing a large number of 'watermen', as was the case on Arran, raised production costs to unacceptable levels.[58] The problems caused by the irregularity of coal supplies were compounded by the less than ideal locations of the saltworks which were near to streams which produced 'freshes' during periods of heavy rain so reducing the salinity of the sea water. This is an aspect of the supply-side of saltmaking which can easily be overlooked both at the short-term, local and regional levels. While some works could thereby be stopped from making salt for long periods, others had a continual fight to overcome their natural disadvantages in this respect. Clearly, fuel requirements would be less at the Saltcoats (Cunninghame) works, where it was reckoned that 25 pounds of water would produce one pound of salt, than on the Forth, where the ratio was 28:1 and in places as high as 32:1, the latter taking 'five fulls [sic] of the Pan to make the draught of salt' compared to four refills at Saltcoats and other more favourably situated works.[59]

The Arran saltwork which had first produced salt in 1710 probably ceased to operate in 1729 although the re-appearance of Salt Charge Vouchers from there between 1732 and 1735 may indicate that the Hamilton family made another attempt to obtain some return on what had been a relatively heavy capital investment.[60] Planned and constructed with the assistance of salters from Bo'ness, the upstanding remains (see Plate 1) of this venture represent some of the most important in the country as few remnants of early eighteenth century saltworks are to be seen on the Forth. The Saltcoats pans which belonged to the Earls of Eglinton worked intermittently throughout the eighteenth century, with production apparently being dependent upon the favourable operation of the factors mentioned above as well as the vigour and application of the concern's various lessees.

Although it is obvious that the availability of coal supplies was the critical factor which determined whether or not salt was made, and in what quantity, and while other supply side factors such as the availability of suitable labour, favourable weather conditions and adequate supplies of repair materials are important, demand side factors too have to be considered, as we saw in the case of the peat-fired works. Historians have tended to overlook this factor, or to assume that salt exports were the only matter of any consequence for the industry.

We have already commented upon Ayrshire's impressive increase in sales between our two terminal years. Apart from the Forth region, and the north-east coast saltworks which only began operation from 1793, Ayrshire was the only area which increased its output in the eighteenth century. The reason for this lied in the domestic demand for salt which, not surprisingly in a period of

rising population, grew during our period. Ayrshire's saltworks were in a specially favourable location. This was nowhere more true than in the case of the saltworks at Saltcoats which belonged to the Cunninghames of Auchenharvie and where, in 1797-8, over 82 per cent of the county's salt sales were recorded. Significantly, coal supplies there were rarely interrupted and the market environment was unusually favourable. The east coast of Scotland was supplied by the Forth salt producers as well as by illegal imports of 'Bay' salt, diverted from its legitimate use in fish preservation.[61] Both Orkney and the south-west experienced production difficulties and, of course, these areas had no easily obtainable coal supplies. Ayrshire, however, tucked in beneath the south-west of Lanarkshire and Renfrewshire, whose eastern approaches at least could be served with Forth salt carried overland, was faced only with effective competition from illegal imports from Ireland. In spite of frequent complaints about great amounts of smuggled salt entering the west coast of the country,[62] the evidence of the sales figures suggests that the industry may not have been so badly affected by these as some contemporaries have led us to assume.

Ayrshire's saltworks were mainly concerned with supplying salt to the inhabitants of the county itself. Although it has been suggested that there was a salt shortage in the west of the country[63], the evidence now available does tend to refute at least part of that proposition. In fact, the argument is heavily biased towards the 1790s when there were not only war-induced salt shortages but also high prices, especially after 1798 when the salt duties rose sharply.[64] For the rest of the century, though, there was not a great deal of room for new entrants to Ayrshire's salt industry and competition was fierce when local 'market sovereignty' was in dispute.[65] Even in 1790 William Cadell (of Grange on Forth, but then leasing Marypans near Ayr) had difficulty selling salt at what he thought was a reasonable price.[66] Indeed, there were occasions when there was sufficient salt available to justify small shipments at lower prices than were normally available locally to other Clyde ports. At the Saltcoats (Eglinton) pans between November 1756 and October 1757, for example, the bulk of salt made was sold to 'cadgers' and the 'country', usually in small quantities. Two larger loads, of 98 and 154 bolls, which accounted for 29 per cent of total sales, were sent to Dumbarton and Greenock respectively.[67] The quantities of salted provisions sent from Ireland to those two ports suggests that it was there and in the Glasgow area rather than in Ayrshire that a salt shortage may have existed.[68]

It was the Forth, however, which produced the vast bulk of Scotland's salt. To do the region justice would require a lengthy article by itself; of necessity, the survey which follows is painted with an even broader brush relative to its importance than we have been using thus far. It was only its share of the market which separated the Forth region from its counterparts elsewhere in Scotland. It was here that the country's biggest and most

extensive saltworks were to be found. The largest of these in 1716-17, as we have seen, was at Cockenzie, where thirteen pans were then going. Its sale of more than 20,000 bushels was more than that sold from the county of Ayrshire in 1797-8. The contrast between the Forth and the rest of the country is made even more stark if it is noted that whereas 20 (53 per cent) of the Forth's saltworks sold over 4,000 bushels of salt in 1716-17, only one from outside the region, Marypans on Kintyre, matched that sales figure. Works became even more concentrated as the century wore on; in 1797-98 there were twenty-three as opposed to the earlier thirty-eight, and of that smaller number, 78 per cent sold more than 5,000 bushels. Only the saltworks belonging to Robert Reid Cunninghame of Auchenharvie competed in this league, with its 14,500 bushels, although seven of the Forth works were bigger than that, some considerably so.

However, there were some small works on the Forth too, especially in the Prestonpans precinct. Indeed, variation over time and between the Forth's five major saltmaking precincts (as determined by the Salt Commissioners) are well worth examining. As there were so many works in the area, Table 5 lists these precincts only and not the individual saltworks.

Table 5

Forth Salt Precincts and Sales, 1716-17 and 1797-98

	1716-17		1797-98	
Precinct	**Sales (bushels)***	**% of total**	**Sales (bushels)***	**% of total**
Alloa	50,100	21.62	14,500	5.03
Anstruther	--	0.00	9,000	3.13
Bo'ness	48,900	21.09	84,000	29.14
Kirkcaldy	65,400	28.21	73,000	25.42
Prestonpans	67,400	29.08	107,500	37.28
Total:	231,800	100.00	288,000	100.00

Source: Derived from S.R.O., E 536/3 and 84, Salt Charge Vouchers.

* Figures are rounded to the nearest 100.

We have already seen that the experience of the Scottish salt industry was not uniform over the eighteenth century. This table shows that within the Forth region the fortunes of the five precincts were by no means identical. The Prestonpans precinct, which covered the saltworks on the south side of the Forth from

Cockenzie in the east to Duddingston in the west[69] was throughout the period the most productive area on the river. All of the precincts except Alloa increased their sales, and to be fair it should be pointed out that Alloa's dramatic fall from grace would have been less marked had the saltworks at Inverkeithing, responsible for over 20,500 bushels in 1797-98, not been transferred from the Alloa to the Bo'ness precinct. Even so, many of the works in the Alloa area, including the formerly large producers at Newpans and Kincardine, did close during the period, largely because local coal pits were worked out.[70] Alloa, however, was not the Forth and it was certainly not representative of what was happening in the industry elsewhere. At St Monans (which was in effect the Anstruther precinct), for instance, a battery of nine new pans was built there between 1772 and 1775. The windmill tower (see Plate 2) on the bank above the site of the saltworks is not the only evidence of saltworking in the area.[71]

Near the beginning of this paper, a pessimistic view of the course of the Scottish salt industry was reported. This interpretation is based on the evidence of a very real decline in salt exports during the later stages ofthe seventeenth century; specific support for that argument has been found in the alleged decline of saltmaking in the Kirkcaldy precinct,[72] which included works at Leven, Methil, Wemyss, Dysart and Kirkcaldy. What actually happened there is possibly the most telling feature of the industry's eighteenth century history. It is true that the saltworks in that precinct had long been committed to the export market.[73] Although even in 1716-17 over 58 per cent of the salt sold there was being exported to what were traditional markets in north-eastern Europe, this was almost certainly a smaller proportion than had been going overseas from there formerly. By the end of our period hardly a bushel of Scottish salt was recorded as being sold for export; yet, as Table 5 clearly shows, sales from the Kirkcaldy precinct increased substantially. Instead of being sent abroad, however, salt was being made locally in Fife, carried overland into southern Perthshire and other adjoining counties and sent by sea to northern ports such as Perth, Aberdeen, Elgin and Dingwall.[74]

Although no other Forth precinct was as dependent as Kirkcaldy on the export trade at the beginning of our period, small quantities were still being shipped overseas from all of them with Prestonpans being least committed in this direction, exports there accounting for only 12 per cent of sales. Clearly the connection between the saltworks there and the large domestic market in Edinburgh and the surrounding area had been established at an early stage.

We have been dealing largely in proportions and we need to know more about absolute quantities of salt made and sold, especially in the seventeenth century, in order to determine whether or not the industry and not just the export trade had declined since the balmy days of the 1630s. Unfortunately, we

cannot consider this here. What can be said with confidence at this stage, however, is that the idea that declining exports were responsible for a disintegrating Scottish salt industry in the eighteenth century is no longer tenable; on the contrary, the saltmasters managed to more than replace these ongoing market losses by turning their attentions towards the Scottish salt consumer. For the Forth saltmasters, the eighteenth century was a period of transition. As I hope to demonstrate elsewhere, the change in direction had occurred in the late seventeenth century; and exports ceased to have any significance for the Scottish salt industry long before the end of the eighteenth century.

The inhabitants of the eastern counties north of the Tay were in a particularly vulnerable position with regard to supplies of salt. having virtually no local supplies of coal and imports from Tyneside and the Forth being subject to the payment of duties, they could not easily supply themselves with sufficient quantities of salt. Their distance from Liverpool excluded that source of salt, shipped either legally or illegally. 'Bay' salt was imported into the region for use by the fishing industry but it could not be used for home consumption although some surplus quantities were 're-entered' at places such as Aberdeen. How much salt was being 'diverted' from its legitimate uses is not and probably never will be clear. However, there are scraps of evidence which suggest that at times during the century its use might have been widespread. George Beattie, for instance, a customs officer who was working in the Montrose area, pointed out in 1740 that the quantities of Scots salt being landed in the north-east were nowehere near the requirements of the area and that 'For thes [sic] many years past, foreign Salt was publickly [sic] Sold in all shops of Montrose and Arbroath'.[75]

Thus, when salt and customs officers were performing their duties with diligence, the area was almost totally dependent upon the Forth for its salt supplies. This 'improper' monopoly was greatly resented and strongly opposed but it was not until 1793 when the duties on coastwise movements of coal were taken off that any relief was obtained.[76] No doubt encouraged by war-induced salt shortages and a rise in its price, work began almost immediately on the construction of saltworks. One of the first to be built was at Usan (Plate 3), a couple of miles south of Montrose, under the guidance of David Scott of Dunninald, Member of Parliament for Forfar. Six other works were opened between 1793 and 1796, at Dundee, Montrose (2), Nigg, Peterhead and Portsoy. This was not the end of the expansion of saltmaking capacity north of the Tay, as works were opened at Arbroath and Brora in the early nineteenth century thereby adding a further threat to the saltmakers of the Forth.[77]

The buoyancy which this indicates is reflected in the country's sales figures. Indeed, in terms of sales and numbers of new works opened, the first couple of decades of the nineteenth century marked the most active period the industry had experienced

for well over a century.[78] This, as in the case of so many aspects of saltmaking which have been touched on during the course of this paper, deserves and will receive further elaboration and explanation elsewhere. What has been shown here is that there were marked differences in the experiences of the country's salt producing regions. The explanation of these reveals a more complex picture than that which historians have painted in the past. This is especially so for the all important Forth, where the salt industry's fortunes were not, as has been suggested, linked solely to movements in coal production.[79] If this was the sole factor one would have expected salt sales in the Alloa precinct to have risen, following the movement of coal output and exports from the area[80]; instead, salt sales fell. It has been shown that other supply side factors have to be considered on the Forth and elsewhere and that the individual demand circumstances of each saltworking precinct played a critical role in determining the fortunes of the industry. There is a lot more to the story of Scotland's salt industry. Hopefully, this paper has shown that it is a tale worth telling.

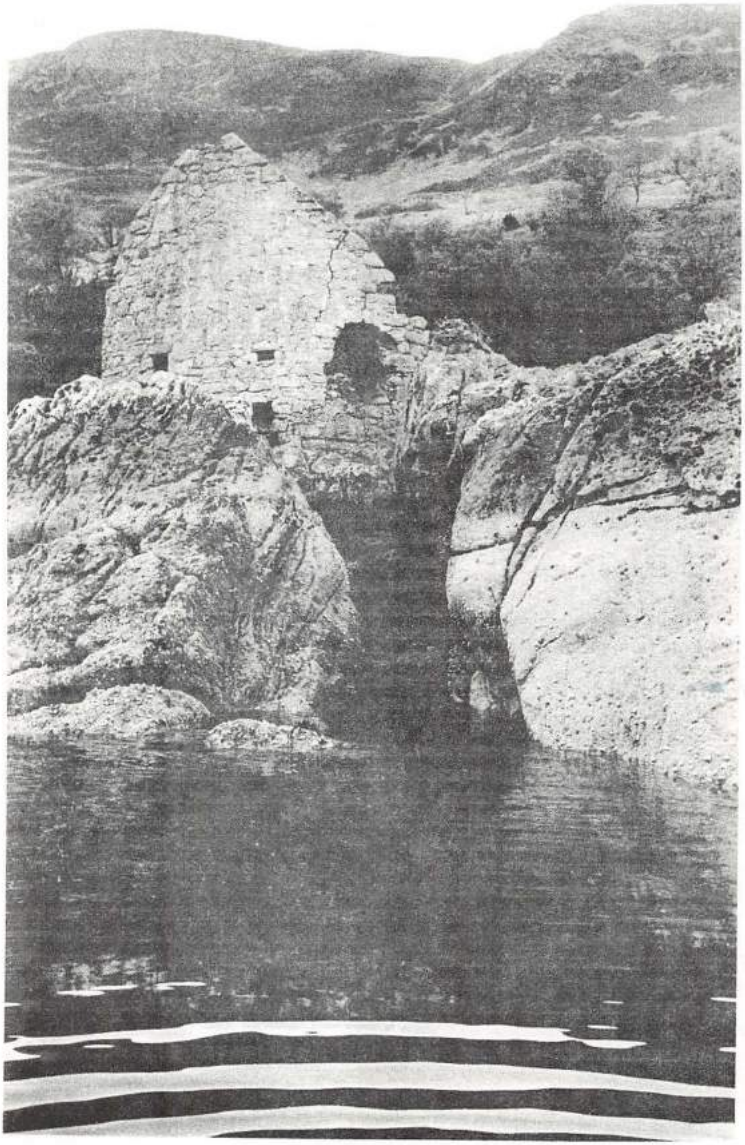

Plate 1: Saltwork (NR 972512), Cock of Arran, Cunninghame District, Strathclyde Region.

This building may represent the earliest positively identifiable saltwork in Scotland. Built with the assistance of salters from Bo'ness, the first salt was made there late in 1710. This plate shows the seaward gable wall.

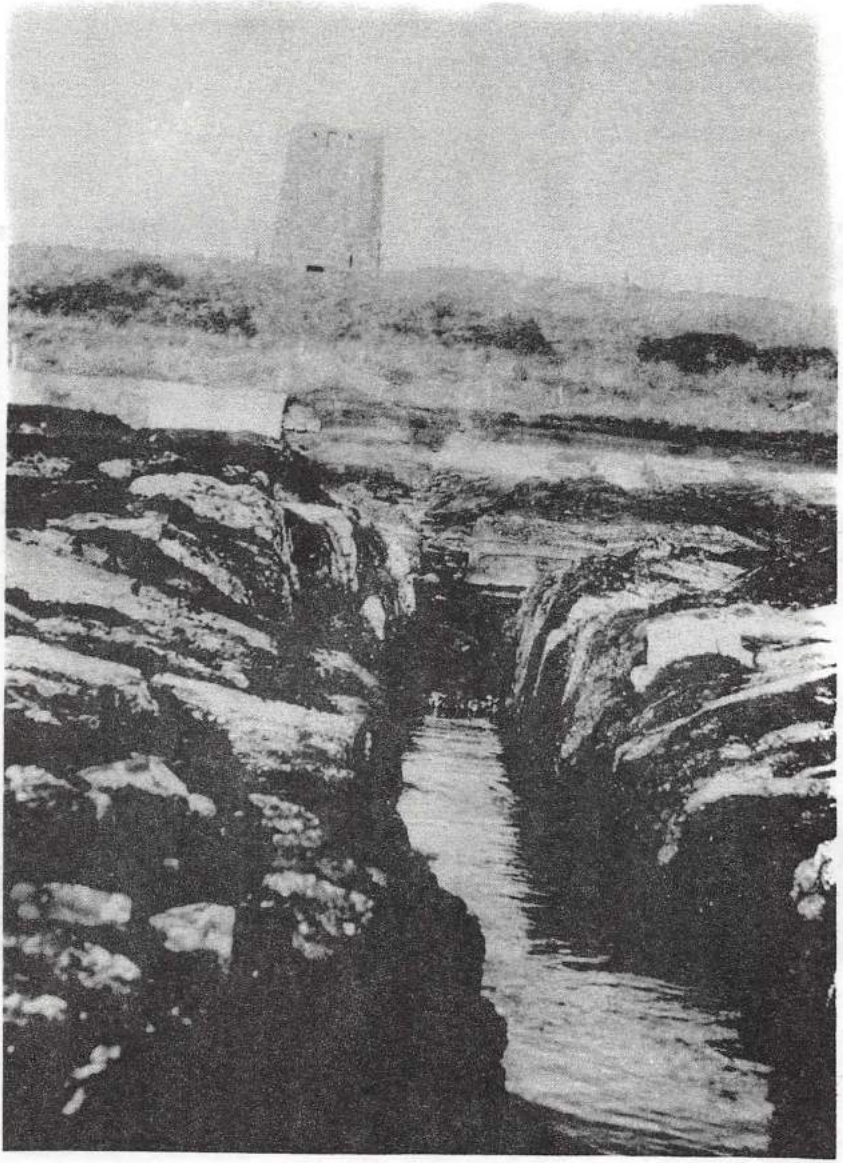

Plate 2: Windmill Tower (NO 534019), St Monans Saltworks, St Monans, N.E. Fife District, Fife Region.

The deep channel, cut into the rock, was part of the pumping system here, which incorporated a large reservoir and the windmill. Nine pans were served by this labour cost-cutting method. Built c. 1772.

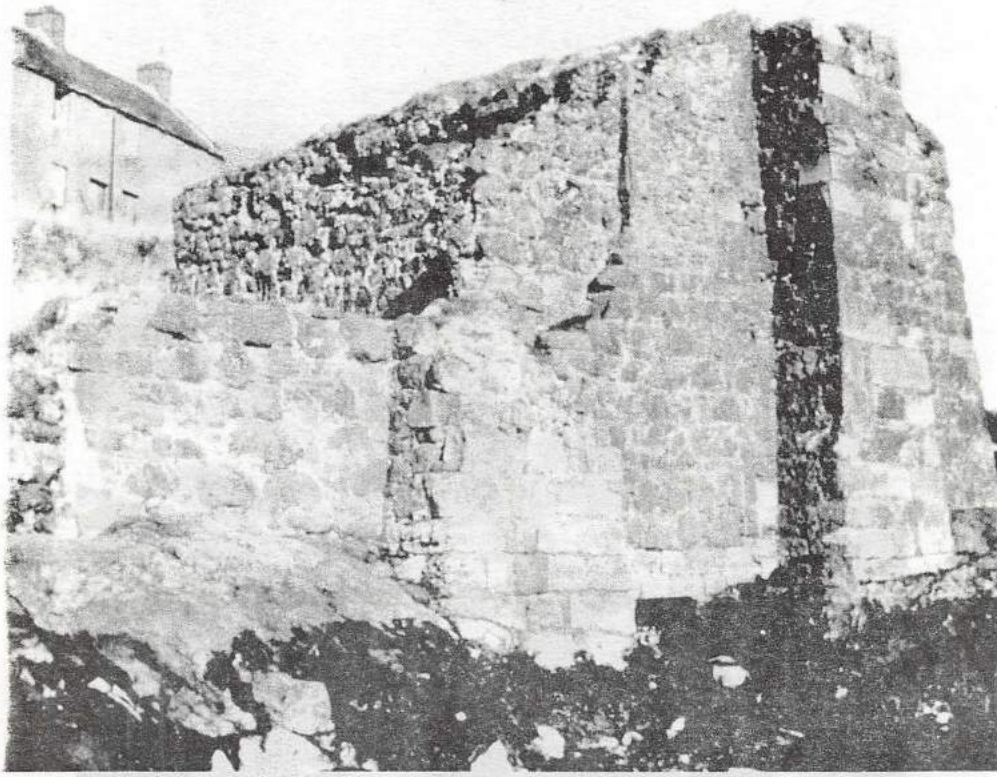

Plate 3: Saltwork (NO 726545), Fishtown of Usan, Angus District, Tayside Region.

Later adapted and used as an ice-house, this saltwork, built 1793-4, is one of a number built on the north-east coast. The gable-end chimney and water inlet (bottom left) are both clearly visible.

NOTES

1 This is an amended version of a lecture given to the Scottish Society for Industrial Archaelogy at their one-day conference on the subject of 'The Rural Industries of Scotland', held in the Royal Scottish Museum, Edinburgh, on 24 October 1981.

2 See S.G.E. Lythe, The Scottish Economy in its European Setting, 1562-1625 (Edinburgh and London, 1960), and T.C. Smout, Scottish Trade on the Eve of the Union, 1660-1707 (Edinburgh and London, 1963).

3 D. Defoe, The History of the Union of Great Britain (Edinburgh, 1709), 128, 129, 141-4.

4 P.W.J. Riley, The Union of England and Scotland: A Study in Anglo-Scottish Politics in the Eighteenth Century (Manchester, 1978), 186.

5 For a world-wide survey, see R.P. Milthauf, Neptune's Gift: A History of Common Salt (Baltimore and London, 1978), although care should be exercised where an author confuses the rivers Forth and Clyde (p.58); see also F. Braudel, The Structure of Everyday Life: Civilisation and Capitalism, 15th-18th Centuries (London, 1981).

6 Lord Belhaven's Speech in Parliament (1706), 2.

7 C. Singer et al, (edd.), A History of Technology, IV (Oxford,1958), 214-57; A. & N.L. Clow, The Chemical Revolution (London, 1952), 46-64.

8 See, for example, P. Lemonnier, Les Salines de l'Ouest: logique technique, logique sociale (University of Lille, 1980), and recent work by Joyce Ellis, including 'The decline and fall of the Tyneside salt industry, 1660-1790: A Re-examination', Economic History Review (E.H.R.), XXXIII, 1, 1980, 45-58, which has important consequences for our perceptions of the Scottish industry.

9 To be fair, T.C. Smout (ed.), 'Henry Kalmeter's Travels in Scotland', in Scottish Industrial History: A Miscellany (Scottish History Society, 1978), 40n., does note the conflict between Kalmeter's picture of post-Union prosperity and Dr Adams' more gloomy impression.

