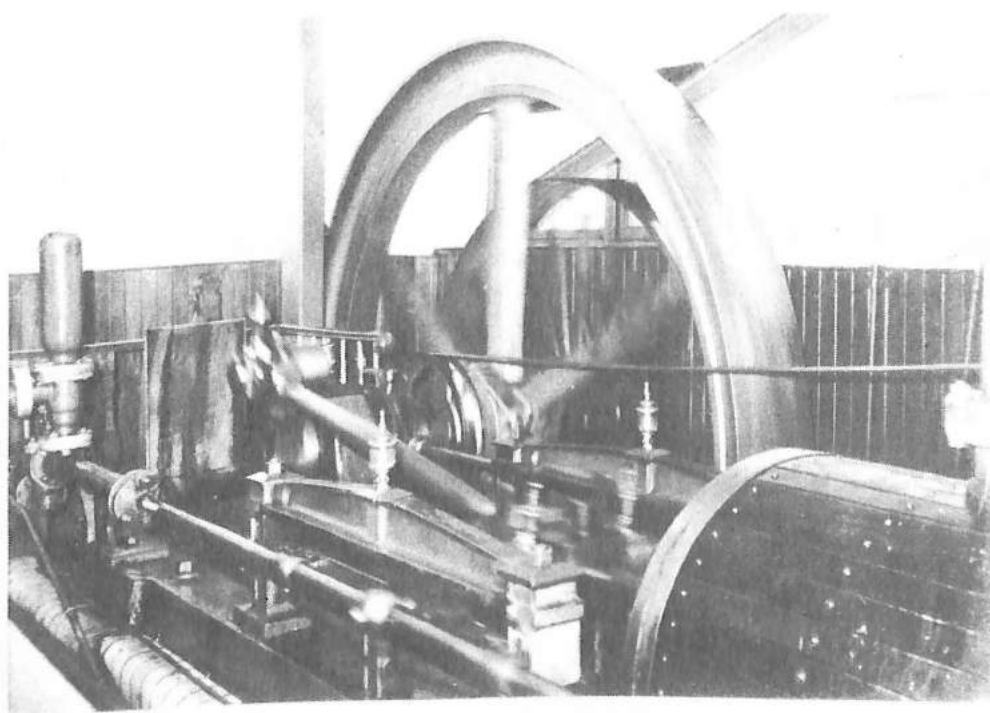


SCOTTISH INDUSTRIAL HISTORY

Volume 1.3 Autumn 1977



Cover Illustrations

Front The tandem-compound steam engine at Glenruthven Mills, Auchterarder, in August 1977

Back An advertisement for the Scottish Provident Institution, from the Glasgow Post Office Directory for 1872-3

Scottish Industrial History is published jointly by the Scottish Society for Industrial Archaeology, the Scottish Society for the Preservation of Historical Machinery and the Business Archives Council of Scotland. Details of membership of these organisations may be had from the respective secretaries (see page for names and addresses). The journal is edited by Dr. Charles W. Munn, Department of Finance and Accountancy, Glasgow College of Technology, Cowcaddens Road, Glasgow G4 0BA, and John R. Hume, Department of History, University of Strathclyde, Glasgow G4 1XQ. It is published three times a year. Contributions will be welcomed, and should be sent to either of the editors. The closing date for copy for volume 2, No.1 is 28th February 1978.

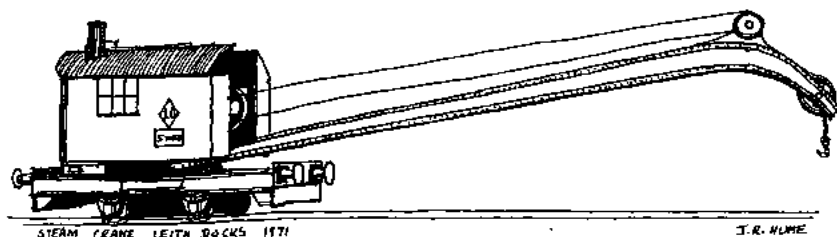
SCOTTISH INDUSTRIAL HISTORY

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CONTENTS

Forthcoming Events	2
Overhead costs and profitability : a note on some uses of business records, by Professor R.H. Campbell	4
The Ayrshire Salt Industry, c.1707-1879, by Dr. C. Whatley	13
Bibliography of Scottish Industrial and Commercial History 1974-76, compiled by W. Forsyth	31
Notes on Record Offices and Surveys	38
Summary Lists of Recent Archives, Surveys and Deposits	42
Society Notes	50
News from other Organisations	52
Site News	55
Miscellanea	59
Book Reviews	61
Correspondence	73
Who's Who	



FORTHCOMING EVENTS

Scottish Society for the Preservation of Historical Machinery

The SSPHM's series of winter meetings, open to members of the Scottish Society for Industrial Archaeology and the Business Archives Council of Scotland, continues in the new year. Meetings are held in the Department of the History of Science, University of Glasgow, 2 Lilybank Gardens, Glasgow at 7.30 pm. The remaining meetings are : 18th January, W.W. Mackie The Burma-Siam Railway; 15th February, A.S.E. Browning, What We Can Learn From Ship Models; and 15th March, Dr. P. Swinbank, More Engineering Books from Glasgow University Library.