10 G. Donaldson and R.S. Morpeth, A Dictionary of Scottish History (Edinburgh, 1977); B. Lenman, From Esk to Tweed (Glasgow and London, 1975), 39, and the same author's An Economic History of Modern Scotland, 1660-1976 (London, 1977), 125.

11 J. Butt and I.L. Donnachie, Industrial Archeology in the British Isles (London, 1979), 138.

12 Clows, op. cit.; E. Hughes, Studies in Administration and Finance, 1558-1825 (Manchester, 1934); J.U. Nef, The Rise of the British Coal Industry, 2 vols (London, 1932).

13 I.H. Adams, 'The salt industry of the Forth basin', Scottish Geographical Magazine (S.G.M.), 81, 1965, 153-162.

14 See note 1 above.

15 J. Butt, The Industrial Archaeology of Scotland (Newton Abbot, 1967), 135. A systematic survey of the industry's physical remains is in progress, funded by the Carnegie Trust for the Universities of Scotland.

16 This is part of a full-scale study of the industry, c.1660-1850.

17 It was agreed at the time of the Union that the Scots should be exempt from paying additional duties on salt for seven years from 1707 and thereafter Scots salt was to pay considerably less than salt made south of the border, Hughes, op. cit., 144.

18 Scottish Record Office (S.R.O.), E 536/1-84, Salt Charge Vouchers, 1713-1798. Salt duty continued to be payable on Scottish salt until 1823. Unfortunately, the same detailed record does not exist for the period 1798 until 1823 when responsibility for the collection of duties had passed to the Board of Excise.

19 1716-17 is the first year for which a full (and I think, reliable) set of figures is available. 1797-98, as has just been indicated, is the last year for which a detailed record is currently available.

20 For example, Hamilton Public Library, Hamilton MSS, Bundle 4, 'Note of the panwood made gross betwixt 13 May 1690 and 23 Aperil 1694', where one-seventh was lost in 'upholding' it, and Scots Magazine (S.M.), 66, 1804, 762, where one-eigth is allowed. The difference may be accounted for by improved manufacturing technique.

21 Ibid.

22 B.F. Duckham, A History of the Scottish Coal Industry, 1700-1815 (Newton Abbot, 1970), 15.

23 W. Singer, General View of the Agriculture of the county of Dumfries (Edinburgh, 1812), 427, 527-30.

24 Duckham, op. cit., 233.

25 S.R.O., GD 154/460/6. Agnew of Lochnaw MSS, 'Visitation of the House of Meikle and Little Galdenoch, 1741'.

26 Singer, op. cit., 528.

27 Wemyss Castle MSS, Diary of David, second Earl of Wemyss. I am most grateful to Captain Michael Wemyss for letting me have access to this document.

28 Singer, op. cit., 529.

29 This summary is based on an analysis of a detailed set of accounts and wage books from Cockenzie saltworks for the period 1716-19. They are from the Scottish Record Office's holding of Forfeited Estate Papers, F.E.P. 1715/E 661/Box 196. I hope to publish a detailed study of these works in due course. I am grateful to Dr Annette M. Smith, Department of Modern History, University of Dundee, for drawing my attention to this collection.

30 See T.C. Smout, History of the Scottish People, 168-70. Impressions rather than careful source-based analysis rule current perceptions of the salter's job. They are invariably lumped together with the colliers, with whom they shared the same restrictive legislation. Yet one wonders what evidence Professor Smout has to suggest that the salter's job was 'unskilled' (p.170) and where he has discovered small countryside communities of subterranean salters (p.169).

31 S.R.O., GD 154/461/2, Tack, Sir Andrew Agnew and Patrick McNeilly, 1741.

32 S.R.O., GD 154/461/6, Tack, Sir Andrew Agnew and Alex. Martin, 1776.

33 Singer, op. cit., 529.

34 W.T. McIntyre, 'The salt pans of the Solway', Transactions of the Cumberland and Westmorland Society, 42, 1942, 10-12.

35 I.L. Donnachie, Industrial Archaeology of Galloway (Newton Abbot, 1971), 64-5.

36 I am grateful to Dr Ian L. Donnachie for letting me use his detailed notes on the Dumfries and Galloway saltworks which he has gleaned from the Salt Charge Vouchers.

37 S.R.O., E 504/21/7, Quarterly Customs Books, Kirkcudbright, quarter ending 5 April 1796.

38 Most of this was going from the Forth, and in particular from the saltworks at Cockenzie and St Monans. Salt for this

purpose never exceeded 8.26 per cent of recorded sales.

39 S.R.O., Leven and Melville MSS, GD 51/5/201, Letter, Patrick Heron to Henry Dundas, 23 September 1793.

40 Donnachie, op. cit., 64; Hughes, op. cit., 413-9.

41 S.M., 760.

42 J.V. Beckett, Coal and Tobacco: the Lowthers and the Economic Development of West Cumberland, 1660-1760 (Cambridge, 1981), 134.

43 These doubled on the Lochnaw estate between 1762 and 1776.

44 Discussion of the Salt Association's activities forms a major part of my study of the salt industry (see note 16 above). Recently, some aspects of this organisation have been discussed in P.L. Payne, 'The Halbeath colliery and saltworks, 1785-1791', in A. Slaven and D.H. Aldcroft (edd.), Business, Banking and Urban History: Essays in honour of S.G. Checkland (Edinburgh, 1982), 2-33; S.R.O., GD 172/503/10, Henderson of Fordel MSS, 'Account of Salt Made and Sold at the Works... 1790'; S.M., 817.

45 Singer, op. cit., 530; Report from the Select Committee on the Laws relating to the Salt Duties (Parliamentary Papers, 1818, V), Minutes of Evidence, 360, 375, 467.

46 A. Fenton, The Northern Isles: Orkney and Shetland (Edinburgh, 1978), 211-3; F.J. Shaw, The Northern and Western Islands of Scotland (Edinburgh, 1980), 115.

47 Fenton, op. cit., 211.

48 J. Girvin, An Investigation of the Substitutes for the Present Duties on Salt recommended by Lord Dundonald (Edinburgh, 1801), 25; Fenton, op. cit., 213.

49 There is a useful discussion of the operation of the Salt Laws in A.R.B. Haldane, The Drove Roads of Scotland (Edinburgh, 1952), 225-6.

50 Cawdor Castle MSS, Charter Room, Bundle 656, 'Disposition of David Scott to the Earl of Cawdor, 1694'; Shaw, op. cit., 160; I am grateful to the Earl of Cawdor for letting me have access to his papers and to Dr F.J. Shaw for pointing me in that direction.

51 M. Moss and J.R. Hume, The Making of Scotch Whisky (Edinburgh, 1981), 24.

52 Although the appearance of Professor Payne's recent article on Halbeath colliery and saltworks, op. cit., does partly rectify the situation.

53 National Library of Scotland (N.L.S.), Grange MSS, Acc. 5381, Box 39, 1, Letter, John Williams to William Cadell, jnr, 27 November 1776, in which Williams asks Cadell if he has good salters, because 'I know it [requires] great care & attention, & that the bringing the Pan to Salt, is a nice operation.' The whole question of Scottish salter serfs needs to be re-examined, and will be discussed in another paper.

54 Smout, Scottish Trade, 231.

55 West Register House (W.R.H.), Court of Session Papers (C.S.P.), CS 237/1P/M/3/1, Samuel Mitchell v. William Orr, 1764, Petition of David Campbell, chamberlain to His Grace the Duke of Argyll; N.S.C. MacMillan, The Campbeltown and Machrihanish Light Railway (Newton Abbot, 1970), 21-2.

56 W.R.H., C.S.P., CS 237/1P/M/B1, Mitchell v. Orr, Petition.

57 They were accused of having deliberately taken off the gin and thus flooding 'a very rich coal mine' (ibid.).

58 Signet Library (S.L.), C.C.P., 132:13, Willam Orr and others v. the Earl of Eglinton, 176, Pursuer's Proofs; Hamilton MSS, Lennoxlove, F1/839, Accounts relating to Coal and Salt, Arran, c.1708-1714. I am grateful to the Duke of Hamilton for letting me have access to these papers.

59 W.R.H., C.S.P., CS 96/3085, Patrick Warner v. Robert Reid Cunninghame, 1799, Supplementary Report of John Clerk of Eldin and John Roebuck upon the Coalworks of Ardeer and Saltworks at Saltcoats; S.M., 760.

60 The operating loss between June 1711 and October 1714 was over £2,500 Scots. This figure of course excludes the capital costs of the panhouse, girnel, quay and sinking of coal pits.

61 See note 75 below.

62 See, for example, A. Cochrane, Thoughts on the Manufacture and Trade of Salt (1794), 6; C.A. Whatley, 'The Ayrshire salt industry, c.1707-1879', Scottish Industrial History, 1.3, 1977, 16.

63 Clows, op. cit., 50.

64 Hughes, op. cit., 344.

65 N.L.S., Grange MSS, Acc. 5381, 39.1, Letter, John Alexander to William Cadell, 26 April 1777.

66 Ibid., William Cadell to George Oswald, 20 January 1790.

67 W.R.H., C.S.P., CS 237/1P/M/3/1, Mitchell v. Orr, Miscellaneous Accounts.

68 L.E. Cochran, 'Scottish trade with Ireland in the eighteenth century' (Unpublished Ph.D. thesis, University of Stirling, 1980), 231. Dr Cochran surveys a number of possibilities here. Her work will be more easily accessible in 1983 when her thesis is published. I am grateful to her for allowing me to make use of her material.

69 Adams, op. cit., 154 and 156, has drawn two useful maps which will assist the reader who is unfamiliar with the locations of the Scottish saltworks.

70 Ibid., 159.

71 A full archaeological survey of the area is being conducted by Mr Colin Martin of the Department of Maritime Archaeology, University of St Andrews.

72 Adams, op. cit., 160-1.

73 Lenman, From Esk to Tweed, 30-1; Smout, Scottish Trade, 136-7.

74 S.M., 760-1; Wemyss Castle MSS, Ledger of Salt Accounts, 1771-6.

75 N.L.S., Adv. MS,80.1.4, Dundas of Dundas MSS, George Beattie to Robert(?) Dundas, 5 and 15 February 1740.

76 Duckham, op. cit., 233; 27 Geo. III, cap. 13.

77 G. Hay, History of Arbroath (Arbroath, 1899), 375; J.M. McBain, Arbroath: Past and Present (Arbroath, 1877), 139; S.B. Calder, 'The industrial archaeology of Sutherland', 2 vols (Unpublished M.Litt. thesis, University of Strathclyde, 1974), I, 135.

78 S.R.O., E 551/11-18, Excise Revenue Accounts, 1798-1826.

79 Adams, op. cit., 161.

80 Lenman, op. cit., 38; T.C. Smout, 'The Erskines of Mar and the Development of Alloa', Scottish Studies, VII, 1963, 64.

THE IRON INDUSTRY OF THE MONKLANDS

An Introduction

by

George Thomson

(This article is the first part of The Iron Industry of the Monklands by the late Dr George Thomson of the Department of Chemistry, University of Glasgow. Later issues of Scottish Industrial History will publish Dr Thomson's notes on the individual ironworks, a list of which appears in the Appendix on page 41. - Ed.)

For centuries now, iron has been produced from its ores in the blast furnace by heating together the ore, charcoal, coke or coal and a flux, usually limestone. The flux combines with the silicious (earthy) impurities in the ore to remove them in the form of an easily fusible slag. As the iron produced descends through the furnace it encounters increasing temperature, becomes liquid and sinks to the bottom into the hearth. The lighter slag floats on top of the molten iron. Iron and slag can be tapped off separately. The iron was formerly cast in sand beds into bars known as pigs, hence pig iron. Now, it is cast into slabs in a casting machine.

The pig iron produced by the blast furnace is a brittle material containing from 3 to 4 per cent of carbon. By remelting in a cupola furnace and blending together different types of iron the founder produced his cast iron with a slightly lower carbon content and reduced brittleness. Wrought iron, with only about 0.1 per cent of carbon had much better mechanical properties. It was produced from pig iron by tedious processes which made it costly and so, up to about the year 1800, cast iron was the standard constructional material used by engineers. In the first half of the 19th century, widespread introduction of the puddling processes for conversion of pig iron into malleable iron made the latter a more accessible material which displaced cast iron for many uses. In England and Wales, manufacture of malleable iron expanded rapidly up to about 1860. In Scotland, especially in the Monklands, the industry continued to grow until rather later.

For some purposes, steel had even more desirable qualities than malleable iron but for a long time steel could be made only in

small quantities and so it remained a costly material. The introduction of methods for producing steel in bulk made it competitive in price with malleable iron. Ultimately, as bigger and bigger steel melting furnaces with increasing thermal efficiency were developed, steel became cheaper than malleable iron and the malleable iron trade began to decline. Since the Second World War it has disappeared completely as we in the Monklands know only too well.

Production of Pig Iron

There is no record of any early winning of iron from its ores in our district. Indeed, the outstanding mineral wealth of the Monklands - its Blackband Ironstone - was not known until 1801 when David Mushet, in the course of one his prospective outings, discovered this ore in the bed of the North Calder Water. He soon proved it throughout the estates of Airdrie and Rochsolloch and quietly secured leases.[1] At that time, he was engaged on the erection of Calder Iron Works. Two years later, the Calder company got into financial difficulties. Their works came on the market and were acquired by William Dixon and William Creelman.

A quarter of a century passed before any other blast furnaces were built in the Monklands. Then came Chapelhall in 1826; building of Gartsherrie began two years later. Dundyvan came in 1834, Calderbank in 1835, Summerlee in 1837 and Carnbroe in 1838. In 1841, Langloan completed the tale. No more blast furnace plants were to be established in the Monklands although, in existing works, furnaces might be rebuilt or additional furnaces erected. At Gartsherrie, for example, the number of furnaces rose to be sixteen and then by degrees declined until there was only one - a modern furnace capable of a greater output than the whole sixteen.

Between 1800 and 1841, when the blast furnaces of the Monklands were being established, railways had not yet become important for transport of heavy goods. They afforded only very limited links with markets, really only with Glasgow by the Garnkirk and Glasgow Railway opened in 1831. But it terminated at Gartsherrie and was not extended to Coatbridge until 1842; it reached the Dundyvan Basins of the Monklands Canal in 1845. The other railways of the district - the Monkland and Kirkintilloch (1826), the Ballochney (1828), the Wishaw and Coltness (1834-1844) and the Slamannan (1840) - had all been designed to feed traffic to canals and the network of the interlinked Monkland, Forth and Clyde and Union Canals gave access not only to Glasgow but also to Edinburgh and to both the east and west seas. So the existence of the Monkland Canal and its side-cuts dictated the sites chosen for Calder, Gartsherrie, Dundyvan, Langloan, Summerlee and even Calderbank blast furnaces. It was to prove just as important for the malleable iron works; of the fourteen such works erected up to 1800 no fewer than twelve were laid on sites that could utilise the Monkland Canal to bring in their raw materials and carry away their

products.

By 1890, the blast furnaces at Dundyvan, Chapelhall and Calderbank had been blown out and dismantled. The others survived until after the First World War. In 1919, Langloan was closed following an explosion in one of its furnaces. Calder and Carnbroe wee blown out in the 1921 strike and never relit. After the General Strike of 1926, Summerlee was finally closed down. Gartsherrie survived until 1967.

All of these blast furnaces had been built to exploit local minerals, the rich Blackband ironstone and the hard splint coal which in Scotland had come to be used instead of coke. When these two raw materials were worked out, recourse had to be had to imported iron ores and there was a reversion to the use of coke as a fuel. It became difficult to compete against the English works with their larger and larger furnaces using the rich Cleveland ores. In contrast, the Scottish furnaces were small and had rather low thermal efficiency. Moreover, they were charged by hand. Before 1956 only one mechanically-charged blast furnace had been built - at Langloan. Lacking the strong splint coal, it became necessary to find supplies of coke or of coking coal. Of all the Monklands ironmasters, only the Bairds of Gartsherrie owned fields of coking coal and from 1870 they had possessed mines in Spain producing high-quality haematite ores. So survival was easier for Gartsherrie than for the other blast furnaces. However, even at Gartsherrie a modern blast furnace was not built until 1958. In fact, progress was made impossible by the refusal of Glasgow Corporation to purchase surplus coke oven gas offered them at one-third of the price at which they could produce it in their own gas works. Their prolonged intransigence contributed substantially to the long-continued industrial depression in the Monklands.

Charcoal was never used in blast furnaces in the Monklands. Our early furnaces had used coke but at Calder in 1831 it was shown that, using hot blast, raw coal could be substituted for coke. Indeed, it was at Calder that hot blast was first used successfully in a full-scale blast furnace. Here, too, in 1836 the first satisfactory water-cooled tuyère was introduced. In recognition of his contribution to the use of hot blast and in consideration of his refraining from patenting the substitution of raw coal for coke, Dixon, it is said, was allowed to run two of his Calder furnaces without payment of royalty to J.B. Neilson, the patentee of hot blast.

For many years the waste gases were allowed to burn away at the open top of the furnace, a prodigal waste of energy. In 1842, it was reported that anywhere in the streets of Coatbridge at night one could easily read a newspaper by the light of the flames from the furnace tops.[2] At Dundyvan, in 1850, John Wilson built a blast furnace 65 feet high (at that time the largest in Scotland) and from it he collected and utilised the waste gases. But this practice did not become general until the 1870s when competition

from the Cleveland ironmasters compelled Scotland's ironmasters to look more closely into the economies of their operations. Even so late as 1876,[3] all sixteen of the Gartsherrie furnaces were open-topped.

Nevertheless, it was Gartsherrie that led the way in the next improvement - recovery of tar and ammonia from the waste gases. John Alexander and Andrew K. McCosh took out their patents in 1879, 1880 and 1881. Addies of Langloan followed in 1882, Neilson of Summerlee a little later. Ammonia as ammonium sulphate had come into demand for fertilisers and by 1885 Gartsherrie was producing thirty tons a week.[4]

Production of Malleable Iron

Henry Cort invented his 'dry' puddling process in 1784. In it, pig iron was heated in a reverberatory furnace in a current of air to oxidise away the carbon. The bed of the furnace was of sand, the cheapest refractory available. This had the grave disadvantage that since some of the iron itself was converted to oxide it combined with the sand to form a slag of iron silicate. Up to half of the iron was lost in this way, though certainly the iron could be recovered by using this iron-rich slag as part of the charge in a blast furnace.

Joseph Hall introduced the more efficient 'wet' puddling process in the 1820s but did not patent it until 1838. He used a reverberatory furnace with an iron bed covered (fettled) with oxides or iron. Mill scale (magnetic oxide of iron) was added to the charge. The pig iron was melted and a violent reaction took place in which the oxides of iron reacted with the carbon in the pig iron to form carbon monoxide whose evolution produced the 'boiling' of the molten metal.

Neither process found its way to Scotland until 1839 when puddling furnaces were erected in association with the blast furnace already in operation at Dundyvan and at Calderbank. About the same time, probably in 1840, Gartness Forge on the North Calder Water was converted to a malleable iron works with thirteen puddling furnaces.

In Scotland before 1839 the brittle product of the blast furnace had been converted to a malleable or 'wrought' iron by the finery process. At Calderbank, in the old Monkland Forge, this process was certainly in use in 1801 as it may well have been from the foundation of the forge in 1794.[5] At Calder Iron Works, Mushet appears to have intended to use the finery process.[6] Like Cort's process, the finery was very wasteful of iron: about half of the iron passed into the slag.

Later a refinery process was used - different from the finery process - as an intermediary between the blast furnace and the

puddling furnace to reduce somewhat the carbon content of the pig iron. At Calderbank in 1869 three refinery furnaces were still in use. Each could deal with about ten tons of iron in 24 hours.[7] But, in general, when the pig iron was to be converted to malleable iron the running of the blast furnace was so controlled that it produced a 'white' or 'forge' pig iron, one with a lower proportion of carbon.

It is doubtful if the so-called 'dry' puddling was ever used in the Monklands, or indeed anywhere in Scotland. Puddling processes had been established in England and Wales for forty years and more before they were introduced in Scotland and it was from south of the Border that Scottish ironmaster brought experienced puddlers and shinglers and rollers to man the new ironworks and train Scotsmen in the new techniques. So we had at Dundyvan 'English Square' (which was never a square at all) and in Calderbank 'English Row' and 'Welsh Row'. Of these incomers one observer wrote in 1842:[8]

> ... they form a society among themselves, not mingling with the natives, and expend their high wages in good cheer of every kind occasionally entertaining each other with wine, turkeys and other sorts of poultry.

And in the same report, the Rev. Walter Colvin, minister of the parish of Shotts, complained that they had 'raised the price of poultry' in that part of the country. More important for the community was the fact they brought Methodism with them.

So many years have passed since any puddling furnace was in use in Scotland - the last was at Waverley works, Coatbridge - that it is probably desirable to say something about the mechanics of the 'wet' puddling process.

Pig iron was melted in the reverberatory furnace in contact with oxides of iron provided by haematite ore, or black mill scale or just rusty scrap iron. As the oxygen in the oxides reacted to remove the carbon impurity in the iron, the molten metal appeared to boil, the melting point of the iron rose and the contents of the furnace became more and more pasty. The puddler then used his 'paddle' to separate the iron from the slag and form it into balls each weighing anything from 100 to 150 pounds. No mechanical proccess ever successfully supplanted the manual process. These balls consisted of a spongy mass of iron with its interstices filled with slag which had to be eliminated. With the aid of large long-handled tongs the balls were lifted out the furnace and transported to the shingling hammer either on a bogey or on a fork suspended from an overhead track. The shingling process consolidated and welded together the particles of iron, expelled practically all the remaining slag and shaped the iron into a rectangular bar suitable for rolling. While still red-hot these bars were passed to the forge train, the first rolling mill, which converted them into bars 3/4 to 1 inch thick, 4 to 6 inches wide

and 12 to 15 feet long. These flat bars were laid aside to cool prior to treatment which produced finer quality iron and gave the name wrought iron to the final product.

It has already been mentioned that most of the slag was expelled in the shingling process. A little, however, remained. In the rolling some was squeezed out and the remainder was drawn out into fine threads running longitudinally along the bar giving it a fibrous structure, like the grain of wood. This made it strong in tension but less strong in compression. Subsequent treatment depended on the purpose for which the iron was to be used. If it were intended to use it in tension - as, for example, in chains - the bars were cut into short lengths which were stacked in a pile with all the pieces lying parallel to each other. This pile was raised to a welding heat in a re-heating furnace, hammered and rolled again. If, on the other hand, material was wanted with properties uniform in all directions, the pile was built with alternate layers at right angles to each other.

The first re-rolling gave what was known in the trade as merchant or crown iron. If the merchant iron was cut up, piled reheated and hammered and re-rolled for a second time the product was known as best iron. Reworking of best iron gave best best or B.B. iron and the highest grade of all, best best best (B.B.B.), was made by reworking B.B.

As we have seen, in 1839-40, three malleable iron works - Calderbank, Dundyvan and Gartness - had been established in the Monklands. Eleven years passed before any other was founded; then in 1851-60 five new works sprang up (Merryston, Coats, Phoenix, Rochsolloch and Drumpellier), in 1861-70 a further five (Clifton, Phoenix II, Tin Plate, Gartcosh, North British), in 1871-80 only one (Crown), in 1881-90 four (Coatbridge, Waverley, Woodside, Dundyvan II), in 1891-1900 one (Victoria) and in 1901-10 again only one (Cairnhill). Altogether twenty malleable iron works had been established. Before 1880 two of them had disappeared, Dundyvan in 1868, Gartness in 1867.

Between 1871 and 1900 several steel works using the open hearth process were established in the West of Scotland. The challenge of cheap steel had arrived and if the malleable iron trade was to survive it had to see what could be done to reduce its costs.

Some of the Coatbridge ironmasters tried to improve the puddling process. At his North British works, Thomas Ellis experimented unsuccessfully with mechanical puddling and invented a 'blast puddling' process. In general, heat losses were reduced by introducing waste heat boilers to generate steam for the engines that drove the rolling mills. Losses of iron by oxidation in the re-heating furnaces were reduced by replacing coal-fired furnaces by gas-fired ones of the regenerative type invented by Gorman and Siemens. Further savings were effected by the puddling furnace

invented by Ellis with closed fire grates that used forced draught and made it possible to use cheap dross as fuel instead of lump coal.

A few of the works added steelmaking to their activities. The Coats Iron Company, for example, changed its name to the Coats Iron and Steel Company and by 1891 had four open hearth steel furnaces in addition to its 25 puddling furnaces. Some time between 1880 and 1885, John Wylie and Co. of Clifton works installed one open hearth furnace. Also in the 1880s John Spencer of the Phoenix works bought Drumpellier Iron Works and installed steel making furnaces there.

Despite the growing output of steel in the West of Scotland - stimulated by rapidly-increasing demand for steel for shipbuilding in the 1880s - the malleable iron trade had some very prosperous spells, one of which was ending in 1910. Of the twenty works erected in the Monklands fifteen still remained. As a depression set in in the malleable iron trade competition for orders became desparate. Each works produced a great variety of sections in each of numerous brands. For example, William Martin's Dundyvan works listed 13 brands each available in many sizes: rounds were produced in 35 sizes and flats in 21; they made weekly rollings of their famous horse shoe, Dundyvan Crown W.M. Best, in 45 sizes and of nut iron in 28 sizes. A catalogue of the products of Smith and McLean Ltd of Gartcosh listed 14 different brands, practically duplicating Martin's list. Rounds were in 47 different sizes ranging from $^{39}/_{64}$ inch to $2^{7}/_{8}$ inch and squares in 25 sizes. One can realise what this multiplicity of sizes entailed both in maintenance and in changing of rolls.

It was becoming evident to the more far-sighted ironmasters that their only hope of survival lay in a rationalisation of their industry and so in 1912 the Scottish Iron and Steel Co. Ltd was formed by the amalgamation of thirteen Lanarkshire firms, ten of which were in the Coatbridge area. Only four Lanarkshire firms elected to remain independent and of these only Martins (Dundyvan) remains today. In the process of reorganisation the 'Combine' had closed four of their Coatbridge works (Cairnhill, Clifton, Coatbridge and Crown) before the outbreak of war in 1914. They opened their own steel work (Northburn) in 1920. In the 1920s two more works were eliminated: Phoenix in 1921 and the North British in 1927.

Further amalgamation took place in 1938 when formation of Bairds and Scottish Steel Ltd brought together the Lanarkshire interests of William Baird and Co. (notably their Gartsherrie blast furnaces) and the malleable iron and steel works of Scottish Iron and Steel. By this time, scarcely any malleable iron was being produced and before long only one puddling furnace remained in Scotland, at Waverley works in Coatbridge. Former malleable iron works were given over to re-rolling of steel billets which could be produced at Northburn and their heating furnaces were fired by gas

from the new coke ovens at Gartsherrie. More closures were to come: Rochsolloch closed in 1964, Coats and Waverley in 1967. Coatbridge Tin Plate Co. Ltd, an independent firm, went into liquidation in 1968. For a further ten years Victoria Works continued to operate but on 1 December 1978 they too were closed, the last of the works that went into the Combine in 1912.

There was no standard size for a malleable iron works. Dundyvan in 1839 laid down 44 puddling furnaces: Calderbank which started with 27 added 40 more at a later date. At the other end of the scale five or six was the minimum number of furnaces to justify the outlay on a steam hammer and forge train. Thus when Ronald's Forge in East Canal Street was converted for malleable iron production it had only five furnaces - the smallest such works in the district. Most of the works started with ten or twelve puddling furnaces, a steam hammer, a forge train and possible a second rolling mill, a 'merchant' or finishing mill. The furnaces were generally grouped round the hammer with the forge train conveniently nearby. The finishing mill was often driven by the same steam engine as the forge train.

Production of Steel

It is difficult to decide whether steel manufacture in our district began at Calderbank or at Calder. The balance of evidence inclines to the latter. The first Calderbank firm did not make any mention of steel in its advertisements but the Monkland Steel Co. which took over the works in 1805 certainly did produce steel for files using the cementation process. They seem to have abandoned steelmaking about 1842, soon after they introduced puddling furnaces. It is significant that when David Mushet laid down the Calder Works in 1800-1802 the company called itself the Calder Steel and Iron Co. Advertisements of the works for sale record that in the steel casting house there were fourteen cast steel furnaces 'capable of making four tons of steel weekly'.[9] Mushet had patented a process for crucible steel in 1800 [10] and from Calder he sent steel for files to Peter Stubs of Warrington.[11] The absence of any mention of steel making at Calder after Mushet severed his connection with it in 1805 suggests that he took his expertised with him.

After Bessemer took out his patent in 1856 for 'pneumatic' steel from pig iron Thomas Jackson of Coats hastened to make trial of the new process without success. Bessemer's success had been achieved with a very pure Swedish iron; Scottish iron contained too much phosphorus and Robert F. Mushet had not yet patented his discovery of the importance of the addition of Spiegeleisen in steel making.

There is no further mention of steelmaking in our district until 1864 when William Hawksworth built, in connection with the Gartness works, a 12-holed steel melting furnace. His venture

lasted barely three years.

The Siemens open-hearth process for steel was introduced to Scotland by the Steel Company of Scotland Ltd who began erection of their Hallside works in 1871. Some time between 1880 and 1885 John Wylie and Co. built one open hearth furnace at their Clifton works. Prior to 1886 the firm operating Coats works had become the Coats Iron and Steel Co. When they actually started to make steel has not been established but by 1891 they had, in addition to their malleable iron works, a steel works with four open hearth furnaces. At Calderbank, steel production started under the Calderbank Steel and Coal Co. Ltd in 1891 and continued under the Calderbank Steel Co. Ltd (1899-1900) and James Dunlop and Co. Ltd (1900-1930). This was the first works in our district built especially for steel making. Following the failure of Henderson and Dimmack in 1881 their Drumpellier works were bought by John Spencer of Phoenix works who installed steel furnaces. In 1886-7, the works are entered in the Valuation Roll as 'empty' but by 1888 they had been rented to William Beardmore.

Not all the works described as 'Iron and Steel Works' did in fact produce steel.

> By the beginning of the twentieth century the proprietors of many malleable ironworks began to purchase mild steel billets from the Continent. Although in no sense manufacturers of steel they then became re-rollers of the semi-finished material. Most of the firms, to advertise their new development, changed their letter headings and other advertising matter from "Ironworks" to "Iron and Steel Works".[12]

Apart from Coats and Drumpellier works the only other 'Iron and Steel Works' which ever made steel was the Waverley which had a small steel furnace working for a short period.[13]

During the First World War, the Scottish Iron and Steel Co. Ltd decided to build a steel works. This new works, Northburn Steel Works, opened in 1920, was built near Kipps, just east of Waverley Iron and Steel Works and by the side of the Slamannan Railway.

Men of Iron

What manner of men founded and carried on this great iron industry in the Monklands? What was their background? What training did they have?

Curiously enough, of the blast furnace owners only David Mushet seems to have had any previous metallurgical experience. He came of a family of ironfounders in Dalkeith but in 1792 had become a clerk at Clyde Iron Works where he became interested in the

assaying of iron ores and developed a skill that later was to bring him a national if not an international reputation. His associates in founding Calder had no such background: James Burns was a builder and the Allans, father and son, were Glasgow merchants. There is no hint of how these four came to be associated. Their successors at Calder were William Dixon and William Creelman, the partners of the Calder Coal Co. Creelman owned the pottery at Laigh Coats. Dixon, a native of Northumberland, had been some twenty years in the coal trade as lessee of Govan coalfield.

The blast furnaces at Chapelhall and Calderbank were erected by the Monkland Steel Co. in which the partners then were John Buttery and Francis Murray. Buttery, an Englishman, had been a partner in a steel and file making concern on Glasgow's Molendinar Burn. Murray, a Stirlingshire pit owner, had also been a partner in that concern.

A surprising number of men with a farming background became ironmasters. Gartsherrie was started by the Bairds, a family of farmers in Old Monkland who had been dabbling in coal mining. Their first furnace was built to the design and under the supervision of James Baird who had no previous experience of such matters.[14] John Wilson (whose name is always associated with Dundyvan to the exclusion of that of its co-founder, Colin Dunlop) had been a farmer until, at the age of 18, he went to Clyde Iron Works as a colliery foreman. Colin Dunlop, who had purchased Clyde Iron Works in 1810, had been trained as a lawyer and had become an advocate although he never practised. The founders of Langloan works were Patrick Rankin, a local landed proprietor, together with Robert Miller and Robert Addie, both of whom had graduated from farming to mining. Carnbroe was founded by Alexander Alison, a Leith merchant, Alexander Cunninghame of Craigends, and the famous James Merry, born at Nettlehole in New Monkland, the son of a farmer who deserted farming for coal mining.

The Wilsons who founded Summerlee has no relationship with John Wilson of Dundyvan. They were sons of John Wilson of Hurlet Alum Works and had had a University education. Associated with them was Walter Neilson, son of the proprietor of Oakbank Foundry in Glasgow and a brother of James Beaumont Neilson, the patentee of hot blast.

All of these ironmasters were men of some substance who must have possessed business acumen and drive combined with ability to manage men. They may have imported furnace men from south of the Border but we have no evidence on this matter.

In the malleable iron industry things were different. As we have seen, expert puddlers, shinglers and rollers had to be brought in from England and Wales. Financing of the trade was different too. Erection of a blast furnace plant involved expenditure on such a scale that only men of substance could embark on it. The original Calder Steel and Iron Works with only two blast furnaces

cost, it was claimed, about £20,000. The cost of a malleable iron works, however, was much more modest and we are told that Drumpellier works was erected in 1859 at a cost of only £24,000.[15] The relative costs of the two types of works are reflected in the values at which works were entered in the Valuation Rolls. In the 1860s and 1870s, blast furnace plants were assessed on £300 a furnace, malleable works on only £30 a furnace. So the malleable iron trade was open to the small investor. Thomas R. Miller wrote in 1958:

> It... yielded in its boom years a return on capital of 30 to 40 per cent - practically all clear profit in the days before taxation was of any consequence. Those engaged in the trade, particularly the rollers and furnacemen, earned such big money that it was mainly from their ranks that the future active partners or executive directors were drawn to form new companies.[16]

With such prospects there was little difficulty in getting financial backing from the banks and it was not uncommon for a new malleable iron works to be started on a credit of £4,000 or £5,000 from a bank as a loan secured on the company's assets.

The first two malleable iron works established in the Monklands, Dundyvan with 44 puddling furnaces and Calderbank with 27, were started by firms already possessing blast furnaces and of considerable financial standing. Thomas Jackson, who founded Coats Iron Works in 1854, was also a man of some standing. Moreover, he had married Janet Baird, one of the Gartsherrie Bairds, and his eldest son, also Thomas Jackson, married a daughter of Robert Addie of Langloan Iron Works.

Most of the othe founders of malleable iron works had much humbler connections. Once Calderbank, Dundyvan and Govan iron works had been established and had introduced skilled English and Welsh workers, these works became the training grounds where Scotsmen learned the new skills. In the main, malleable iron works were started by men, themselves ironworkers, who had expertise and ambition to offer whilst their associates - merchants and coalmasters, great and small - brought business experience. Engineers were attracted to invest in an industry that required much machinery that their firms could supply - steam engines, steam hammers and rolling mills. Tube manufacturers, too, became involved: they required malleable iron strips (skelps) to make lap-welded tubes. Indeed, it is seldom realised how close were the links between these two industries: one finds malleable iron manufacturers embarking on tube making and conversely tube makers venturing into the malleable iron industry.

Merryston Iron Works were founded in 1851 by Martin, Dimmack and Co. - Hugh Martin, Richard Dimmack and James McGilchrist. Dimmack and Martin had both been employed at Calderbank works; Dimmack as a roller, Martin as a heater. Dimmack was a native of

Dudley in Worcestershire but Martin appears to have had local origins; three generations of Martins followed him in the iron trade. McGilchrist was a founder and engineer in Coatbridge; his firm supplied the engines for this new ironworks. At the end of 1858, Dimmack left the firm to join with Robert Henderson in founding Drumpellier Iron Works.

Rochsolloch works were started in 1858 by Isaiah Clark and James Walker (owners of Rochsolloch Brick Works) together with John McAra who had been a shingler at Garness Iron Works which had just closed. He may have come originally from Cramond Iron Works. The Rochsolloch partnership had frequent changes. McAra's connection ended in 1862. Later partners included Archibald Cowie, a coalmaster, and Alexander McGilchrist, engineer, a brother of the James McGilchrist who had been one of the original partners in Merryston works. McGilchrist was succeeded by John Dick, an ironfounder. The person whose name was latterly associated with Rochsolloch Iron Works was James Pettigrew, another coalmaster.

Other ironfounders and engineers who became founders of iron works were the Grays who started Gartcosh Iron Works. One of them was co-founder with David Colville of Clifton works.

Even grocers set up as ironmasters. The first appears to have been David Colville, co-founder of Clifton works. John Wylie, who came to own these works, was another grocer, as was William Tudhope, founder of Crown Iron Works, although before venturing into iron manufacture Tudhope had been concerned in Sunnyside Bolt and Rivet Works.

Outstanding amongst iron workers who graduated to become ironmasters were Thomas Ellis and the Leonard family. Ellis, a native of Whittington in Shropshire, had come about 1842 when he was 24 years of age to be a roller at Govan Iron Works. He became manager of the malleable iron works at Dundyvan but, since they were not prosepering, soon returned to Govan. His father-in-law, James Leonard, a roller in Dundyvan, had come from Stafforshire. Two sons, Moses Leonard and Biby Leonard, were concerned at one time or another in three Coatbridge works. In 1857, Thomas Ellis and James Leonard joined forces to take a lease of Ronald's Forge in East Canal Street and convert it into a small iron works. Again, Thomas Davie, commercial manager in Ellis's famous North British works, and George Garrett, a roller in Clifton works, together with Joseph Reid, a wealthy Glasgow merchant, founded Waverley Iron and Steel Works in 1881.

Reference has been made to the connection between the malleable iron trade and tubemaking. In 1895, Davie and Garrett of Waverley Iron and Steel Works along with the three brothers Symington established the Union Tube Works. Much earlier, Thomas Baird and Co. - in which the partners were Thomas Baird, John McClymont and Thomas Jackson of Coats Iron Works - had started making tubes and shovels in what had been Munro's Foundry (now the

site of the Regal picture house at Coatbridge Fountain). That partnership agreement expired in 1859 and in 1861 Jackson erected Coats Tube Works at the south-west corner of his Coats Iron Works. There are two notable instances of tubemakers who embarked on iron manufacture. John Spencer, a Glasgow ironmonger and partner in Spencer and Eadie, tube makers, was one of the founders and ultimately owner of Phoenix works; and John and James Allan of Victoria Tube Works at Langloan were the founders in 1883 of Woodside Iron Works.

Coatbridge Tin Plate Works, for some years the only works of their kind in Scotland, were founded in 1864 by Edward Mather Bell, a Coatbridge ironmonger, in company with John Baillie. They were dependent on skilled workers brought from England, prominent among whom were the Summerhill family.

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Appendix: The Individual Iron Works

In future issues of Scottish Industrial History, the works are grouped according to their products: (a) pig iron only, (b) pig iron and malleable iron, (c) malleable iron and/or steel. In each group, the order is chronological.

(a)
- Calder
- Gartsherrie
- Summerlee
- Carnbroe
- Langloan

(b)
- Dundyvan I
- Calderbank and Chapelhall

(c)
- Gartness
- Merryston
- Coats
- Phoenix I
- Rochsolloch
- Drumpellier
- Clifton
- Phoenix II
- Coatbridge Tin Plate
- Gartcosh
- North British II
- Crown
- Waverley
- Woodside
- Dundyvan II
- Coatbridge
- Victoria
- Cairnhill
- Northburn

RANDOLPH WEMYSS AND THE DEVELOPMENT OF METHIL AS A COAL PORT

by

Iain Russell

During the mid-1970s, the Forth Ports Authority decided that Methil's life as a coal port should be brought to an end. Mineral traffic was diverted from the Fife harbour to Leith and on 18 May 1977 Methil No. 3 Dock was closed, leaving only the two smaller docks to handle other, mostly import, traffic. The closed dock was subsequently acquired by the Scottish Development Agency which has filled in part of the 16 1/2 acre basin and may completely cover it over should a prospective tenant or buyer for the site have no need for harbour facilities there.[1]

The passing of Methil's days as a coal port and the imminent disappearance of the largest dock there (for No. 3 Dock is in such a state of dereliction that even if it is not filled in it would have to be substantially rebuilt) marks the end of a long and exciting chapter in the economic history of East Fife. Methil Docks played an important role in the industrial development of the area, and had they not been built it is unlikely that the coal industry in East Fife would have grown so spectacularly in the 25 years which preceded the First World War. The story of the promotion and construction of the coal port, and particularly of the controversial third dock there, has a wider significance too. It illustrates some of the ways in which the North British Railway Company sought to develop and maintain a monopoly of the railway goods traffic in Fife. It also offers insights into the often Machiavellian ways in which some Scottish industrialists promoted their business interests at that time.

For several hundred years before the advent of the Industrial Revolution men had exploited to a limited extent the abundant mineral wealth beneath the 'Kingdom' of Fife. The industrialisation of Britain, however, resulted not only in an unprecedented rise in the demand for coal but also in the development of new machinery and techniques which enabled coal owners to take this vital fuel from the ground more cheaply and in greater quantities than ever before. By the end of the nineteenth century, Fife had become one of the most productive coal-mining regions in Britain, producing first-class coal from the rich seams in the south-west and vast quantities of cheaper, third-class coal from the coal fields in the south-east, in the area surrounding the small coastal town of Methil.

The Wemyss family had been prominent landowners in the Methil area since the middle ages, and had taken their name from the ancient shire of Wemyss in which their estates lay. David, the second Earl of Wemyss, had been very active in promoting coal mining and salt panning on his lands, and between 1600 and 1664 he built a small harbour at Methil from which he shipped these and other products to different parts of Scotland and to Holland. In 1756, the Wemyss' estates in Fife passed to a minor branch of the family, but the coal industry there continued to prosper. The small harbours on the estate at Methil and West Wemyss were vital to the development of the industry which required that the product could be carried cheaply from the coal fields to the best markets. It was quite essential that if the Wemyss family and other East Fife landowners and entrepreneurs were to exploit the mineral wealth of the area in earnest that one of these two, or another nearby harbour, be developed as a major coal port.[2]

As the coal industry in Fife grew during the middle years of the nineteenth century so it attracted the attentions of the new railway companies. These companies began to build railway lines all over the county, connecting the coal producing area with Scotland's major trunk lines. They were thus able to take on the highly profitable task of carrying Fife coal to centres of population and heavy industry and to ports, and by making it easier to send coal to domestic and foreign markets they helped stimulate the further growth of the coal industry. After 1862, this lucrative carrying trade in Fife coal became the almost exclusive preserve of the North British Railway Company. In that year, the N.B. amalgamated with the county's two largest railway companies, the Edinburgh, Perth and Dundee and the West of Fife. It subsequently swallowed up most of its remaining competitors, and by aggressively opposing all new schemes to build competing lines in Fife and by coming to agreements with leading Fife industrialists to ensure that they would not sponsor or support such schemes, the N.B. was able to retain a virtual monopoly of railway services in the 'Kingdom'. The N.B. also shared control of Burntisland Harbour, the only major outlet for coal bound for Europe or ports south of the River Forth which existed on the Fife coast. When the Town Council had found itself unable to pay for harbour improvements there the N.B. had offered to help. In return for an equal say in the management of the harbour the railway company opened a new dock at Burntisland in December 1876, at a cost of nearly £80,000.[3]

In 1879, Randolph Gordon Erskine Wemyss (1858-1908) became the laird of Wemyss Castle. The new laird soon emerged as an able, energetic and quite ruthless businessman and he began vigorously to promote the exploitation of the vast coal deposits lying beneath his estates. Wemyss appreciated the need for a large coal port in East Fife. Far more of the coal from that area than from the west of the county was shipped abroad, but Burntisland was not conveniently situated to handle East Fife coal. The harbour was

about 10 miles from the Wemyss estate, where most of East Fife's coal was mined. As it was the only major coal port on the coast and the N.B. had a monopoly of rail services to it, handling and carriage charges were quite high. East Fife coal was of a poorer quality and therefore less valuable than that from West Fife, so that these charges, calculated on each ton of coal regardless of its quality, ate into the profits of the East Fife coal owners more substantially.

Some coal was sent through the small harbours at Methil and West Wemyss, but these ports were too small to handle the growing volume of coal being produced in East Fife, even after Randolph Wemyss' mother, acting as his guardian, had opened a £10,000 wet dock at West Wemyss in 1873. In 1877, the Leven Harbour Company was formed by a group of industrialists including several with interests in local coal mines. The N.B. was also represented. Leven Harbour was purchased with the view of developing it as a major coal port, and it was improved and a new wet dock built at a total cost of about £40,000. But this harbour was plagued by silting, and while it handled 19,000 tons of coal in its first year and eventually more than double that amount, it proved impossible to raise the capital required to further develop the facilities there. Some said that potential investors were put off by the silting problem. Others hinted darkly that the N.B. hindered attempts to raise capital to prevent the growth of Leven as a rival to Burntisland Harbour. Whether because of natural problems or a deliberate attempt to starve the L.H.C. of funds, it began to look increasingly unlikely that Leven would ever become a major coal port.[4] So Randolph Wemyss decided to build his own, and he chose Methil as the site.

Before pushing ahead with the construction of his new 43/4 acres dock, Wemyss had to prepare the ground carefully to ensure that he would receive parliamentary sanction for the scheme (despite the inevitable opposition of the N.B.) and that his dock, once built, would be profitable. He began by building the Wemyss and Buckhaven Railway, which opened in August 1881, cost around £25,000 and ran from the N.B. main line at Thornton Junction to the small fishing village of Buckhaven. While the railway was primarily intended, as Wemyss claimed at the time, to connect the towns and pits on his estate more closely with the N.B.'s network, the laird had another motive for bulding it. It would be a simple matter to extend his railway just over one mile up the coast to Methil, thereby providing a new dock with a vital connection with the N.B.'s railways and a feeder line from the pits on Wemyss' estate.

Wemyss knew that the N.B. would oppose his scheme by arguing that it was unnecessary, owing to the proximity of Methil to the existing harbour at Leven, and that the construction of the new dock would take business away from Leven Harbour and harm those with interests in the L.H.C. But he had many supporters in the L.H.C. who shared his desire to have a major coal port built in

East Fife. He was, therefore, able to arrange to purchase the Leven Dock for the knockdown price of £12,000 and the promise that he would not close it. This transaction was authorised by the Leven Harbour Order of 1883.[5]

To ensure that his dock could not be starved of custom by the machinations of the N.B. or by the fickleness of his local supporters, Wemyss entered into an agreement with the two coal companies who worked pits on his estates as his tenants. The Fife Coal Company and Bowman and Co. would both benefit from the construction of a dock at Methil, and so they agreed in 1882 that if it was built they would send a guaranteed quantity of their coal through it.[6] With the revenue from handling these guaranteed shipments added to the amount which Wemyss would save by sending his own coal by Methil instead of Burntisland, the investment in the new dock was sure to be a safe one.

The N.B. failed to stop Wemyss gaining parliamentary sanction for the new dock and railway in 1883. In 1884 the Edinburgh contractors, Waddell and Gibson, set to work building the dock to plans prepared by the consulting engineers, Cunningham, Blyth and Westland. Wemyss spent about £100,000 on the construction of the dock and the railway extension, and both were formally opened on 5 May 1887.

There was a mild recession in the coal industry during the late 1880s, but Methil Dock proved to be a highly profitable venture from the very beginning and exported over 200,000 tons of coal in its first year of operation.[7] Methil was ideally situated as a Fife coal port, closer to the mouth of the River Forth than any of its rivals. Wemyss, however, did not wish to remain a harbour-owner for long. His prime concern had been to develop the coal industry on his estates, and for this it was essential to have port facilities close to the mines. He knew that owning and operating a specialist coal port was a risky and expensive business. The volume of coal produced in Fife was rising steadily - it increased from $1\frac{1}{4}$ million tons in 1870 to $5\frac{1}{2}$ million in 1900 and to over $8\frac{1}{2}$ million a decade later[8] - putting pressure on space and facilities at the ports. If Wemyss' dock was not equipped with enough railway sidings and the most up-to-date coal-handling equipment then delays in loading would occur and his customers might decide to take their coal elsewhere. Coal ships were being built larger each year, and if Wemyss did not continually deepen his dock to accommodate the largest and most modern vessels then he again risked losing customers. As owner of the harbour, he would eventually be required either to invest large sums periodically in improving facilities at Methil, or to risk losing custom and jeopardising his original substantial investment. Wemyss decided instead to look around to find a buyer for the dock, preferably one who could afford to pay out large sums of money to maintain it as a modern and efficient outlet for East Fife coal.

The ideal buyer Wemyss sought was the N.B. The railway company had huge financial resources and could easily afford to maintain Methil Harbour as a leading coal port. The N.B. was also in no position to dictate its own price. The new dock and railway were deflecting a substantial amount of coal traffic away from N.B. metals and from Burntisland. The situation would become worse if the dock and railway were to fall into the hands of a powerful rival who sought to use them as a toehold on N.B. soil, as a base for further attempts to undermine the N.B.'s monopoly of the coal-carrying trade in Fife. So Wemyss was able to attach several valuable conditions to the agreement for the sale of the dock which he signed with the N.B. on 26 December 1888.[9]

By this agreement, the N.B. acquired Methil Dock, the W. & B. Railway and Methil Extension, Leven Dock, the lines linking that dock with Methil Dock and with the N.B.'s Leven Branch and the line linking the W. & B. with the N.B.'s Muiredge Branch, all for a total of £225,000. Wemyss promised not to work the coal seams directly under or in the vicinity of Methil Dock where the removal of the coal might undermine the dock's foundations. He also promised that neither he nor his tenants would build any dock, harbour or railway in Fife which might divert traffic from the docks served by the N.B. at Burntisland, Charlestown or Methil. In return for these undertakings Wemyss and his tenants were to be allowed free use of the Muiredge Branch line, paying only a fair share of maintenance costs. The N.B. rates for carrying coal from East Fife collieries were fixed and the N.B. was bound to maintain the charges for coal handled at Methil Dock at the same level or less than the rates at Burntisland. Wemyss was given a seat on the N.B. Board of Directors in an attempt to strengthen the N.B.'s network of alliances with Fife's industrialists and to discourage him from embarking on future adventures which might damage the railway company's interests. The laird was later to claim that the N.B.'s General Manager, John Walker, also assured him that the N.B. would improve facilities at Methil Harbour whenever and in whatever way the volume of trade justified expenditure.[10]

After selling his dock, Wemyss settled down to developing his estates and to using his influence on the N.B. Board to promote the interests of the East Fife coal industry. All seemed to go well for him at first. The N.B. agreed that the increasing volume of trade at Methil required improvements there, and on 11 June 1891 an Act for the construction of a new 6 1/2 acre dock received the Royal Assent. But the N.B. was being lobbied from other sides too, and came under increasing pressure to improve Burntisland Harbour. To Wemyss' annoyance, work at Methil did not begin until 1894 and that same year the N.B. announced its intention to further improve Burntisland Harbour and to build a new dock there.

In 1894, Wemyss floated and became chairman of the Wemyss Coal Company Ltd, its aim being to exploit the coalfields on his estate around East Wemyss. Work began to sink the Michael pits, and the Lochhead and Earlseat Collieries were opened some years later. The

success of this new venture relied for its success, to a great extent, on the further development of Methil Harbour. If Wemyss was going to produce greater quantities of coal he would require to be able to ship it cheaply from Methil, but the dock there was already working to capacity. The second dock at Methil was only partially opened in 1897, and the contractors, Sir John Jackson Ltd, did not finish the work there until January 1900. The delay in completing the new dock and the decision to make harbour improvements at Burntisland infuriated Wemyss. In fact, the N.B. was in an embarassing situation, forced to invest heavily in both docks to keep both the East and West Fife coal barons loyal. Its directors often gave the impression that they saw themselves as diplomats negotiating and intriguing to preserve the territorial integrity of a nation-state, not the monopoly of Fife's railways. They considered it necessary to improve Burntisland Harbour to ensure that the West Fife colliers remained satisfied with N.B. services and would not go over to the enemy, aiding the hated Caledonian Railway Company in its efforts to 'invade' Fife. Wemyss had no time for the politics involved, however. He feared that the money invested by the N.B. at Burntisland would mean that less would be made available to upgrade facilities at Methil. He was furious when his arguments were brushed aside by his fellow-directors and the N.B. proceeded with the construction of the new dock at Burntisland.

As the development of Burntisland Harbour would greatly benefit the companies with interests in West Fife coal, the N.B. sought agreements with these companies in return. In January and February 1896, 28 of Fife's leading coal owners signed an agreement designed to strengthen the N.B.'s monopoly of the county's railways.[11] Under it they promised to support the Bill promoting the Burntisland scheme, and that during the next 21 years they would not ship their coal to any port other than one served by N.B. metals. They also agreed not to promote, build or assist others to build any new railway in Fife except for sidings or lines connecting with the N.B.'s railways.

Most of the men who signed this agreement had interests in the West Fife coalfields and, therefore, in the development of Burntisland as a coal port. But one of the signatories was the arch-opponent of the scheme, Randolph Wemyss. As a coal-owning director of the railway company he could hardly have been excused from signing, but his dissatisfaction was such that his fellow-directors were forced to insert special clauses in the agreement recognising Wemyss' separate interests. Under these clauses Wemyss alone of all the signatories was permitted to build private railways and tramways on his estate, and his tenants were allowed to build lines connecting their pits and linking them with Methil Docks.

If the N.B. directors thought that the concessions made to Wemyss in the 1896 agreement would encourage him to respect the N.B.'s interests as paramount, then they were sadly mistaken. In

1897, Wemyss announced that he now intended to build the Wemyss Estate Railway, which would connect several of his own and his tenants' pits more directly with Denbeath, where he was soon to build a mining village and a central coal washery, and with Methil Docks. To the horror of his colleagues on the Board of the N.B., Wemyss intended to work this new railway himself, which meant that he intended to take the job of carrying all the coal from his estates to Methil, previously carried along the W. & B. line, out of the hands of the N.B. The directors tried to persuade him to abandon the scheme, or at least to conform to the spirit of the 1896 agreement and allow the N.B. to work the railway. They maintained that while Wemyss' right to build his own railway was conceded by the company in 1896, he had no right to act as a carrier. But according to the letter of agreement Wemyss was perfectly entitled to build and operate his line if he so pleased, and when the N.B. appealed to an arbiter in July 1898 he had no choice but to find accordingly. Subsequent attempts to 'buy off' the wayward director failed miserably. The laird announced that he would abandon the scheme only if he were given an annuity, as well as a refund of 30% of the cost of transporting coal by N.B. metals which would have been carried by his own railway had it been built. The N.B. tried to negotiate, but Wemyss stuck to his guns and refused to accept any other terms.[12] It was now quite clear that the business interests of Randolph Wemyss were in conflict with those of the N.B. to such an extent that the association of the two could no longer continue. On 16 May 1899, Wemyss resigned as a director of the N.B. His new railway opened two years later.

In 1899, Randolph Wemyss, recently remarried after the widely-publicised divorce from his first wife, set off in his yacht on a world cruise. He turned up in South Africa just as the Boer War was hotting up, and in typical gung-ho fashion he enlisted and joined the fray, returning to Fife as Captain Randolph Wemyss in July 1901. He soon launched himself into his business affairs again, extending the W.E. Railway to the newly-opened Lochhead and Earlseat pits, taking over the working of other collieries as his tenants' leases expired and making life miserable for the N.B.'s directors once more. When the N.B. declined his offer of land to build a tramway linking the villages in Wemyss Parish and providing a cheap passenger service along the coast which would carry men to and from the pits, he formed the Wemyss and District Tramways Co. Ltd and in August 1906 opened an electric tramway between Kirkcaldy and Leven.[13] And when the N.B. continued to ignore his requests to build another dock at Methil to handle the ever-increasing quantities of coal being shipped from the port, Wemyss announced that he would build his own new dock instead.

There is no doubt that there was an element of bluff in Wemyss' threat to build his own dock at Buckhaven. Since 1904 he had written repeatedly to the N.B., noting that overcrowding at Methil Docks was causing delays and giving Methil a reputation for poor despatch which might drive custom away from the port. Fearing that the N.B. sought to run down the dock, Wemyss offered to build

a new dock in partnership with the company if it did not wish to risk investing in the undertaking alone, but the N.B. continued to insist that there was no evidence of overcrowding at Methil, and therefore no need at that time to improve the harbour.[14] So, in 1905, Wemyss carried out his threat to go ahead with creating a new port at Buckhaven, and in July promoted the Wemyss Dock Bill.

It is easy to sympathise with the N.B. directors who had opened the new dock at Burntisland in 1901 and who were probably quite satisfied to wait until the handling capacity at that dock was reached before undertaking yet another costly harbour extension programme in Fife. But Randolph Wemyss naturally thought only of what was best for his estate, and he had the support of many East Fife coal owners and other industrialists for the Wemyss Dock Bill. They used the Bill as a stick with which to beat the N.B., to force the railway company to heed their complaints about overcrowding at Methil Docks.

The scheme outlined in the Wemyss Dock Bill of 1905 was totally contrary to the agreements signed by Wemyss with the N.B. in 1888 and 1896 in which he undertook not to divert traffic from the railway company's ports or to build a rival dock or harbour. The Select Committee of the House of Lords which considered the Bill had, therefore, little option but to throw it out. But the Committee did comment that it found evidence presented by Wemyss' supporters of overcrowding at Methil Docks to be convincing, and hinted that a future scheme might gain parliamentary sanction on the grounds that it would serve the public interest.[15] The N.B. took the hint, as Wemyss and his supporters had hoped, and quickly commissioned the engineers responsible for designing the two existing docks at Methil, now known as Blyth and Westland, to design Methil Dock No. 3.

The North British Railway Bill of 1907 was introduced to promote the construction of the new dock. According to the railway company the cost of building the new, deeper dock at Methil, and of improving service lines and siding accommodation there, would be £530,000, while the doubling of the Thornton-Leven line to improve services from the western coalfields would be £50,000. To guarantee a return on this investment, the N.B. proposed to levy an additional 1d. per ton on all third-class coal handled at Methil Docks. Wemyss was incensed. He pointed out that while the N.B. had blocked his Bill in 1905 by complaining that the construction of a dock at Buckhaven would be in breach of earlier agreements concluded between the two parties, so this levy would break the 1888 agreement in which the N.B. had promised not to raise charges at Methil above those levied at Burntisland. So he reintroduced a Bill promoting a slightly amended version of the scheme put forward in 1905, and the competing Bills were considered by a Select Committee in April and May 1907.

Many of those who had supported the Wemyss Dock Bill in 1905 switched their allegiance and supported the N.B.'s Bill in 1907.

They had supported Wemyss only in order to bring pressure to bear on the N.B., and were probably less than enthusiastic at the prospect of the aggressive and ruthless Captain gaining control of his own coal port, now that he was emerging as the leading coal baron in East Fife. In addition, the N.B.'s case of two years previous was still valid. It maintained that there was no need for a new dock at Buckhaven - the area was perfectly well served by the docks at Methil and would be even better served once the third dock was built. The Buckhaven scheme would jeopardise the N.B.'s considerable investment in the area. And Randolph Wemyss was again seeking to overturn legally binding agreements in applying for permission to build a dock at Buckhaven. The N.B. further enhanced its case against Wemyss' scheme by offering the Wemyss Coal Company preferential treatment once Methil Dock No. 3 opened. On 2 May 1907 the North British Railway Bill was proved, and Wemyss' Bill rejected. But the Captain could take comfort from the fact that, after his objections had been heard, the Select Committee insisted that the N.B.'s surcharge on coal handled at Methil Docks be cut to 1/2d. per ton.[16]

On 21 February 1908, Robert McAlpine and Sons were awarded the contract to build Methil No. 3 Dock. Randolph Wemyss died in July that year, so he saw only the opening stages of what developed into a titanic struggle to build the large and well-equipped dock which his harrying tactics had forced the N.B. to commence. The new dock opened in January 1913, after numerous technical hitches and several violent storms had hindered and disrupted the work and had caused the cost of completing it to almost double from the original estimate of around £500,000. It had to close again in 1915, when mine workings damaged the entrance channel, and it did not re-open until the end of the First World War.[17] By then, the boom times for Fife coal exporters had ended. In the years immediately preceding the war, the original two docks at Methil had handled nearly 3 million tons of coal annually, and this figure was rarely surpassed in later years despite the additional facilities offered at No. 3 Dock.

NOTES

1 Information concerning the recent history of Methil Docks was kindly supplied to me by Mr R.M. Taylor, Port Manager, Fife, of the Forth Port Authority, and by Mr B. Armstrong, Principal Project Officer of the Scottish Development Authority.

2 For the history of Fife's coalfields and of the Wemyss family, see Andrew S. Cunningham, Randolph Gordon Erskine Wemyss: An Appreciation, (Edinburgh, 1909), and Mining in the "Kingdom" of Fife, (Edinburgh, 1913), by the same author.

3 The history of Fife's railways is described in William Scott Bruce's The Railways of Fife, (Perth, 1980), and in the opening chapter of John Thomas' Forgotten Railways: Scotland, (Newton Abbott, 1976). Bruce Lenman's From Esk to Tweed, (Glasgow, 1975), traces the development of Fife's ports.

4 See Scottish Record Office (S.R.O.), BR/NBR/4/225.

5 Ibid., and Cunningham (1909), op. cit., p.117.

6 S.R.O., BR/NBR/3/14.

7 Lenman, op. cit., p.144.

8 Cunningham (1913), op. cit., p.36.

9 S.R.O., BR/NBR/3/14.

10 Glasgow Herald, 27 April 1907, p.9

11 S.R.O., BR/NBR/3/14.

12 S.R.O., ibid., BR/NBR/1/46 and SPC/9/2/6.

13 See A.W. Brotchie, The Wemyss and District Tramways Company Ltd, (Dundee, 1976).

14 Cunningham (1909), op. cit., pp.167-170.

15 Glasgow Herald, 26 July 1905.

16 Ibid., 26, 27 and 30 April and 1 and 3 May 1908.

17 For the story of the construction of Methil No.3 Dock, see S.R.O. BR/NBR/4/127,128 and 129.

SOCIETY NEWS

The Scottish Society for Industrial Archaeology and the Scottish Society for the Preservation of Historical Machinery are contemplating a merger. The general idea has been accepted by both sides and after the Annual General Meetings of both societies this Spring it is likely that a constitution will come into force for a joint body which may perhaps be called The Scottish Industrial Heritage Society, having in addition to its statutory committee at least two statutory standing sub-committees to attend to the different types of activity hitherto covered by both societies, which can be roughly divided into (a) the promotion of the study of the industrial heritage and (b) preservation.

If things go according to plan, this new body is likely to be in existence by the time the next issue of Scottish Industrial History appears.

Meanwhile, the S.S.I.A. has held another successful thematic day conference under the title The House that Jock Built and papers arising from it should appear in the next issue.

Business Archives Council of Scotland

Despite last year's uncertainties, the Council's survey continues and, although there has been little response to our enquiries to find business records, the Surveying Officer's attention has been occupied by the need to find accomodation for the records of companies which have been forced to close, move or simply wish to make more use of the premises they have.

Thirty-seven Surveys were conducted in 1981-2 and 16 deposits arranged. There have been some surveys of note among them: Border Union Agricultural Society, Kelso; Brander and Cruickshank, advocates, Aberdeen; Clyde Shipping Co. Ltd, tug owners, Glasgow; A.F. Craig & Co. Ltd, engineers, Paisley; J. & P. Coats (U.K.) Ltd, thread spinners, Paisley; Walter Runciman & Co. Ltd, shipowners, Glasgow; Charles Tennent & Co. Ltd, chemical manufacturers, Glasgow. These surveys have been or will be placed on the National Register of Archives (Scotland) in due course. All enquries should

be addressed to the N.R.A.(S.).

The number of deposits, often of large collections, have created pressure on archival accommodation. This problem should be overcome, hopefully sometime in the near future, as additional accommodation becomes available. This will certainly be necessary as already this year the number of deposits has exceeded the surveys.

Construction History Group

Many people now believe that it is time to evaluate the historical work that has been and is being done into building production and to establish some new priorities and lines of enquiry for the future. Very little is known about those who are engaged in historical research into the building industry, where work is being done and where work ought to be done before records are destroyed. The Construction History Group is attempting to identify and contact individuals and organisations interested in the historical aspects of building, who might be working either within or ourside the industry. During 1983, a series of seminars is planned to which those identified will be invited. The purpose of these seminars will be to determine priorities and to establish how future historical investigation into building topics might be encouraged and financed.

Few people would deny that there is a long tradition of building. However, when this tradition is examined for documentary evidence some interesting issues emerge. First, there is a considerable body of knowledge associated with building types and the materials of construction. For example, students of English churches, medieval houses, English brickwork or structural carpentry have some basic references from which further studies might be mounted. Second, the development of architecture as a profession has resulted in an extensive documentation of the work of selected architects. This concern with architecture and design, however, has probably reduced the role and history of the builder to that of passive executor of the architect's design. Third, there is a growing body of knowledge regarding the economic history of the building industry during the 19th and 20th centuries. Fourth, the industrial relations scene is being increasingly explored and, consequently, the records of trade unions and employers' associations are attracting more study. Finally, the historical development of particular geographical areas, towns and localities are being investigated and recorded.

In all these areas, there exists a growing reservoir of historical knowledge and inventories of documentary evidence. But

compared with the above subjects areas, there would appear to be no readily available inventories or well-defined bodies of historical documentation or commentary associated with the employment, working conditions, training, site operations or site organisation aspects of the building industry.

There seem to be two major areas that are especially neglected. They are the growth and development of building firms and the documentation of the building processes associated with specific buildings. As a consequence, the building industry may be seen as unchanging and old-fashioned. In fact, many changes have occurred - in employment patterns, in management structures, in building processes, and these are all visible at the level of the individual firm and building project. Therefore, tracing the history of firms and recording the activities associated with the construction of some specific building projects will, to some extent, reflect changes in the industry at large. There are, however, only a handful of published histories of building firms and even fewer commentaries on site processes.

If you are interested in the history of building or know of anyone who is or may be already working on an investigation, then please contact Peter Harlow, Head of Information, at the Chartered Institute of Building, for further details. The address is Englemere, Kings Ride, Ascot, Berkshire, SL5 8BJ.

Scottish Mining Museum Research Papers and Bulletins

The first of a series of occasional Research Papers, Investment and Management in the Lothian Coal Company, 1890-1955, by Michael S. Cotterell, appeared in January 1983. The intention is to make the research carried out by the S.M.M. History Unit known to a wider audience. The Museum which is located at the Lady Victoria Colliery in Midlothian also produces regular bulletins embracing all types and aspects of the history of mining. Enquiries to the History Unit, the Scottish Mining Museum, 12 St Giles Street, Edinburgh, or Lady Victoria Colliery, Newtongrange, Midlothian.

SUMMARY LISTS OF ARCHIVE SURVEYS AND DEPOSITS

1 National Register of Archives (Scotland)

Full details of the surveys are available from the National Register of Archives (Scotland); all enquiries and requests for access should be addressed to The Secretary, The National Register of Archives (Scotland), P.O. Box 36, H.M. General Register House, Edinburgh, EH1 3YY.

Agricultural Estates, Land & Property

1936 Shetland Library, Lerwick. Vaila estate papers. Titles to lands and other estate papers relating to Cheyne, Sinclair and Scott families and to Vaila estate, including titles of Vaila and Foula and lands in Sandness, Waas, Fetlas, Uist, Sandstig and Tingwall, 1548-1924. Papers concerning teinds of Waas, 1753-1815, n.d.

1948 Macbeth & Maclagan, solicitors, Rothesay. Writs of South Garrochty, Isle of Bute, 1504-1745. Legal and estate papers relating to lands of Ascog, Rothesay, 1507-1752; letters from gardener at Ascog on agricultural matters, 1749-52.

1953 W. Runciman, Esq., Lauder, Berwickshire. Accounting records of Wantonwalls, East Mains and West Mains farms, Berwickshire, including harvest and sowing dates, 1830-1956, and accounts of wool and grain sold, 1868-86.

1957 Co-operative Wholesale Society Ltd. Scottish Division. Financial and administration records relating to S.C.W.S. milk department and creameries at Coatbridge, South Glasgow, Wishaw, Witchknowe, Bladnoch, Whithorn and Stranraer, 1927-77; Financial and administrative papers of James Wylie & Sons, grain merchants, 1911-77.

1963 St Andrews University Archives. St Fort Estate records. Titles and other legal papers relating to St Fort and lands in Fife, Angus, Kincardine and Perthshire, 1504-1944. Estate papers, 1746-1957. Leuchars parish teind papers, 1713-1889.

1967 Mrs M. Salvesen, Edinburgh. Titles to lands of Auchincarroch and Blairnyll, Dumbartonshire, and mill of Ladrisbeg, Perthshire, 1655-1788. Legal and estate papers of Donalds of Lyleston, 1757-1880.

2001 Mrs M. Porter, Dundee. Family correspondence, legal papers and accounts relating to Porter family at Myreside Farm, later Mains of Fullarton, Meigle, and Lochmill Farm, Glamis, 1807-85, including farm accounts and receipts, 1814-70; letter concerning dispatch of ploughs to Australia, 1861.

2005 Stewart & Co., seedsmen, Dalkeith. Minute book, 1940-4; accounting records, 1890-current; order lists and books, 1890-current; journey sheets and notebooks, 1933-67; correspondence, 1901-74, including reports on golf courses in Britain and elsewhere, 1914-70; wage records, 1906-76; gardeners' employment register, 1924-71; misc. catalogues, 1836-1978. Photographs, c.1890-1970. Edinburgh Seed Trade Assistants Association minute book, 1900-14.

2008 Cowan & Stewart, W.S., Edinburgh. Titles to land in counties of Kirkcudbright, Dumfries, Selkirk and East Lothian, 1687-1756.

2056 Charles G. Spence, Esq., Biel. Biel, Belhaven and Dirleton estate papers, 1751-1952, includes rental of Biel, 1761-78, and papers relating to division of Dunbar commonty.

2058 Lt. Col. J.K. MacFarlan, Yeovil. Papers relating to Dalquharran Castle, 1786-20th century, includes letters from Robert Adam to Thomas Kennedy of Dunure discussing Dalquharran, the New College, Edinburgh, and Adams' other projects in Scotland, 1786-9; descriptions and inventories relating to Dalquharran, 1789-1904. Plans of estate, 1781, and proposed alterations to castle, 1880.

2059 Murray, Beith & Murray, W.S., Edinburgh. Walker Trust Drawings. Plans of house and barony of Coates and their relation to New Town of Edinburgh, 1778-1826. Plans, sections and elevations of buildings in parts of New Town of Edinburgh, including Coates Crescent, Melville Street, Rothesay Terrace, Manor Place and Walker Street, with related legal papers, 1819-1957.

2079 Earl of Rosebery, Dalmeny House. Plans, elevations and sketches (some never executed) for Barnborough Castle, Dalmeny House and garden and Rosebery House, 1756-1915; estate plans, 1754-1832, including Cramond Island, 1769, Barnborough and Dalmeny by John Ainslie, late 18th century, and feuing plan of Newhalls, 1818.

2081 Badenoch Printers (Jas Johnstone & Son), Kingussie. Badenoch and Rothiemurchus Farming Society, minutes, 1868-98, 1923-50;

accountancy records, 1880-1950.

2084 National Library of Scotland. Douglas of Cavers muniments. Writs relating to lands mainly in Roxburgh and Berwickshire, 1353-1812. Miscellaneous legal and estate papers, 1506-1947, including rentals of Parish of Smailholm, 1643, Kirktoun, 1739, Weensland, 1733, and Cavers, 1781-6. Legal and financial papers relating to Roxburgh, 1598-1734.

Banking

1924 Dundee Banking Company. Sederunt Book, 1763-7; correspondence from Western Bank, 1847; character references of customers, c.1823-64; list of partners, 1836. Dundee New Bank: partners' minute book, 1802-4; accounting records, 1802-53, some relating to Brechin, Arbroath and Forfar branches; papers concerning merger with Dundee Banking Company, c.1820-40; miscellaneous legal papers, 1802-38; correspondence concerning administration of Dundee branch of Paisley Banking Company, 1789-91. List of partners of Dundee Union Bank, 1836.

Brewers & Distillers

1926 Lang Bros Ltd, distillers and spirit merchants, Glasgow. Minutes, directors, 1897-1933, annual general meetings, 1897-1978; private letter book, 1862-91; register of members and share ledger, 1897-1965. Glengoyne distillery ledger, 1922-65, warehouse book, 1934-56, papers relating to valuations, 1899-1923. Advertising material, c.1910. Newspapers and press cuttings concerning firm and events in West of Scotland, c.1850-1960.

1955 Drybrough & Company Ltd, brewers, Edinburgh. Directors' minutes, 1895-1923, accounting records, 1781-1965, including malt, yeast and barley purchases, 1921-76, and ale and spirit sales, 1781-3, 1933- 65; records of malting and brewing processes, 1875-1966; correspondence, 1796-1919; wages and salaries books and sheets, 1791-2, 1912-61; share and dividend records, 1891-1936. Plans and photographs of Canongate and Craigmillar breweries, machinery and staff, 1888-c.1970.

2080 Scottish Malt Distillers Ltd, Elgin. Minutes, 1914-20. Minutes of Speyburn Glenlivet Distillers Co. Ltd, 1897-1961, Daltuaine-Talisker Distilleries Ltd, 1898-1911, Associated Scottish Distilleries Ltd, 1938-62, Alexander Bonthrone & Sons Ltd, 1938-63.

Civil Engineering and trades allied to building industry

1932 Gilbert Thomson & Son, chartered civil engineers, Glasgow. Letter books, 1887-1976; miscellaneous financial records, 1911-52. Contract documents and drawings, particularly relating to water and drainage schemes (indexed), 1887-current; specifications and bills of quantities, 1893-current; report books, 1897-1972; descriptions of plots and record of lists, 1898-1964; photographs, c.1906-current.

1935 James Williamson & Partners, consulting civil and structural engineers, Glasgow. Contracts, drawings and working papers relating to British power industry projects, 1945-current.

1942 Leitch & Sharpe, consulting civil engineers, Glasgow. Contract documents, specifications and bills of quantities, c.1863-current; drawings, c.1900-current; photographs, c.1894-current; cinematographic film, c.1940-80; correspondence, c.1910-current.

1948 Macbeth & Maclagan, solicitors, Rothesay. Papers relating to Robert Thom of Ascog, water and civil engineer, 1827-47.

1992 H. Walker & Son, painters and decorators, Oban. Accounting records, 1895-1970; estimate books, 1888-1977.

1993 Baptie Shaw & Morton, consulting civil and structural engineers, Glasgow. Letter books, 1895-1970; specifications books, 1844-1907; contract book, 1895-1907; job lists giving clients' names, job titles and relevant working papers and drawings, 1944-79. Photographs of reservoirs, shipbuilding projects and construction of pipeline, c.1947-60.

2012 R.C. Steven & Co. Ltd, oil and paint merchants, Dundee. Accouting records, 1921-52.

2017 East Brothers, furniture manufacturers, Dundee. Minute book, 1910-current; accounting records, 1896-1943; catalogues and price lists, c.1900-c.1905.

2047 George C. Kirk Ltd, glass merchants and glaziers, Glasgow. Daybook, 1880-3; copy letterbook, 1909-29.

Engineers

1924 Carlaw Group Ltd (cars & engineering) Glasgow. Accounting records, 1930-69; order books, 1936-61; cost books, 1934-56; wage books, 1925-53; canteen ledger, 1944-51; drawing office

registers, 1916-76; plans and technical drawings of machinery manufactured by firm, 1889-1946. Photographs of specimen envelopes produced on firm's machinery, 1901-29. J.S. Carlaw's desk diaries, 1955-65.

1925 Brownlie & Murray Ltd, structural engineers, Glasgow. Minutes of consultative committee, 1955; accounting records, 1898-1964, including purchase and sales ledgers, 1923-53; wages books, 1912-64; records of estimates, 1899-current; order books, 1901-70. Register of drawings and catalogues, c.1925-35. Specifications plans and drawings relating to buildings and machinery supplied by firm at home and abroad (esp. India), with related correspondence and photographs, 1846-1973. Catalogues, c.1895-c.1950. Plans and photographs of Possil iron works and other premises, c.1890-1970. Inventories and valuations of Possil Ironworks, 1898, 1941. Notebooks of drawings and calculations of building methods kept by James Murray, c.1870-1925. Reports, minutes and other papers relating to Council of British Manufacturers of Petroleum Equipment, 1943-4.

1926 Lang Bros Ltd, distillers and spirit merchants, Glasgow. George Robertson & Partners, metal workers, Glasgow: letterbook, 1849-51.

1996 Denny, Tolmie & Spence (Dennystoun Forge Co.), Dumbarton. Minute book, 1881-1934; accounting records, 1881-current; correspondence and legal documents, including partnership contracts, papers relating to Kosmoid Tubes Ltd, and valuation of engineering machinery, 1855-1907; order book, 1872-87; photographs of works, machinery and staff, 1950-current.

2014 Thomas Duff & Co. Ltd, jute merchants, Dundee. Angus Engineering works. Order book, 1933-9.

2032 D.J. MacDonald Ltd, engineers and machine makers, Dundee. Accounting records, 1908-33.

2075 Dundee University Library. Giddings & Lewis Frazer, engineers, Arbroath. Douglas Frazer & Sons: minutes, 1905-67; accounting records, 1878-1968; legal and financial papers, 1857-1952, and agreements with Ministers of Supply and Aircraft Production, 1942; business papers and correspondence concerning various organisations, 1857-1956; papers concerning patents and trade marks, 1881-1921; inventories and valuations of property and machinery in Arbroath, including steam engines, 1881-1959.

2516 Dundee University Library. Alexander Shanks & Sons Ltd, engineers, Arbroath. Minutes, 1894-1904; accounting records, 1883-1965, including inventories and valuations of property and stock; lists of apprentices, 1892-1910.

2078 Dundee University Library. Lewis C. Grant & Co. Ltd, engineers, Dysart. Accounting records, 1892-1964, including estimate books, 1892-1942, with gaps, and plant valuation books, 1927-50. Correspondence, technical data, plans and other business papers relating to mills and milling machinery, particularly for processing rice, 1893-1952.

Insurance

2019 Association of Underwriters and Insurance Brokers in City of Glasgow. Minutes, copy extracts, 1818-90, originals, 1929-current; accounting records, 1823-70, 1959-current; correspondence and legal papers, 1819-1972; papers relating to formation of Glasgow Underwriters Protection Committee and subsequent printed reports, 1880-9; lists of members and agents, 1857-current; ship insurance policies, 1805-87; history of association, 1906. Printed matter and newspaper cuttings relating to underwriting and insurance, 1819-1968. Photographs of personnel, 1899-1962.

1957 Co-operative Wholesale Society Ltd, Scottish Division. Financial and administrative records, Co-operative Insurance Society Ltd, 1925-72.

Manufacturing - Shipbuilding

2069 Scott's Shipbuilding & Engineering Co. Ltd, Greenock. Replaces surveys nos 307 and 954. Deposited in S.R.O. (G.D. 319).

Manufacturing - Textiles

1957 Co-operative Wholesale Society Ltd, Scottish Division. Papers, mainly financial and administrative, George J. Balsillie & Co. Ltd, jute manufacturers, Dundee, 1947-70; Ettrick and Yarrow Spinners Ltd, 1925-73; Loudon Textiles, 1961-72; Scottish Textile Manufacturing Company Ltd, 1945-67; Whitegates Knitwear Ltd, 1962-73. Taybank Juteworks, Dundee, 1913-74.

1961 R. & G. Neill, woollen manufacturers, Langholm. Accounting records, 1916-65, including wage books, 1916-58, and purchase daybooks, 1923-61; records of output and pattern books, 1919-current.

1990 D. Ballantyne Brothers & Co. Ltd. woollen manufacturers, Peebles. Minute books, 1916-current, accounting records, 1884-1919; stock and shareholding records, 1917-50; letterbooks, 1884-1920; standard pattern books, 1880-current; inventories and valuations of buildings and machinery, 1880-1927. Photographs of mills at Peebles, Caerlee and Innerleithen, c.1950.

2001 Mrs M. Porter, Dundee. Papers relating to James Porter and Prinlaws Mill, Leslie, 1873-1958, including diaries of James Porter with details of business dealings in flax and yarn, 1878-1905, with gaps. Notice of bleaching charges at Douglasfield Bleachfield, 1873.

2002 H. & A. Scott, textile manufacturers, Dundee. Accounting records, 1832-69, 1902-25; order book, 1887-1910; miscellaneous papers mainly relating to wage rates, 1904-19.

2010 William Watson (Dundee) Ltd, textile dyers and bleachers. Minute book, 1925-current; minute book, Cargill & Co. Ltd, 1939-76, with correspondence concerning ownership of latter by Watsons, 1969-77. Photographs of dyeing machinery, c.1970.

2014 Thomas Duff & Co. Ltd, jute merchants, Dundee. Minute book, 1883-99; accounting records, 1924-38; business correspondence, 1887-1944, including letters from agents in India on subjects including Samnuggur and Titaghur mills production, strikes at Samnuggur mill and state of Indian stock market, 1887-90; weekly reports on Indian stock market conditions of jute, etc., 1901-64; Samnuggur Jute Factory Co. Ltd, minute book, 1874-85; accounting records, 1896-1958; order book, 1926-36; directors' reports, 1929-58; labour contracts for work in Calcutta, 1912-33. Papers of James Robertson, manager of Samnuggur jute mill, 1865-87. Titaghur Jute Factory Co. Ltd; minute book, 1892-8; accounting records, 1896-1958; order book, 1930-6; directors' reports, 1929-58. Victoria Jute Co. Ltd: minute book, 1892-8; accounting records, 1896-1958; order book, 1920-9; directors' reports, 1929-58. Angus Co. Ltd: accounting records, 1933-53; directors' reports, 1950-3; Calcutta labour contracts, 1933-54. Photographs of Indian Jute Mills, machinery and workers, and of Thomas Duff & Co. directors, 1929-71. Plans of jute mills and machinery in India, 1874-5.

2018 Donald Brothers Ltd, furnishing facbric manufacturers, Dundee. Minutes and reports, 1920-4, 1934-47; accounting records, 1913-62; wages and salaries records, 1916-61; inventories and valuations of factories and machinery, 1880-1933; papers relating to trademark registration, 1909-70.

2029 Scott & Fyfe Ltd, textile manufacturers, Tayport. Minutes, 1907-75; accounting records, 1917-75; correspondence, 1905-

64. Photographs of staff, machinery and premises, c.1920-1956.

2034 A. & J. Macnaughton Ltd, woollen manufacturers, Pitlochry. Accounting records, 1878-97; order and specification books, 1914-21; wages book, 1881-90. Lecture notes on textile manufacture, 1904-5. Photographs of interior of Pitlochry Mill.

2038 Alexander Devlin, Esq., Glenrothes. John Fergus & Co., linen manufacturers, Leslie: business and financial papers, 1835-1916, including copy letter from James Aytoun to Messrs Arthur & Sons discussing rise in hecklers' wages and use of machines, 1835.

2039 Ian Inglis, Esq., Glenrothes. John Fergus & Co., linen manufacturers, Leslie: business correspondence, 1817-1910.

2040 Mrs May Wooden, Kinross. John Fergus & Co., linen manufacturers, Leslie: correspondence and financial papers of John Fergus, 1800-70, including letters concerning international trade in flax and finished products, 1800-43; memoranda books mainly concerning engineering matters, 1862-74; plan and photograph of Prinlaws works, n.d.

2041 Gordon Spence, Esq., Glenrothes. John Fergus & Co., linen manufacturers, Leslie: business and financial papers, 1856-1933, including note of wages at various mills, 1880.

Manufacturing - Miscellaneous

1957 Co-operative Wholesale Society Ltd, Scottish Division. Financial and administrative records relating to various S.C.W.S. departments, preserving factory, confection department and pickle factory, 1890-1976; engineering and allied services, 1887-1976; transport department, 1881-1977; cabinet factory, 1934-64; defunct productive units, including laundries, flour mills and footwear department, 1948-72; British Lunna Co-operative Electric Light Society Ltd, 1936-70; Clan Quality Foods (Scotland) Ltd, 1968-7; Philcote Manufacturing Co. Ltd, 1945-73; Shoefayre Groups Ltd, 1960-72.

1958 D. & A. Macleod, sponge and chamois merchants, Glasgow. Accounting records, 1934-78; photographs of staff and premises, c.1930-50.

1971 Alex. Ferguson Ltd, confectioners, Edinburgh. Accounting records, including sales and purchase books and overseas accounts, 1921-73; correspondence, 1934-69; records relating to employees, 1898-current. Plans of proposed factory at

Lauder, c.1970.

2003 J.H. Rogers and Company, saddlers, Edinburgh. Day books, 1795-1828.

2011 Edward Parker & Co. Ltd, leather belt manufacturers, Dundee. Accounting records, 1923-63. Papers concerning takeover of business of Edward Parker, leather merchant, by James D. Hardie, 1923-44, including inventory and valuation of machinery, 1923.

2031 Bell & Sime Ltd, timber importers and sawmillers, Dundee. Accounting records, 1885-1975; order books, 1963-76; wage records, 1924-31; 1947-66.

2051 Smith, Anderson & Co. Ltd, paper and bag manufacturers, Leslie. Minute books, 1909-current; accounting records, 1906-39; apprentice book, 1873-1916; paper and bag order books, 1891-c.1910, with gaps; weekly paper tonnage book, 1937-40; sample book, c.1929; valuation of mill property, 1914-1920; photograph of Scottish paper makers, 1866; plans of Fettykil mills, 1828-1946.

2073 Inverkeithing Museum. Caldwell & Co. Ltd, papermakers, Inverkeithing. Daybook, 1894.

2077 Dundee University Library. James Allison & Sons (Sailmakers) Ltd, Dundee. Accounting records, 1880-1964, including stock books, 1928-44, and wages books, 1890-1904, 1944-57; correspondence, 1889-1954.

Merchants

1937 Shetland Library, Lerwick. Leog House papers. Legal and financial papers relating to Lawrence Laurenson, merchant in Lerwick, and his family, 1853-1906.

1938 Shetland Library, Lerwick. Hay of Laxfirth MSS. Family, business and legal correspondence and papers of Hay family, especially James and William Hay, merchants in Lerwick, and Andrew Hay in Singapore, 1741-1840, including James Hay's notebook concerning his smuggling voyages, 1814.

1989 Mrs D.A. Gordon, Forres. Executry papers of George and Archibald Craig of Pennsylvania, 1782-1820.

2078 Dundee University Library. Lewis C. Grant & Company Ltd, engineers, Dysart. Letters from Charles Douglas in the Far East describing Indo-Chinese commerce, 1914.

2084 National Library of Scotland. Papers concerning the African Company, c.1700.

Public Utilities

1932 Gilbert Thomson & Son, chartered civil engineers, Glasgow. Contract documents and drawing, particularly relating to water and drainage schemes (indexed), 1887-current.

1935 James Williamson and Partners, consulting civil engineers and structural engineers, Glasgow. Plan of Glasgow Harbour, 1882.

1942 Leitch & Sharpe, consulting civil engineers, Glasgow. Papers on projects include: Eyemouth and Fraserburgh harbours, Eyemouth coastal protection, Montrose seafront and Barrhead Sewerage Works.

1948 Macbeth & Maclagan, solicitors, Rothesay. Papers relating to Rothesay rates, water supply and tramways, 1850-1902.

1963 St Andrews University Archives. St Fort Estate records, papers on various subjects including Edinburgh, Perth and Dundee Railway Company, 1820-84; taking of land from St Fort by Tay Bridge Railway, 1867-77; opposition to Tay Ferries Bill, 1872-3; new Tay viaduct, 1881; Estate and Railway plans, c.1852-1948, including plan of Newburgh and North Fife Railway works at St Fort, 1907.

1966 Dundee City Archives and Records Centre. Shiell & Small, solicitors, Dundee: records relating to schools and public utilities in Dundee, 1845-1920, including Dundee Industrial Schools minute book, 1851-5; Dundee Landward School minutes, letter books and reports, 1873-1920; Dundee Water Company minutes, letter books and shareholders records, 1845-74; cartulary of Dundee New Gas Light Company, 1850.

2023 Three United Trades of Dundee. Papers relating to Dundee Royal Infirmary and to Dundee Royal Lunatic Asylum, 1794-1907, including list of subscribers to Dundee Dispensary, 1795. Reports and other papers relating to Dundee Water and Harbour Bills, 1847-75, lighting of river Tay, 1865, and Dundee Harbour extensions, 1866, 1868.

2027 Dundee City Archives and Records Centre. Young & Goodman, W.S., Auchterarder: Aucherarder Gas Light Co.: minute books, 1841-1904; registers of directors and shareholders, 1927-48. Dunning Gas Light Co.: registers of shareholders, 1846-1914.

2028 Guildry Incorporation of Dundee. Papers relating to Dundee harbour Trustees, 1864-1952, with report by James Abernathy, London, on proposed improvements to harbour, 1864.

2052 Leadhill Miners' Library. Leadhills Water Works Committee: miscellaneous records, 1940-61.

2064 Campbell, Middleton, Burness and Dickson, solicitors, Montrose. Montrose Harbour Trust records, 1795-1966, including minute books, 1839-1965; correspondence, 1914-66; title deeds and miscellaneous legal papers, 1765-1966; records of assignments, 1839-1956; papers relating to construction of Montrose harbour and docks, 1805-94, and elections of Harbour Trustees, 1872-1949. Plans of town of Montrose and docks, harbour, basin and River South Esk, 1795-1946.

2073 Lt. Col. J.K. MacFarlan, Yeovil. Documents relating to Dunure Harbour, 1810-97, comprising accounts for work on harbour and connecting roads, 1810-14, including wage lists, 1810-12; printed papers relating to erection and maintenance of harbour, 1811, 1897.

Retailing

1957 Co-operative Wholesale Society Ltd, Scottish Division. Full inventory available in 3 volumes (indexed) in S.R.O. and G.U.A.

1960 Archibald Brown and Son, grocer, Mull. Customers' accounts ledger, 1863-84.

1970 Fleming Howden Ltd, wholesale food distributors, Newbridge. Accounting records, 1871-1967. Photograph of premises in Leith.

1991 Aitken, Dott & Son, art dealers, Edinburgh. Accounting records giving details of paintings bought and sold, 1896-1979; stock ledgers listing artists, paintings, customers and prices, c.1880-1946; correspondence with Alex. Reid and Lefèvre Ltd, art dealers, London, 1898-1951. Notes on frames and moulding of casts and receipts for waxes, varnishes and plasters, c.1807-1908. Rules of profit sharing scheme for employees, 1894. Plans and legal papers relating to premises in Castle Street and Lady Lawson Street, Edinburgh, 1894-c.1914.

2000 Rutherglen Co-operative Society Ltd. Minute books, 1896-current; accounting records, 1915-61; lists of members, 1924-70. Avonbank Co-operative Society: minute books of general meetings, 1881-1933, and education committee, 1905-1928;

lists of members, 1914-34. East Kilbride Co-operative Society: minute books, 1905-40; accounting records, 1926-40. Partly replaced by survey no. 1957.

2016 Watson & Philip Ltd, wholesale food suppliers, Dundee. Accounting records, 1882-1927, 1953-7; miscellaneous business papers, 1880-1917.

2043 Alex. Potter & Sons, footwear retailers, Dundee. Papers, including newspaper cuttings relating to history of firm, 1915-66. Plans of premises, Murraygate, Dundee, 1911-47.

2044 James S. Hood & Co. Ltd, coal merchants, Dundee. Accounting records, 1907-48; wages books, 1935-7; pit despatches book, 1958-9. Papers relating to takeover of John Stuart & Co., coal merchants, 1904.

2048 Alexander Wilkie Ltd, ladies' tailor and outfitters, Edinburgh. Minute books, 1940-current; balance sheets and directors' reports, 1905-78; share and members' registers, 1940-current; scrapbooks of proof advertisements and press cuttings, 1934-54. A. Anderson and Co.: minute book, 1925-48; share register and certificate books, 1920-48.

2050 William Low & Co. Ltd, food retailers, Dundee. Accounting records, 1880-1964; including staff wages lists, 1903-64.

2061 Blairgowrie Co-operative Society Ltd. Minute books, 1926-74; accounting records, 1850-1972; shares ledgers, 1927-70. Plans of premises and machinery, 1927-38.

2063 Charles Young (Chemists) Ltd, Dundee. Accounting records, 1878-1954; prescription books, 1910-32.

Publishing and Printing

1995 A. Romanes & Son Ltd, newspaper and general printer, Dunfermline. Bound copies of Dunfermline Press newspaper, 1859-current.

2020 Blackie & Son Ltd, publishers, Glasgow. Minute books, 1887-1965; accounting records, 1831-1963; correspondence and legal papers, 1836-1978; authors' royalty statements and agreements, 1889-current; histories of firm, 1912, 1958; book catalogues, c.1850-current; miscellaneous press cuttings, 1849-1962. Gresham Publishing Co. Ltd: minute book, 1917-1968; accounting records, 1885-1965; correspondence, 1881-1912, 1931-6. Blackie & Son (India) Ltd: minute book, 1926-37; accounting records, 1926-65. Blackie & Son (Australia) Ltd and Blackie & Son (Canada) Ltd: accounting records, 1926-65. Photographs of staff, 1864-1959.

2037 Robert Maclehose & Co. Ltd, University Press and general printers, Glasgow. General and Directors' meetings agenda book, 1936-7; accounting records, 1882-1977; correspondence and legal papers, 1902-70; including correspondence with Ganges Printing Co., Calcutta, 1920-3. Shareholding records, 1904-77; lists of employees, 1900-67; inventories and valuations of machinery and equipment, 1938-75. Miscellaneous printed matter relating to building trade, 1919-36. To be replaced.

2062 Montrose Review Press Ltd. Bound copies of Montrose Review, 1811-current; Montrose Year Book, 1884-current. Accounting records, 1883-1924.

2081 Badenoch Printers (Jas Johnstone and Son), Kingussie. Bound files of Kingussie Record and Badenoch Advertiser, later Badenoch Record and Advertiser, 1902-64.

Shipping and Transport

1927 John Stewart & Co. (Shipping) Ltd, shipbrokers, Glasgow. Accounting, brokerage and insurance records, 1917-67, including ledgers relating to Stewart's vessels, 1920-67, purchases and sales, 1949-55, and Ministry of War Transport, 1941-6; voyage books, 1937-57; abstracts of extraordinary log book entries, 1942-64. Press cuttings relating to Clyde steamers, particularly those owned by James Williamson & Co. Harvieston Ltd; accounting records, 1931-3. Kelvin Trawlers Ltd; accounting records, 1946-52.

1928 Denholm Ship Management Ltd, Glasgow. Records of Denholm Ltd and various associated and subsidiary companies, including Denholm Line Steamers Company, Scottish Ore Carriers, Alscot, Norscot and Scotscraig Shipping Companies and others; minutes, 1909-58; financial and business papers and correspondence, 1877-1977; share certificate books and register of shareholders, 1904-77; charter parties and agreements, 1877-1960; crew agreements and accounts, with details of voyages to Europe and America, 1872-93; management agreements relating to particular vessels, 1960-74; steamship specifications and reports on ships' boilers, c.1900-34. Photographs of Denholm ships and personnel, c.1870-1965. Private letter book of James Denholm, concerning his early involvement in shipping, 1869-70.

1937 Shetland Library, Lerwick. Hay of Laxfirth MSS. Journal of schooner Mary, 1829.

1941 Shetland Library, Lerwick. Peter Jamieson's papers. Logbook of S.S. Solway Queen, 1943-63; transcript of Northmarine

Fishermen's Fund ledger, 1812-60.

1948 Macbeth & Maclagan, solicitors, Rothesay. Papers relating to Rothesay rates and tramways, 1850-1902.

1963 St Andrews University Archives. St Fort Estate records, papers on various subjects including Edinburgh, Perth and Dundee Railway Company, 1820-84; taking of land from St Fort by Tay Bridge Railway, 1867-77; opposition to Tay Ferries Bill, 1872-3; new Tay viaduct, 1881; Woodhaven and Mars Training ship, 1873-1931. Estate and Railway plans, c.1852-1948, including plan of Newburgh and North Fife Railway works at St Fort, 1907.

1967 Mrs M. Salvesen, Edinburgh. Correspondence on Royal Nassau Balloon's ascent from Montpellier Spa, 1839.

1969 Captain J.P.D. Holtham, Coldstream. Correspondence and papers relating to Berwick and Kelso Light Railway, 1809-44.

2002 H. & A. Scott, textile manufacturers, Dundee. Journal of schooner Fox, 1832-40.

2004 The Shore Porters' Society, Aberdeen. Minutes, 1760-1975; accounting records, 1774-1973, including removals book, 1921-42. Photographs of staff, premises and transport, 1880-1978.

2019 Association of Underwriters and Insurance Brokers in City of Glasgow. Ship insurance policies, 1805-87.

2030 J. & E. Shepherd, chartered surveyors, Dundee. Plans of premises for Dundee Motor Carriage Company, 1909.

2049 M.J. Adamson, Esq., Dundee. Photographs, mainly taken on River Tay, of yachts, trawlers, passenger and sailing ships, some built by Caledon Shipbuilding and Engineering Company, c.1890-1930.

2056 Mrs J. Horsburgh, Edinburgh. Journals of William Gardner, emigrant to Australia, describing his voyage on the Sherwood, 1883-4.

2077 Dundee University Library. James Allison & Sons (Sailmakers) Ltd, Dundee. Letters concerning scuttled S.S. Cornubia, 1923-4; captain's books, voyage account books, charter parties and other papers relating to barque Countess of Rothes, and Countess of Derby, 1876-97. Charter parties and accounts of S.S. Evelyn Manor and S.S. Ernest Williams, 1912-25. Miscellaneous papers relating to Glenisla Steamship Co., 1921-8. Plans of barque Countess of Derby, 1876, and of various ships built by Caledon Shipbuilding Co., 1927-54.

2082 Sutherland Transport and Trading Company Ltd., Lairg. Minutes, 1920-76; accounting records, 1935-55.

Trade Associations and Societies

1925 Brownlie & Murray Ltd., structural engineers, Glasgow. Reports, minutes and other papers relating to Council of British Manufacturers of Petroleum Equipment.

1941 Shetland Library, Lerwick. Peter Jamieson papers, miscellaneous papers of Shetland Hand Knitters Association, 1937, transcript of Northmarine Fishermen's Fund ledger, 1812-60.

1946 Thomas I. Todrick, Esq., Chirnside, Berwickshire. Papers relating to Incorporation of Baxters of Haddington, 1550-1800, including Seal of Cause, 1550; minute book, 1681-1743.

1954 Guardian Society of Scotland Ltd, Glasgow. Glasgow and West of Scotland Guardian Society (later Guardian Society of Scotland) and Building and Allied Trades Protection Society: minute books and annual reports, 1852-current. Rules and reports of other trade protection societies, 1852-82

1957 Co-operative Wholesale Society Ltd, Scottish Division. 3 volume catalogue available in S.R.O. and G.U.A.

1962 Grocer Company of Glasgow. Charter of erection, 1796; minutes of directors' and annual meetings, 1790-current; accounting records, 1790-1973, including collectiors' and treasurers' account books, 1790-1938; price regulation book, 1791-93. Photograph albums of office-holders and members, 1841-1934.

1984 Aberdeen University Library. Shipmasters' Society of Aberdeen. Sederunt books, 1795-1913; accounting records, 1790-1967, including rental, 1790-1808; fish sales records, 1937-52; financial records relating to administration of charities, 1835-1967. Legal papers concerning Don and coastal salmon fishing rights, 1630-1783. Photographs of Society's officers and premises, ante 1918.

1994 Flesher Incorporation of Perth. Minute books, 1701-1936; accounting records, 1634-1967; legal papers mainly relating to property in Perth, 1634-1926.

2005 Stewart & Co., Seedsmen, Dalkeith. Edinburgh Seed Trade Assistants' Association minute book, 1900-14.

2023 Three United Trades of Dundee. Minute books, 1770-1885; accounting trade records, 1741-1934; membership lists, 1835-

1929; rules and regulations, 1891. Mason Trade records, 1659-current, including minute books, 1736-1852; accounting records, 1706-1867; correspondence, 1831-46; register of entries of masters and journeymen, 1659-1779; membership roll, 1827; 'lockit' book, 1659-current. Slate Trade, 1654-current, including minute books, 1784-1976; accounting records, 1780-current; Master Slaters' Association minute book, 1954-65. Wrights' Trade records, 1672-current, including minute books, 1766-1934; minutes of committee meetings, 1803-47; accounting records, 1687-current, with account book of meal disposed to wright trade, 1744-64, regulations of journeymen's working hours, 1752, mort cloth account books, 1796-1861, and poor lists and accounts, 1802-51; correspondence, 1832-46; miscellaneous legal papers, 1783-1831; 'lockit' books, 1672-current; roll book of quarterly court, 1741-64; journeymen's books, 1692-1771; rules and regulations, 1824-75. Miscellaneous papers relating to Mechanics' Institution and Technical Institute, 1887-1904. Membership rolls of Dundee Guildry, 1905-29.

2038 Guilding Incorporation of Dundee. Minutes of guild court, 1570-current, and of dean of guild and assessors, c.1699-1950, with gaps. Accounts, 1591-1855. Rolls of guild court, 1815-62; and of guilding membership, 1840-1970. Register of apprentices, 1816-36. Minute book of Convivial Society of the Dean of Guild and Assessors, 1841-1938. Dundee burgess tickets, 1734-1831.

2036 Scottish Retail Drapers' Association, Glasgow. Glasgow and West of Scotland Retail Drapers', Outfitters', Garmentmakers' and Milliners' Association: minutes, with annual reports, 1931-41; correspondence, 1935-42. Scottish Wholesale and Retail Drapers' Benevolent Fund: minutes, 1936-48; correspondence, 1938-56. Association of Retail Distributors: minutes, 1942-current; lists of members with details of business, 1963-72.

2 Scottish Film Archive

Recent Acquisitions

Transport

'GEORGE BENNIE RAILPLANE SYSTEM OF TRANSPORT' 1929/30

'AMAZING MOMENTS OF THE GREAT TRACTION ENGINES' 1969

Manufacture

'STORY OF A STEEL WIRE ROPE' c.1945
Martin Black & Co. (Wire Ropes) Ltd, Coatbridge.

Shipbuilding

'A. & J. INGLIS, GLASGOW' 1952
Construction of passenger steamer and launch of the Maid of Ashton.

Miscellaneous

'GOVAN SCHOOL BANK, GLASGOW' c.1930

'SALTCOATS GETS NEW ESPLANADE' 1933
Opening by L.M.S. Chairman, Sir Josiah Stamp.

'ROYAL OPENING CRUACHAN HYDRO-ELECTRIC DAM' 1965

3 Strathclyde Regional Archives

The following business, industrial and commercial records have been received since the appearance of the last number.

Applications for access should be made to the Principal Archivist, Strathclyde Regional Archives, P.O. Box 27, City Chambers, Glasgow, G2 1DU, of, if calling, at 30 John Street, Glasgow (Basement Office). Telephone: (041) 221 9600, Ext. 2021.

Engineering: Shipbuilding

P.N. Thomas Esq., Glasgow: Plans, general arrangements, various Clyde-built ships including a good set of Clyde 'puffers'; ships built by Messrs Robert Napier & Sons, Govan, and by Messrs Mackie & Thomson, Govan.

Barclay Curle Ltd: General arrangement plans of marine engines built at North British Engine Works from 1866; specification and trials books, c.1915-1970; Barclay Curle contract data books, ship nos. 400 onwards.

Engineering: Automobile Building

Talbot Motor Car Co. Ltd, Linwood: Files from personnel department, publicity material, plans, 1970-79.

Agricultural Estates, Lands and Property

Campbell of Succoth (Addnl): Charters, diplomas, etc. of family, 1727-1804.

Todd of Haghill, Shettleston, Lanarkshire: Titles, 1596-1783; marriage testamentary and legal papers, 1658-1836; estate papers, 1662-1884; genealogical collections for Todd family, 1831-83.

Mr Lang, Milngavie: Plan of Langfaulds Farm, New Kilpatrick, c.1880.

Smith of Jordanhill (Addnl): A very large group of 18th and 19th century papers of this family including Alexander Wilson, Professor of Astronomy at Glasgow University (1714-1786), and

his son, 'Sandy' Wilson, factor in Virginia, 1769, and subsequently bookseller in Trongate.

By purchase: Plan of Loch Sunart, Ardnamurchan, with mining at Strontian, 1733; proposed Crinan Canal, Argyll, 1793.

Transport

By purchase: Scottish Aeronautical Society: minutes, 1909-15. The Society was formed in Glasgow.

Civil Airports Authority: Glasgow, Prestwick and Islay airports aircraft movement records, 1976-7.

Miscellaneous

Professor Cormack, St Andrew's University: Gorbals Waterworks Inspection photograph, 1929.

Glasgow Academy Co. Ltd: Financial records, 1878-1927.

Royal Insurance Group (Addnl): List of warehouses in Glasgow, 1921.

Glasgow Corn Traders' Association: Records, 1913-63.

Gordon Borthwick (Vista of Glasgow), photographers, Glasgow: Negatives (mainly social photography), c.1955 to date.

By purchase: Sederunt book of William Cuthbert of Ayr, formerly sugar planter of San Fernando, Trinidad, 1877.

Anderson, Fyfe, Stewart & Young, solicitors: Sederunt books of trusts and executories, 19th-20th cent. (unlisted).

Ian Robertson Esq., Glasgow: Trade catalogue of Francis Spite & Co. Ltd, grocers and chemists, 1895.

County Archivist, Clwyd: Illustrated catalogue of Messrs A. and J. Nairn & Co., ironwork manufacturers (n.d.).

University of Strathclyde: Photograph albums of Glasgow power stations.

BOOK REVIEWS

M.W. Kirby, The Decline of British Economic Power Since 1870. (London: Allen and Unwin. 1981. Pp. 205. £10).

The idea that Britain has failed, or declined in some sense, over the last hundred years is popular, even if the definition of failure and/or decline remains problematical. Most discussions are concerned with the growth of the economy, and explanation for inadequate performance range over cultural and intellectual attitudes to simple ineptitude. There are those who see ideological conflict in a class-conscious society, raising the share of wages at the expense of profits; other point to institutionalised resistance to change coupled with the growth of an inefficient public sector. Or again, in spite of evidence in mitigation, financial institutions have attracted criticism for failing to provide a proper channel for finance to industry. Dr Kirby's focus is the economy alone though it is not the decline of the British economy, but of British economic power that is the subject, implicitly suggesting that a comparison with others is made, though such comparison does not escape entirely from the problems.

The book is presented as an interpretative essay, mentioning some competing hypotheses and ignoring others. There follows a chronological treatment of traditional sub-periods, of which there are five: 1870-1913, 1920s, 1930s, 1939-50, and 1951 to recently. The statistical tables provided are almost all drawn from other texts, and the text itself provides some very good treatments of particular topics - for example, in the opening chapters there is a succinct survey of the issues in, and literature on, the debate over relative retardation in the late nineteenth century. But there is no clear indication of what threads in the story we are going to be tracing over the hundred years period. What emerges is that the changed nature of the international economy (some of it changed by war) found Britain lacking in her responses. There is therefore an emphasis on trade and international finance. Chapter Three is largely on the depression of 1929-32, and Chapter Four is devoted to the problems of lend-lease, imperial preference, loan negotiation and other international monetary problems, and there is no discussion of the 'real' economy. The final chapter is reached before we arrive at any explicit discussion of what decline means and what evidence there is for it: here it is stated that decline should be read not strictly in terms of performance relative to other countries but rather as a result of 'deindustrialisation',

and that, the consequence of progressive inroads being made by foreign competition in Britain's overseas markets, and the growing import penetration of foreign manufactured exports in the domestic market. An over-dependence on an accommodating Empire persisted too long, with damaging consequences.

Given the title, it is a pity that no concentrated effort has been made to grapple with the admittedly difficult concept of decline. How far should it relate to growth and should the performance of earlier periods be considered? Should we talk in terms of potential output and a falling short of such a hypothetical figure? Should the focus be on the structure of the economy or the performance of a particular sector such as manufacturing output, etc.?

Even if we accept that some true measure would reveal Britain in a position lower down the scale than could have been achieved, it is certainly not possible on the information or argument provided in this book to conclude that the source of the trouble can be traced to the late nineteenth century. In many respects Britain can be seen to have been in a strong position after the Second World War.

Dr Kirby has provided a readable essay (and only an occasional misprint like 'automacities' - which sounds like a derogatory term for British cars - detracts from an excellent production. Readers will quickly come to grips with several important issues in Britain's international economic history of the last one hundred years; the book's brevity is also not without its attractions.

Centre for Banking & International Finance
CITY UNIVERSITY

FORREST CAPIE

P.L. Cottrell, Industrial Finance 1830-1914: The Finance and Organisation of English Manufacturing Industry. (London: Methuen. 1979. Pp. xxii + 298. £15).

Dr Cottrell has performed an excellent service for the busines historian in writing this book which adds greatly to our understanding of how businesses were organised and financed in the 19th century.

The first two chapters set the background of finance in the industrial revolution and chapter three describes, in some detail, the changes in company law necessary to the onset of modern capitalism. There then follow chapters on shares and shareholdings, the major sectors, the growth of combination, banking and othe sources of funds. In all of these the author has drawn substantially on secondary works to produce his synthesis but

there is also much that is new here and some use has been made of bank archives.

As the subtitle suggests, the book is about English Manufacturing Industry (meaning England and Wales) and this is this reviewer's objection to the book. For in the period covered it is increasingly meaningless to think in terms of an English economy and a Scottish economy in a separate way. Occasionally, the author will offer some information on Scotland by way of example, e.g. on p.31, when he describes the organisation and bank finance for the Scottish iron industry but in this the author is inconsistent for there is little further mention of Scotland and even less on Ireland. Fortunately, the gaps which this creates, e.g. no mention of J. and P. Coats in chapter 6, can be filled in from other sources - most of which appear in Dr Cottrell's bibliography. This could easily have been a book on British manufacturing industry.

Nevertheless, this reservation aside, Dr Cottrell's book is to be welcomed as filling an important gap in the literature on business history.

UNIVERSITY OF GLASGOW CHARLES W. MUNN

Geoffrey Jones, The State and the Emergence of the British Oil Industry. (London: Macmillan. 1982. Pp. xi + 264, £20).

Oil is topical, and the place of state intervention is seldom out of the news. Put the two together and there is clearly a promising mix. However, it is worth noting that although there is a current preoccupation with government and oil in Britain this fact should not raise expectations of any study of the recent past in this volume. The title accurately describes the subject matter and that is the emergence of the oil industry. That took place at the turn of the century and the subject closes in the 1920s. This study is the first in a series 'Studies in Business History', which seeks to emphasise general issues in nineteenth and twentieth century business history. The story told here is a fascinating one ranging over narrow microeconomic issues to major international rivalries and occasional skulduggery.

It was the conversion of the Royal Navy from coal to oil in the years immediately before the First World War that was the main reason for the growth of government interest in oil. That meant the government was interested originally in only a small part of the industry's output - fuel oil. Along the road in the early development, some oil companies sought to involve the state in some form or another, a good reason being that the state was an attractive market. Although the major share of investment of

British oil companies in the late nineteenth century was in foreign oilfields, attention was turning to Empire exploration and development, in part a consequence of the growing strategic importance of oil and the accompanying desire to lessen dependence on foreign resources. The Admiralty's interest in fuel oil meant that colonial oil became important and yet there was still no British government oil policy prior to 1914.

The discovery of oil in Persia in 1908 effectively marks the beginning of the middle east oil industry and saw the birth of A.P.O.C. The British government's agreement with A.P.O.C. was highly significant in their early relations with the oil companies. (Several departments were involved with Persian Oil but the responsibility for making the agreement lay with the Admiralty.) And while during the Great War the strategic importance of oil soared, yet again there was still no clear policy at the end of the war.

In all of this story, it is the subtle relationship amongst government departments themselves or between one and an oil company that is the main thread. The emphasis must always be on the Navy and fuel oil but the story is set in a genuinely international context, and the history of production and marketing are neatly woven in.

CITY UNIVERSITY FORREST CAPIE

N.K. Buxton and D.H. Aldcroft (edd.), British Industry between the Wars. Instability and Industrial Development, 1919-1939. (London: Scolar Press. 1979. Pp. 308, £18.50)

This collection of essays adds further ammunition for the debate on the nature of changes in British industry between 1919 and 1939. In two sets of five essays the 'old' and the 'new' industries are considered. The former includes familiar material and some new insights into the problems of cotton and wool textiles, coalmining, shipbuilding and iron and steel together with a survey of mechanical engineering. The 'new' industries cover chemicals, motor vehicles, aircraft, electrical engineering and rayon. Of these articles, the treatment of the motor industry by Miller and Church stands out for its close discussion of the nature of the home and overseas market and of the impact of tariff and fiscal policies. Stress is placed on the need to understand the changing character of demand. Not until the 1930s were the middle classes sufficiently confident in their increased real incomes to become significant purchasers, with the result tha the upsurge in demand for cars in the 1930s actually took place when the rate of reduction in prices was much lower than in the 1920s. Fearon emphasises the small scale of the aircraft industry and its extreme

dependence on Air Ministry policy rather than on the trade cycle. Reference is also made to the comparatively poor rate of productivity growth in electrical engineering even though, in output growth, this industry ranked second to motor vehicles.

In the articles on iron and steel and on chemicals, Scotland is used as a case study of the failure to adopt coastal locations for major new steel plants while the fusion of Nobel Industries with I.C.I. accelerated a shift of profits out of Scotland to ventures in England which included conspicuous failures such as the Billingham fertiliser plant designed just before the severe depression of world agriculture in the 1930s.

Aldcroft, though named as joint editor, contributes none of the chapters and Buxton is the author of the linking, introductory essay. This dwells on the difficulty of producing an acceptable account of the inter-relationships between instability and the strong performance of the British economy, compared with international rivals, in the 1930s. Buxton argues that, used with care, a 'new' and 'old' division of industry is still useful in explaining the inter-war performance yet the bulk of his argument takes him into areas which receive little attention in the subsequent essays. He plays down both export prospects and innovations as having a decisive impact on change and suggests that variations within the home market became an important influence on instability and the character of demand. Changes in the terms of trade are picked out as a significant influence on the home market and there are other hints, not fully developed, about how the character of the market was being changed by shifts in consumer preferences. It is in such a context that Buxton sees the housing boom from the later 1920s as an imprtant, initiating influence on expansion in the home economy yet there is no essay on the construction industry or on the possible impact of changes in attitudes to family size, as well as improved terms of trade, on the scale and character of home demand.

With a price tag not much below £20, this work creates high expectations yet, despite the perceptiveness of the introduction, the net result is a series of individual articles rather than a sustained treatment of instability and industrial growth.

UNIVERSITY OF GLASGOW T. HART

P.L. Payne, The Early Scottish Limited Companies, 1856-1895. (Edinburgh: Scottish Academic Press. 1980. Pp. xii + 140. £12.50)

This book represents an extremely important contribution to Scottish business history. The development and spread of the

limited company following the coming of general limited liability is of considerable significance in the evolution of business organisation. It gave investors a sense of security and made it easier for companies to raise capital in the money markets. As firms were required to make annual returns to the Registrar of Companies and defunct businesses had to be legally wound up, a considerable mass of information on such organisations in Scotland has survived among the legal records in West Register House, Edinburgh. It may come as a surprise, therefore, to find that no major study of the impact of this type of business in Scotland has been attempted but, as Professor Payne tells us, the very volume of surviving statistical data has made this appear an almost impossible task. That is, until the advent of the computer, the possible uses of which intrigued the author as much as the subject material itself. The material available on the companies formed in the first three decades of general limited liability was processed with some interesting results. Of 2,625 companies floated in the period, some 311 were still in existence in 1970. Early Scottish companies seem to have been less fraudulent, better managed and controlled longer by their founders than were their counterparts in England. The narrow scope of the information required to be submitted to the Registrar has meant that some important questions could not be answered. Thus it has proved impossible to determine the relationship between called-up capital and the real investment undertaken by companies. This factor may also be responsible for the fact that despite the use of some excellent specific examples, no overall statistics are give for the flotation of brand new business as opposed to the conversion of existing partnerships. It would also have been interesting to know the relative length of life of each type of organisation after incorporation.

The nature and scope of the investigation make it a study more of interest to the specialist than to the general reader. The former will find much of interest in the closely woven analysis and statistical material presented to him in the 24 tables and 6 charts which intersperse 104 pages of text. The general reader may well be put off by this mass of figures and, indeed, the mathematical equations which result from it. He may also quibble at the price which, at £12.50 of 140 pages for mainly double-spaced type, seems expensive even by the standards of the 1980s. If he persists, however, the reader will find much that is new and interesting concerning the development of the limited company in Scotland. Professor Payne is well aware of the parameters of his study and looks to his readers to use his work as the basis for further research. It is hoped his challenge will be answered.

UNIVERSITY OF STRATHCLYDE A. J. G. CUMMINGS

John Scott and Michael Hughes, The Anatomy of Scottish Capital, (London: Croom Helm, 1980. Pp.291. £10.95)

In this volume the authors set themselves the substantial task of examining the nature of change in Scottish companies and Scottish capital in the 20th century. The result is an impressive array of their data which is displayed with clarity in 66 tables and 32 figures. It is therefore not an easily read book nor is it elegantly written but it will be an invaluable source for all who are interested in the development of Scottish business in the 20th century.

The major interest of the authors has been to trace the relationship between companies especially as this is witnessed in interlocking directorships. This investigation was carried out for five points in time - 1904-5, 1920-1, 1937-8, 1955-6 and 1973-4. The existence of these interlocks is indisputable but what is much less clear is the extent of their significance. Proving their existence is one thing, but trying to gauge the implications of these relationships for communication, efficiency and control in business is quite another and may indeed prove to be an impossible task. The reader is often left with the uneasy feeling that the authors expect him to believe that all interlocks were significant in some way and that somehow they represent a unity in Scottish capitalism which probably did not exist other than as a manifestation of the economic system.

A further interest has been in the transformation of the Scottish economy from its relatively independent status at the beginning of the century to that of a branch plant economy in the 1970s stressing the dependence on English and American business. They find that Scottish finance has been more successful than the industrial sector in maintaining its independence but their conclusion that 'the long term viability of Scottish finance is very dependent upon that of its industrial base' seems strange in the light of a hundred years experience in overseas investment by the trusts and insurance companies and the more recent involvement of the banks in overseas branching, deposit taking, lending and joint-ventures.

Nevertheless, despite these reservations, this book is to be welcomed as much for what it achieves as for the directions in which it points for further research.

UNIVERSITY OF GLASGOW CHARLES W. MUNN

Ian Donnachie, A History of the Brewing Industry in Scotland, (Edinburgh: John Donald, 1979. Pp. xi + 287. £15)

This addition to the select but slowly growing list of historical monographs on Scottish industries will be warmly welcomed. It is a little less than its title implies: only 12 pages are devoted to the years before 1750, and 16 to those since 1914, which leaves about 200 for the years between: these are weighted towards the industrial revolution rather than the 'brewers' boom' of the later nineteenth century. To have ignored the earliest period was perhaps wise, given the exiguous nature of the sources, but it is certainly a shame that so little has been said of the most recent and most controversial period in Scottish brewing history - that since 1950, which has slimmed the numbers of brewers operating within Scotland to around half a dozen, resulted in control over most of them going to board rooms in the south, and flooded the market with revolting fizzy keg.

Not that take-overs and amalgamation are anything new in Scottish brewing history, as Dr Donnachie shows. The industry has developed over the centuries largely by realising ever-increasing economies of scale (and by alterations in packaging and marketing) rather than by fundamental alterations in the technique of brewing: 'apart from electronic pumping, heating and cooling and the control of the whole process by computer, modern brewing practice in, for example, the Scottish & Newcastle plant at Holyrood, Edinburgh, differs little from that followed by William Younger when he started his Abbey Brewery on the same spot in 1749'. The 522 brewers of Fife who petitioned against wrongful imposition of excise in 1700 sound like little more than home brewers who sold their wares in the alehouse on a very small scale. Their reduction in numbers (until recent times only relative; there were still 62 breweries in Fife in 1841) was a function of increasing capitals, vigorous entrepreneurship and aggressive selling, only feasible in a well integrated market tied together with modern communications.

The author tells his story methodically and generally clearly, though at one important juncture (pp.77-8) where he is estimating the amount of capital invested in the industry during the industrial revolution his account becomes too cloudy to follow with confidence. He appears to imply that the total invested could have been equal to that in cotton mills, ca 1795, but the assumptions necessary to reach this conclusion are fairly heroic.

Most of the time, however, Dr Donnachie inspires only admiration for his comprehensive search for sources inside and outside Register House and the scrupulous use made of them. There is a judicious balance between the history of the firm and the history of the industry as a whole with an awareness of regional developments and an appreciation that not only the successful survivors are interesting. Some general points of considerable interest emerge from the study. Firstly, while foreign trade has

not been an important sector of total demand in overall quantitative terms, it has been important in product development. Many beers, most famously the 'India pale ale export', were created for an emigre market and later took the fancy of the home drinker.

Total production in Scotland seems to have moved forward in a series of rapid surges (1770-1800, the second half of the nineteenth century, and 1960-1975) punctuated by periods of relative stagnation or decline (1800-1830, 1913-1950), a pattern determined partly by trends in living standards and partly by fortunes of whisky, the alternative good. Nevertheless, the Scottish brewing industry, judged by the percentage of U.K. output which grew from 3.4 per cent in 1857 to almost 14 per cent in the 1960s, must be judged a long-term business success. At the end of this triumph, I only wish its output tasted better.

UNIVERSITY OF ST ANDREWS T. C. SMOUT

Charles W. Munn, The Scottish Provincial Banking Companies, 1747-1864, (Edinburgh: John Donald, 1981. Pp. xii + 306. £15)

Charles Munn's first book, based on his 1976 Glasgow doctoral thesis, offers a comprehensive and authoritative study of the Scottish provincial banking companies during the entire period of their existence from 1747 to 1864. The book is divided into three parts, together with a conclusion and appendices summarising many of the extant balance sheets of individual banks. A short introduction, somewhat inaccurately subtitled 'Scotland in 1750', is followed by five chapters devoted to a valuable chronological overview of the growth and demise of the provincial banks. Part two contains a wide-ranging discussion of all aspects of banking business as well as staffing, patterns of ownership and control, the development of branch systems and correspondent networks. Part three, less than thirty pages, multiplies instances of bank lending to various sectors of the Scottish economy. Although such multiplication is no substitute for aggregate data on sectoral lending, it would be most unfair to have asked Dr Munn to produce data which are impossible to derive from the available records. The conclusion (the substance of which has already appeared in Business History in 1981) effectively draws together the many strands of this impressive book and evaluates the performance of the banks in terms of their survival, profitability, stability, the extent to which they fulfilled the needs of their customers and their contribution to economic growth. The reader is left in no doubt as to the major contribution made by the provincial banking companies to Scottish economic development in the century or so after 1750.

It is impossible in a short review to do full justice to the richness and originality of this book. This reviewer knows of no other published study of any part of the British banking system which rests on such a wide range of evidence. Throughout, the language is straightforward and all technical terms are fully explained. Mistakes are few (the most obvious one, on p.107, is the definition of net profit as a percentage of capital employed) and the book is well organised and produced to a high standard. It usefully complements Professor Checkland's massive but patchy Scottish Banking: A History, 1695-1973 and will be required reading for banking historians and students of modern Scottish economic history.

ULSTER POLYTECHNIC PHILIP OLLERENSHAW

R.C. Michie, Money, Mania and Markets: Investment, Company Formation and the Stock Exchange in Nineteenth-Century Scotland, (Edinburgh: John Donald, 1981. Pp.287. £18)

The centre court for Scottish financial history has been Scottish banking; indeed, this important activity of the financial sector in Scotland has received almost exclusive billing. The purpose of Dr Michie's book is to correct the existing imbalance by examining the development of joint-stock companies and the resulting necessity to establish a stock exchange, enabling the collection and distribution with relative ease of vast sums of capital. As such, Dr Michie's work is a brave, pioneering effort, further enhanced by his attempt as a national survey, a too infrequently used methodology among Scottish economic historians.

Most recent books on Scottish economic history fall into one of two categories, the general and the specific. The first category, exemplified by works such as Bruce Lenman's Economic History of Scotland are too general, giving a superficial overview, without attempting explanations of causation. The second category, such as Ian Levitt and T.C. Smout's The State of the Scottish Working Class in 1843, are too specific, providing a morass of detil, yet failing to place the observed conclusions into a general historical trend. Money, Mania and Markets is a mixture of the two, providing a general impression of Scottish business cycles, while attempting to provide a connecting link with financial reactions or causes. Utilising such a mixed methodology is preferable, though Michie is not always successful. He provides the reader with vast quantities of detail about the activities of brokers, yet from the extremely general nature of his conclusions it is evident that he made full use of information; the work is mainly descriptive, begging for a greater degree of analysis. However, such comments can be made of most pioneering national surveys, especially one so long in coming, indicating the difficult

nature of the topic.

With the advent of joint-stock ventures there developed the need to establish a mechanism for transferring shares; the Scottish legal profession provided the service, treating shares in a similar fashion to other forms of property ownership. Such practices were workable as long as the number of both joint-stock companies and investors were small and needs were localised; such was the case in Scotland before the speculative boom of the mid-1820s. After that date independent stockbrokers emerged, though many continued to have connections with the legal profession and accounting. Speculation in the boom of the 1840s produced a greater need for communication among brokers, resulting in the establishment of formal stock exchanges and specialisation in stockbroking. Dr Michie argues that even after the development of the stock exchanges the activities of brokers were concentrated in transactions of shares for banks, insurance companies, gas works, railway lines and shipping companies, until late in the nineteenth century. Likewise, most transactions were in local joint-stock companies, though a national and even international shares market became increasingly important. In short, the financial market developed to facilitate the transfer of shares in the increasingly more popular joint-stock companies. Ironically, in spite of a much different banking system, the development of the shares market in Scotland was identical to that in England; Dr Michie makes no mention of this seemingly important fact.

Money, Mania and Markets is an important contribution to economic history; it should be read by all students of financial history, and indeed by all those interested in the industrialisation process of Scotland.

UNIVERSITY OF GLASGOW R. A. CAGE

D. Charman (ed.), Glengarnock - A Scottish Open Hearth Steelworks: The Works - The People, (Netherland: De Archaeologische Pers, 1981. Pp.121. £3.90)

[Available direct from the publisher at £5.10 incl. p. & p., 5582 GH Aalst-Waalre, Lelielaan 3.]

In recent years, the Scottish iron and steel industry has suffered a series of blows, mainly in the form of closures of long-established works. North Ayrshire, whose hopes of reinvigorating its connections with the industry were sustained in the late 1960s and early 1970s by the prospect of major developments at Hunterston, has been cruelly hit, although closures there are nothing new. Blair ironworks, not far from Glengarnock, closed in

1871 and was followed by Ardeer and Kilwinning in the 1920s. The area's long links with iron and steel manufacture were finally severed in December 1978 when the last steel was tapped from Glengarnock's furnace 'H'.

This publication then is a timely one. It is in part a piece of 'rescue archaeology' with the plant and material on site at the time of closure having been recorded in meticulous detail. Through a series of interviews with former employees and local inhabitants, on 110 tapes, the human record has been preserved. A list of archival material relating to Glengarnock has been compiled. Running through the report is a concern to establish a national Iron and Steel Museum there, but sadly such hopes appear faint at present. The people's heritage in Ayrshire, which is based far more soundly on nineteenth century industrial developments than on Robert Burns, appears to have few friends amongst the local political leadership.

There are some flaws in this publication, which is to be expected considering the restrictions of both finance and time under which the team worked. Nonetheless, the end result would have been more useful had more attention been paid to the available secondary literature. The lack of contextual material makes the volume less useful than it might otherwise have been, especially to those without a working knowledge of the industry's development in Scotland and Ayrshire. While the description of the steel making process, transcribed from an interview with an employee, vividly transcends any of the textbook accounts available, the undoubted potential of the aural record can too easily be dissolved in a series of rambling and unconnected events. It is to be hoped that the promised future publication of material from these interviews is treated with a little more caution than the use of the extracts here demonstrates.

In spite of these small complaints, what we have here is a model which could easily be adapted to the needs of other agencies or local societies who are faced with the shut-down of historically important industrial plant.

This volume is for purchase by the specialist. Library copies should be ordered though for when the history of Glengarnock works and its community comes to be written it will prove to be one of the richest veins which that researcher will be able to tap. For this the editor and his team of previously unemployed assistants are to be thanked and congratulated. Mention too should be made of the publishers who are prepared to produce small runs of fairly specialised books at acceptable prices. This, their first Scottish subject, augurs well for the future.

UNIVERSITY OF DUNDEE CHRISTOPHER A. WHATLEY

John F. Riddell, Clyde Navigation - A History of the Development of the River Clyde (Edinburgh: John Donald, 1979. Pp.376. £17.50)

This is an unashamedly old-fashioned study of the development of one of Britain's great harbour complexes from the seventeenth century to the present day. John Riddell describes, with technical surefootedness, how port facilities on the Clyde were steadily improved after the Act of Union. He describes how the outports of Greenock and Port Glasgow, the hub of the trade of the eighteenth century west of Scotland, were extended at that time. He provides a fascinating account of the continuing attempts to deepen the fourteen tidal miles of the Clyde from Dumbarton to Glasgow, particularly the work of John Golbourne in the 1770s. In the late eighteenth and early nineteenth centuries, we learn that the Clyde Navigation Trust called on several other famous civil engineers to assist them in this task; James Watt, John Smeaton, John Rennie and Thomas Telford. Mr Riddell catalogues their achievements in the successful deepening of the river to accommodate larger and larger vessels and shows how their work was steadily build on during the nineteeth century. He demonstrates the impact of the coming of steam ships on the navigation of the river and the estuaries, making it relatively easy to take ocean-sailing ships and passengers into the heart of Glasgow. He describes the construction of wharfs in the centre of the city and later wet docks from 1864. He describes the evolution of public drydocks on the river and the provision under the aegis of the trustees of passenger and vehicular ferries. He shows how the trade of the river fell away in recent times, the various abortive schemes to develop downriver sites and finally the construction of the Clydeport Container Terminal at Greenock in 1966 and the Hunterston deep water terminal in 1980. The book also gives an interesting account of the development of dredging equipment on the river.

Those interested in the Clyde will find this a fascinating book, full of detail, not only about the waterway itself, but about its bridges, ferries, lighthouses, docks, shipping and shipbuilding. The study, as befits an author who is a civil engineer, is embroidered with much well explained technical information. If it is to be criticised, it must be for its failure to examine convincingly the way in which the decisions were made to proceed with various projects or to describe how the capital was raised. There is, also, little analysis of the trade of the port, either its changing composition or volume. Nor does the author attempt to contrast Glasgow's experience with its major competitors, for example, Liverpool and Bristol. This book is, however, a very useful contribution to the corpus of work on Britain's ports in the tradition of James Marwick's The River Clyde and the Clyde Burghs, published in 1909. It is to be hoped that the author will find time to people his waterways and docks with ships and cargoes and do for the Clyde what has been done for the

Mersey in J.R. Harris (ed.), Liverpool and Merseyside, 1967, and F.E. Hyde, Liverpool and the Mersey, 1971.

UNIVERSITY OF GLASGOW M. S. MOSS

Ian R. Mowat, Easter Ross, 1750-1850 = The Double Frontier, (Edinburgh: John Donald, 1981. £15).

This book is quite evidently a product of careful and extensive research and its title should not be omitted from the reading list of any student of Highland history. It should also serve as a reminder to historians of the dangers of incautious generalisation about the Highlands. In spite of being north of the 'Highland Line', Easter Ross has more in common with the Lowlands than the Gaelic North-West. The author presents Easter Ross as a frontier between the primitive and the new orders; yet one is left with the impression that it was less of a frontier (which would have acted as a catalyst to change in neighbouring parishes) and more of an enclave in which the inhabitants carved out a precarious and largely independent existence. This impression, however, may be due to the author's decision not to explore the organic links between Easter Ross and the other Highland areas. Victims of the great changes occurring elsewhere appear as shadows in the wings of the drama - we never meet them face to face.

Nevertheless, this is an excellent study of a limited area. The author shows how local landlords initiated the agricultural changes of the eighteenth century by experimenting on their home farms and by reorganising their estates. Their experiments, however, were largely 'a fashionable pursuit divorced from the realities of economic life'. Before the French Wars, costs of improvements were high and returns uncertain; extensive changes, therefore, could be effected only with the assistance of external sources of finance. Why, then, did the lairds embark on programmes of improvement? Mowat suggests that contact with Edinburgh and England helped to extend their horizons and that comparison with progressive agriculture in the South encouraged them to apply the new methods in the North. He maintains that 'the pleasure to be derived from it' was the most likely motive for improvement. Prestige, of course, must have been another. Whatever the motive, the experiments were not immediately followed by the tenants. When the inflated prices of the War provided the opportunity for them to do so, it was not the local tenants who were given the new leases but men from the South who had accumulated enough capital to effect radical change and to offer substantially higher rents. Although the author warns us not to assume that this change was inevitable, it seems that the inequalities produced by nascent industrial capitalism and the enthusiasm with which the lairds embraced its values made the process more inevitable than Mowat is

prepared to admit.

One of the most interesting sections of the book is Chapter V on religious and cultural developments. Mowat describes Easter Ross as 'a hot bed of fanaticism' and certainly 14 out of 19 parishes declared their allegiance to the Free Kirk in 1843. The extreme religious views were particularly prevalent among the lower classes - a situation reminiscent of that in E.P. Thompson's The Making of the English Working Class. The fact that the education of the poor was based on scripture may explain why their frustration often found expression in religious terms; the scriptures, after all, provided one of the few stable points of reference in a rapidly changing world.

In the section on industry, Mowat's research reveals a rich variety of local enterprise. Yet none of these, except perhaps Ferintosh distilling, could have provided a real growth point. Most of them, like the textile industries, suffered from an unfortunate dependence on external markets and external control. As communications improved their demise was a 'foregone conclusion'. Mowat blames the misfortunes on a lack of indigenous, independent leadership. Yet few 'peasant' societies could withstand the forces generated by industrial capitalism and, like many others, the Highlands were drawn into its web.

OBAN HIGH SCHOOL WILLIE ORR

Frances J. Shaw, The Northern and Western Islands of Scotland, (Edinburgh: John Donald, 1980. Pp. x + 270. £15)

It is always a pleasure to discover a learned publication which is fluent and lucid. Frances Shaw has produced such a volume which is also scholarly and interesting. Like Mowat's work on Easter Ross, it will remind historians of the complexity and diversity of Highland society and emphasises the difference between the Western and Northern Isles in the seventeenth century. The former is shown to be still in the grip of the clan system and the latter witnessing the decline of the ancient system of 'odall' land holding.

In the Western Isles, we find the central government attempting to assert its authority over what had been a quarrelsome and rebellious Gaelic race. Through the Statutes of Iona in 1609 and the subsequent Privy Council legislation of 1616 it tried to 'civilise' the clans by limiting the number of retainers kept by the chiefs, by insisting on clearly defined tacks and by undermining the Gaelic language. In spite of these efforts, the system continued. The chiefs continued to appropriate the surplus of their small tenants by taking a share of their produce (whether

it was grain, cattle, seabirds or whale oil). However, this was no longer dissipated on armies of retainers but spent on luxuries, travel and fines imposed by the Privy Council. What is particularly striking is the way in which the chiefs used the cattle trade to enhance their rents, leaving the small tenants with little profit - one reason why beef rarely appeared as part of the diet of the islanders. The great droves heading to the trysts on many occasions may have been nothing less than symbols of oppression. The tacksmen, of course, did not have to endure such hardship. They had written leases, often of considerable duration, and paid their rent in cash or kind extracted from their sub-tenants. The cash, however, came from the sale of cattle or grain. Thus, when we read of grain exports from Skye in the seventeenth century, it would be rash to conclude that this was a boon to the islanders. The control exercised by both landowners and tacksmen over the surplus of the small tenants may also explain why the latter failed to exploit the abundant fishings on the West Coast.

The Northern Isles, where Orkney regularly produced a surplus of grain and the Shetlanders were involoved in a vigorous fishing industry, had a very different system of landholding. The 'odall' holdings were gradually disappearing as feudal tenures became more popular but the complexity of holdings produced by the old system remained - tacksmen, for example, were often proprietors as well and the holdings of many proprietors were minute. Cash rents predominated and, unlike the Western Isles, military service was not a condition of lease. Although the islands were geographically remote from what we normally regard as the centres of development, it seems that they were in many respects more advanced that the Western Isles. The flourishing merchant trade with Scandinavia, Germany and Holland must have provided the islanders with opportunities and ideas which were largely denied to the Gaelic islanders.

There is one aspect of the study which may create some controversy. This concerns the continuity of the Catholic faith in Barra, where, according to some authorities, the 'old faith' had never died. Frances Shaw, however, seems to suggest that it was 'revived' by Irish missionaries in the 1620s and 1630s. This is an important issue and I trust that the author has chosen her words in this instance as carefully as she has conducted her research.

OBAN HIGH SCHOOL WILLIE ORR

R.A. Cage, The Scottish Poor Law, 1745-1845, (Edinburgh: Scottish Academic Press. 1981. Pp.180. £8.75)

Trying to find out something about how the poor were treated in Scotland and indeed who precisely the poor were has always been a bit of a problem. First, there is the patchy nature of the literature. The two main surveys are Sir George Nicholls, A History of the Scotch Poor Law, and A. Cormack, Poor Relief in Scotland. Nicholls' appeared in 1856 and Cormack's in 1923 and are thus both out-dated and old-fashioned. Recent studies have been more restricted in approach and none the worse for that: Jean Lindsay examined the situation in the north-east of Scotland in 1975; in 1979, I. Levitt and T.C. Smout analysed the condition of the working-class by computerising the returns to the Poor Law Royal Commission of 1843-4; and Audrey Paterson, in an invaluable essay which appeared in 1976, dealt with the post-1845 situation and in particular the role of the Board of Supervision. This book, therefore, fills a great need for students of social history for it is the first modern attempt to give a general survey of poor relief covering the whole country as well as developments in practice between 1745 and 1845. The other problem is that the closer one looks at such a topic, the more apparent symmetry and solidity implied by the words 'poor law' seem to dissolve against the peculiarly regional network of local custom and attitude, economic background and devolved administrative initiative which marks Scottish society in this period. Not for us the apparent wholeness of the 'system' beloved of pre-Blaug historians of the poor law in England.

The author's task is thus a daunting one: to be both comprehensive (with one eye over his shoulder to take account of the new approaches which have opened up the subject in England) while at the same time trying to give a sense of the development of Scottish practice with all the nuances involved in a country with little central direction and no strong local agency of the state such as the justices of the peace to provide some coherence. True, there were laws concerning the poor passed by the Scots Parliament since the 15th century but how they were interpreted and applied depended less on central direction than on local initiative. In 17th and 18th century Scotland such coherence as was provided came from the more intangivle compromises which resulted from the rival claims of often conflicting jurisdictions, with the parochial kirk sessions and burgh magistrates left to provide day-to-day continuity of humdrum practice. In this situation, the author tries to provide a guide by dealing first with the legal framework, then the practice in rural and urban areas, as well as the role of charities; a comparison with English developments follows, and then, well into the period of industrial and urban change by now, he considers the work of Thomas Chalmers, the attempts between 1815 and the 1840s to reform the system and the arguments which surrounded these, and finally he assesses the significance of the

changes introduced by the Amendment Act of 1845.

Such a remit would probably take several books to accomplish satisfactorily. What is valuable here is the analysis drawn out of a study of selected parishes ranging throughout the country. In this way, a picture of the variations and developments illustrative of local poor law practice is established. However, further local studies of this nature will be necessary to give a comparative sense of changes occurring at different rates over a long period of time. The author also has the virtue of asking pertinent questions. But sometimes, the answers fail to convince. Part of the problem here is that the book tends to start by defining the poor law as if it were a system of established principles instead of a series of local responses loosely backed by intermittent legislation which the court of session and local administrators interpreted to fit current assumptions and prejudices. In Chapter 4, the author gets round to this point when he observes that poor laws are organic growths in which legislation tries to enforce uniformity on the charitable impulse existing in local communities. In Scotland as in the rest of Europe the mainspring was religious belief, not the actions of the secular state. It would have been fruitful to have explored this aspect more fully. The duty of caring for the poor went back beyond 1560, and after the Reformation the First Book of Discipline restated these principles. Could it be that the poor law system, such as it was, was merely a part of a larger concept of beliefs and values? Administrators in the 18th century did not base their duty to care for the poor primarily on statute law. The author rightly tries to get behind the record into the contemporary mind by asking, for instance, why fines played such a large part in making up the poor's fund, but gets into a terrible fankle by hazarding the guess that it had something to do with absolving sin. Try mentioning absolution to minds obsessed with the intricate profundities of 'free grace' and 'election'. He seems to assume a legal conceptual basis guided local administrators. When he talks about church collections being divided into two halves he observes 'though in the examples found this was not done in the bookkeeping sense'. Unfortunate for us historians, that our forerunners failed to keep their records in the neat categories needed to fit modern assumptions. Could it be that the actual doles given from the parish income to the poor (both regular and occasional) were but a part of a wider concept inwhich these funds could be equally applied to ventures such as education or the repairing of the church fabric as a means of inculcating social discipline on the local community?

Dr Cage's examination of the situation in the late 18th and early 19th centuries of contemporary attitudes to the poor, especially as enshrined in the General Assembly reports of 1818 and 1839, is good and penetrating especially in his use of statistical data. He convincingly demonstrates how far the conclusions arrived at by contemporaries were at variance with the evidence put forward. The recipe for passing off current dogma as self-evident fact was the same then as it is today. First, you make up your

mind, then you interpret the evidence accordingly, and finally stir vigorously before bringing to the boil. He presents a good study of Chalmers' social experiments (though it should be noted that Chalmers did not persuade the city fathers to create St John's parish for him, its formation had already been decided on by the town council). He is right, too, to underline the importance of the medical profession in forcing Scottish opinion finally to face the facts in the 1840s. Theirs was the trigger for setting up the Royal Commission in January 1843, rather than the Disruption which did not occur until the next May. Even after 1845, however, old attitudes died hard for, with a majority of parishes still unassessed, many contemporaries still firmly believed that the new basis for Scottish poor law administration was ruining the country. In spite of the reservations expressed here it is valuable to have a book which tries to trace the development of the treatment of the poor through a long period of time and covers the whole country using modern sampling techniques of the primary material. The author has had the courage to go into a complex field with an open mind. Future studies of the subject should start from the basis laid here.

UNIVERSITY OF GLASGOW JOHN F. McCAFFREY

C.G. Powell, An Economic History of the British Building Industry, 1815-1979, (London: Architectural Press. 1980. Pp.211. £17.95 hardback; and Methuen. 1982. £4.95 soft cover)

This attractive and well organised book promises the reader a description of 'a century and a half of building activity'. The author divides what is in actuality a period of 164 years into four sections, 1815-50, 1851-1914, 1915-39 and 1940-73, with an epilogue bringing us up to 1979. Each particular section consists of two chapters, the first of which deals with broad issues relating to the supply, demand, sponsorship and shape of buildings and the second with the structure of the industry the various specialised professions within it, and matters relating to labour-force, plant, materials, etc. This is not necessarily an ideal division, and leads to matters such as investment in building being dealt with sketchily in both chapters. It does, however, offer a starting point for a discussion of the industry. The sources used for this dicusssion are all secondary. Considerable use is make of current writings on urban history and also of the several studies of the structure and economics of the twentieth century building industry. A selection of the many relevant trade journals have also been consulted, whilst figures relating to costs have been taken from builders' price-books and official publications. It is to be regretted that neither the hardback nor soft-cover editions of this book contain a bibliography of the large numbers of works consulted.

We are told at the start of the first section on the building industry that 'the figures who populated the world of building seem as shadowy and ill-defined as those who took decisions to build'. In effect, the author is telling us here that we should expect no detailed account of the activities, personalities and capital structures of particular firms, and this indeed is the case. The seven page index carries references to only ten builders or building companies, although there are more than this number mentioned in the text. These references, drawn from standard works such as Hermione Hobhouse's Thomas Cubitt, Master Builder (I wonder how many footnotes there have been to this book since it was published in 1971?) and the late Professor Dyos on 'The Speculative Builders and Developers of Victorian London', offer us nothing new in order to understand this most complex of industries. One must ask how we can expect to understand the economic history of any industry without a detailed knowledge of the firms and personalities within it.

Scottish readers may here take exception, for there is nothing 'shadowy' about our builders. Completed work by Dr Richard Rodger on the Scottish building industry reveals how much information on Scottish builders can be gained from Dean of Guild Court records and sequestration papers. All Scottish sequestrations between 1839 and 1913 are currently being indexed by name, year and occupation in the Glasgow University Archives, offering the researcher better access to builders' bankruptcy papers. A project concerned with research into the history of Sir Robert McAlpine & Sons Ltd is also based within the University Archives. Finally, research into the lives and careers of builders and contractors active in Scotland between 1860 and 1960 is also being carried out for the Scottish Business Biography Project. All of this research is bringing to light the vast resources of information relating to builders and the building industry which are available in Scotland. Scotland, however, is given a rough deal by Mr Powell, despite the fact that his cover title refers to the British building industry. We are told on page ix that 'reference to Scotland' is 'sacrificed with regret ... in interests of space'. This proves to be no idle threat, for the index carries no references to Scotland, although indexable itmes such as 'Aberdeen granite' and McAlpines do manage to appear in the text, apparently unnoticed. Perhaps, however, this is not such a bad thing. If, as is currently believed, the English style of housing is in European terms exceptional, then it might not be too extravagant to suggest that in some respects its building industry might be the same. Certainly, the common building form in Scotland required builders to deal with problems relating to materials, plant, labour and also capital which his English counterpart would never encounter. Railway builders and public works contractors also faced difficulties alien to most of their southern counterparts. We have, then, a history of what is very much an English industry.

This, of course, is not to denigrate the value of the book as a whole. Although there are some notable omissions, particularly in respect of the involvement of the industry in railway building and other transport-related activities, the book remains a worthwhile enterprise. The author's wide knowledge of secondary sources brings together a range of information on the industry previously not found in similar works, if indeed there is a simlar work which has so bravely attempted an economic history of this most complex, though perhaps not 'shadowy' English industry.

UNIVERSITY OF GLASGOW NICHOLAS J. MORGAN

Malcolm W.H. Peebles, Evolution of the Gas Industry, (London: Macmillan. 1980. Pp. xvi + 235. 38 tables. £12)

Malcolm Peebles has undertaken a valuable task in studying the development of the gas industry in 5 countries. After an outline of the industry's origins, individual chapters are devoted to the gas industries in the United Kingdom, the United States of America, Japan, the Netherlands and the Soviet Union. The final chapter discusses the recent expansion in the use of liquefied Natural Gas. Other nations are considered briefly as suppliers or consumers for the 5 national gas industries. A comparative approach is employed which is a welcome attempt to identify the varied influences on an industry and the resulting national differences in gas enterprise. The author pays attention to many aspects of the industry: the production of gas, its transmission and distribution and patterns of consumption. Numerous facets of these processes are discussed with differing national emphases. Changing technologies of production, transmission and consumption are outlined along with corporate organisation, government policies and pricing policy. The account is complemented by numerous photographs and a glossary of common gas terms.

This is not a complete account of the evolution of the gas industry since the early nineteenth century. As Peebles states (p.18), 'The main thrust of this book is directed at the role of natural gas, how the business has developed, its special features and characteristics and related subjects.' The focus on natural gas mirrors the upsurge in the use of gas compared to other energy resources, an upsurge largely based on natural gas. The emphasis is, therefore, on the period since 1945 and reflects the author's business experience. The earlier manufactured gas industry is surveyed as a prologue to post-war developments but not subjected to much detailed analysis. Invention, innovation and demand are outlined for manufactured gas only briefly. The wealth of post-1945 information would be more valuable if supplemented by a greater account of the industry's previous character.

A comparative approach is the book's most promising feature, an attempt to assess a particular industry's development in differing economic and social conditions. While the author draws together valuable material and contrasts the various national industries, a more systematic analysis would be useful. The account is often descriptive with no direct comparisons of specific factors such as size and concentration, technological change, energy resources, pricing policy and marketing strategies or government policy. Summaries are presented for each chapter but these might have been organised more analytically.

Peebles cautions concerning the danger of recycling 'opinions or best guesses' in the guise of apparent facts. Unfortunately, most of his material is presented with little or no indication of its source or reliability. The book contains a useful collection of up-to-date (to 1978) information on an important industry with an account of the recent past despite the failure to cover its earlier evolution adequately. Peebles' study should be of general interest and is a basis for assessment of the future of the gas industry.

UNIVERSITY OF GLASGOW M. FRENCH

D.C. Coleman, Courtaulds: an Economic and Social History, vol.III, Crisis and Change, 1940-1965, (Oxford: Clarendon Press. 1980. Pp.xiv + 345. £15)

The third and final volume of Professor Coleman's history of Courtaulds maintains the high standard set in the previous volumes. The years surveyed were of crucial importance to the survival of the firm. The Second World War, the post-war reconstruction and the Korean War ensured a long period of buoyant demand but subsequently it became clear that competition from newer man-made fibres and changes in fashion had led to a substantial and continuing decline in demand for Courtauld's principal product, viscose rayon. Price reductions, improvement in quality and more aggressive selling failed to halt the decline and the directors therefore sought other solutions.

Courtelle, an acrylic fibre to compete with wool, was developed and brought to large-scale production by 1961-62, but the main strategy adopted was the acquisition of other businesses, marking a new departure for the firm. Other British producers of viscose rayon were acquired cheaply and inefficient plants closed down to eliminate excess capacity. More important was the acquisition of British Celamese Ltd, the major producer of acetate rayon yarn in the United Kingdom, which unlike Courtaulds had made a substantial investment in weaving, knitting, textile finishing and garment manufacture in order to provide an outlet for its yarn.

Diversification into fresh activities, however, was the main aim of the new strategy and, by the autumn of 1959, 54 detailed reports on potential victims had been prepared, the companies operating in a wide variety of fields including refreigeration, building materials, plastics, electronics, hotels, travel agencies and jewellery. The actual purchases included a glass fibre factory and a chain of retail lingerie shops and a department store which were part of the Gossard corset and brassière empire, but the main expansion was in paint and packaging. Four small companies in this field were acquired in 1958 and two years later it was the turn of the second largest manufacturers of paint in the U.K., Pinchin Johnson and Associates Ltd.

The steps taken to lessen Courtaulds' dependence on viscose rayon, however, were both too late and insufficient to maintain a healthy level of profits in the second half of the 1950s. Divided opinions in the boardroom played a large part in this situation and when I.C.I. launched its takeover bid in December 1961 it seemed that Courtaulds might cease to exist as an independent entity.

C.F. (later Sir Frank) Kearton who spearheaded the resistance to the bid and its final rejection, both ensured his elevation to the chairmanship of the company in 1964 and the pursuit of a more vigorous policy of diversification and expansion, designed to honour promises of higher dividends made to the Courtaulds shareholders. The main aim was forward integration into the textile industry and, although the policy was far from complete by 1965, in the years 1963 and 1964 nearly £60 million was bid to acquire 20 British firms with interests embracing knitting, cotton spinning, textile processing, garment making and the design and manufacture of high class fabrics.

Professor Coleman examines these changes through the eyes of the directors. 'What I have tried to do is to examine the changing composition and outlook of a body of about 18 men, comprising the Board of Courtaulds, and the ways in which it perceived and grappled with the problems besetting the company'. The result is an absorbing study of the influence of individual relationships in determining company policy which is set carefully within the context of the policy options open to the directors given the economic situation facing the firm. The weak chairmanship of Hanbury Williams between 1940 and 1962 is sharply contrasted with the vigour and enterprise of his eventual successor, Frank Kearton, who showed his outstanding qualities as managing director from 1957 to 1961. Kearton in turn is compared with his powerful rival and fellow scientist, A.H. (later Sir Alan) Wilson, deputy chairman from 1957 to 1962, who possessed a first rate intellect but lacked Kearton's inspiring leadership and drive. The author's familiar 'gentlemen vs players' entrepreneurial theme runs through the analysis, whilst his comments on the organisation of Courtaulds shed further light on the Chandler 'strategy and structure' hypothesis about the growth of large firms. The book should be

welcomed by all students of business history and Professor Coleman is to be congratulated on a very perceptive and interesting study.

UNIVERSITY OF ABERDEEN J. NEVILLE BARTLETT

Hugh Barty-King, Girdle Round The Earth: The Story of Cable and Wireless, (London: Heinemann. 1979. Pp. xvi + 413. £8.50)

Cable and Wireless, the government-owned international telecommunications group, is both a relic of Britain's imperial past and one of the country's leading enterprises - active in new fields of technology, profitable and reputed to have earned 2 per centof Britain's net invisible earnings in 1978. It is the lineal descendant of the Easter Telegraph Group put together in the 1860s and 1870s by John Pender, a Dumbarton man, formerly a Glasgow cotton merchant and in later stages of his life a Liberal M.P. for Wick. Pender was a fairly typical example of the expatriate Scot who found in the 'imperial economy' an arena for entrepreneurial endeavour but, unlike his analogues in shipping, his activities seem to have generated little direct demand for Scottish products. By the time of his death in 1898, Eastern Telegraph's network of oceanic cable and telegraph stations handled Britain's communications with the world beyond Europe and North America and was, in effect, the central nervous system of the British Empire, connecting London to areas of formal sovereignty and informal influence around the globe. The second phase in the group's history, from 1898 to 1928, is one of maturity, complacency and competition. The challenge came first from a rival, publicly-owned telegraph service, via Canada and the Pacific to Australia and New Zealand (an expression of colonial resentment of the Eastern Telegraph monopoly), and second from Marconi's development of wireless transmission. This, the more serious threat, was ignored until the late 1920s, when the introduction of short-wave radio techniques by the Marconi Company and the Post Office drastically undermined Eastern Telegraph's commercial prospects. However, a timely merger in 1929 brought the various competing interests together in the Cable and Wireless group and the third phase was therefore one of complementary cable and radio telegraphy (but not telephony, which remained a preserve of the Post Office) through the difficult period of the depression and the Second World War. Acquisition by the Labour government in 1947 ushered in the fourth and final phase, which was dominated by the working out of new relationships with overseas governments and diversification into new technologies, notably oceanic cable telephony and satellite communications.

An enterprise of such standing - in world as well as in British terms - deserves a major and authoritative study of its lengthy, complex, colourful and above all influential history.

Unfortunately, the present volume, commissioned to celebrate the 50th anniversary of the 1929 merger, does not meet the highest professional standards of business history. While there is abundant evidence of solid digging by research assistants, the author has been unable to convert this effort into anything like a satisfactory assessment of the group's performance and achievements. He adopts a hectic, chronological/narrative approach, in which great facts daily jostle with little ones, and makes no attempt to offer anything in the way of interpretive or analytic generalisation. There is no discussion of the yardsticks by which the group's record might be evaluated, and no familiarity with the modern literature on business concentration, managerial organisation or multi-national operations. The wider context of the group's activities is also absent, with no consideration of the effects of its communications system the principal users - government, the business community and the press - nor anything more than passing reference to relationships with manufacturers of communications equipment. In brief, this is an account from which a persistent and determined reader may derive an understanding of the course of development of communications between Britain and the Empire, but which leaves him to ask his own questions and draw his own conclusions. Business history, as a craft, has not been particularly well served.

UNIVERSITY OF GLASGOW J. FORBES MUNRO

Vera Blinn Reber, British Mercantile Houses in Buenos Aires, 1810-1880, (Cambridge, Massachussetts and London: Harvard University Press. 1979. Pp. xi + 206. £11.35)

British financial and commercial connections with Argentina during the nineteenth century were very deep and wide. The amount of British capital, for instance, rose from a mere £13 million in 1865 to nearly £500 million on the eve of World War I and made Argentina one of the major fields for Britain's overseas expansion. It is not surprising, therefore, that a number of British merchants benefited from these financial connections.

Vera Blinn Reber provides us with a very useful complement to the work previously written by Henry Ferns and A.G. Ford on the subject and the major contribution of her work lies in the detailed study on the origins, sources of capital, methods of operation and insertion in the host economy by the many British merchant houses operating in the River Plate area. This kind of task can only be tackled by painstaking research on widely scattered papers of the firms concerned analysed at the light of a good knowledge of both Argentina's economic history and of British expansion overseas. To a significant extent this was achieved by Reber's research which led her to Canada, Argentina and several parts of the United

Kingdom - ranging from Fort William to H.M. Customs and Excise Library in London - in pursuit of current account books, ledgers, correspondence and other surviving documents which bear clear testimony to the enormous extent of British interests in Argentina. If one wants to know the ways in which merchants operated abroad and the kind of problems they had to face in an environment so different from their own, then Reber's book is invaluable.

Concerning another major aspect - the impact of British interests on the economic development of Argentina - her work represents a laudable effort but can be greatly improved by further theoretical analysis of economic growth and a better description of the patterns prevailing in Argentina's economy during the last century. It could also be improved by a better selection and presentation of quantitative data. The present book includes only five tables which are of little relevance. Two of them are simply price lists of gold per ounce and the three remaining are not related to the main arguments in the book. Reber's assertion, for instance, that 'merchants repatriated little capital to England' (p.145), craves for some sort of statistical support. Many other questions raised by the book can only be answered by pointing to some figures, e.g. the proportion of Argentina's foreign trade handled by British merchants, the profit and loss results of the firms, their assets, etc.

On one matter of Scottish interest, it is rather odd that being a study so permeated with references to merchants connected with places north of the Border (Wright, McAlister, McCrakan, Gibson, MacNab, Stewart, Robertson) the Scottish connection is not separately commented on, not even by minor references, and the entry 'Scotland' does not even appear in the index.

UNIVERSITY OF GLASGOW MANUEL A. FERNANDEZ

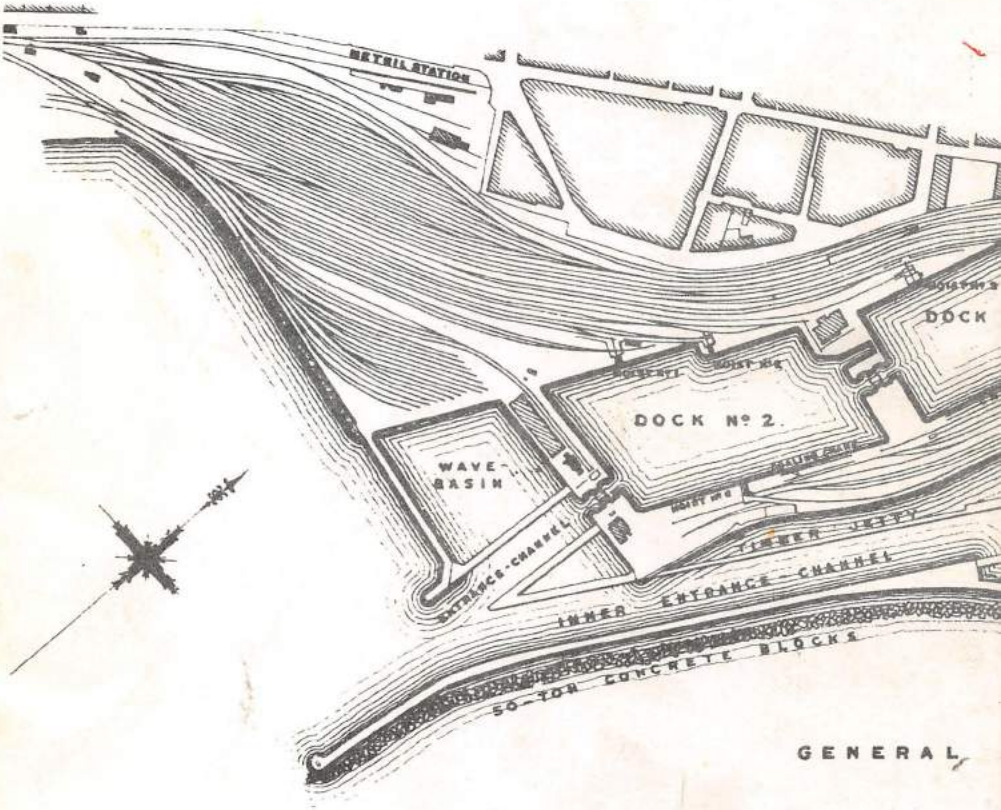

Fig: 1 1 Inch = 6 Miles.

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Figs 3 & 4 1 Inch = 40 Feet.

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