Scottish Society for Industrial Archaeology

The Annual General Meeting of the SSIA will be held on Saturday, 18th February 1978 in Glasgow. Details will be circulated to members in due course.

Business Archives Council of Scotland

Members of the BAC(S) are invited to a seminar being given in the University of Glasgow by Professor T.C. Barker, Professor Economic History in the London School of Economics, on Friday, 20th January. The seminar will be held in Lilybank House, behind the Adam Smith Building in Bute Gardens, at 11. am.

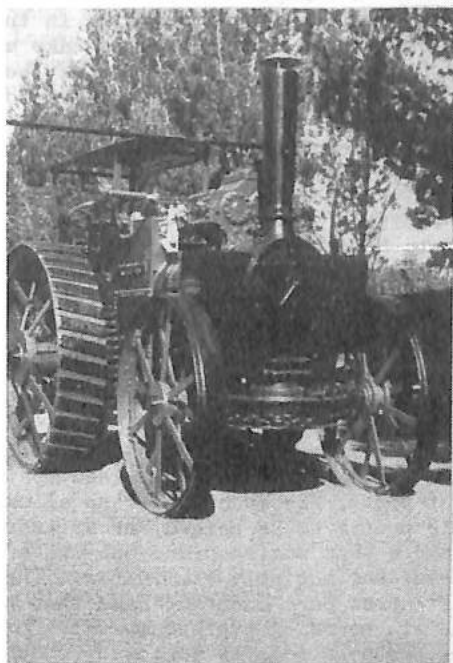
WORKING PARTIES

The SSPHM is, at the time of writing, about to receive formal approval of its part in the restoration of Pollok House Sawmill and Power Station. Regular Saturday Morning Working parties are planned, and it may be possible to work on some evenings. The work to be done includes the restoration of the governor gear and drive from the power station turbine, and of the overhead shafting, and the installation of an oil engine and generator. Old and new members will be welcome at working parties, and there will be tasks suitable for varying degrees of skill. The power station is heated! Phone Bill Mackie at 954 9157 for details of working parties.

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Bow, McLachlan traction engine in
the National Museum of Rhodesia,
Bulowayo

Overhead costs and profitability : a note on some uses of business records

by R. H. Campbell

The records of some firms show evidence of much care being taken to ensure detailed and comprehensive records of costs and of profitability of contracts. But even in recent times, much more so in the more distant past, variations in accounting practices and techniques inhibit comparisons between financial records of different firms and even between those of the same firm over time. A conspicuous illustration of the problem is the way in which the same financial information in the same set of records is reworked, even after some years, to take account of some new problem or issue which has emerged. The facts may be the same, but their relevance is altered because they have to be directed to answering new questions. Such reallocation, which usually assumes the form of re-distributing costs between contracts or between different heads in the same contract, places difficulties in the path of any analysis of costs, but does not necessarily affect the record of profitability on a contract or more generally. Profitability is affected directly by changes in the principles or practices of the recording of costs. Material, and even labour costs may be reasonably comparable between firms, but there is little consistency of principle, and even more so of practice, in the treatment of indirect or overhead costs. Such lack of consistency makes comparison between the costs and profitability of firms hazardous, but ~~even greater~~ complexity and confusion follows from the changes in principle and practice in one firm. If the formula for allocating overheads varied over time, comparisons of the profitability of contracts can be misleading. The problem is most acute if the allowance was a variable the extent of which was itself partly determined by the profit earned above prime or direct costs. In such cases the allowance was reduced to allow a reasonable profit to be earned, or at least to avoid a loss, as far as possible and a loss was recorded only when any possibility of an allowance for overheads was entirely eliminated. The level of the profitability stated as earned on a contract came then to depend in part on the changing methods of recording overheads. If a more consistent practice of allowing for overheads is followed, contracts recorded as profitable cease to be so, and their recorded profitability altered, particularly during periods of financial stringency, as between the wars.

The problem can be illustrated from records of William Denny and Company deposited in the University of Glasgow,(1) and its significance examined by reference to The Denny List, published by the National Maritime Museum.(2)

(1) UDG 3/21/1 and 2.

(2) The Denny List (National Maritime Museum, London, 1975) compiled by D.J. Lyon, four volumes.

Though The Denny List does not quote the profit earned on contracts after ship number 1171 (launched in 1926) cost figures are given subsequently. The financial records in Glasgow may have been altered slightly after their completion because of subsequent negotiation between the firm and its customers, but any such alterations do not affect the nature of the problem, which alone is being examined in this note. The period between the wars is chosen because it illustrates the nature of the problem well. It was a period of considerable variations in the conditions affecting profitability and so when the principle and practice of dealing with overheads were subjected to particular strain.

During the period between the wars Dennys recorded the costs and receipts, and so the profit or loss, on each ship beginning with costing on a regular peacetime basis with ship 1126, launched on 24 September 1919. In the relatively short period of two decades three phases marked by the adoption of different principles of costing can be identified from the records.

In Phase I, which covers ships 1126 to 1222, launched 20 December 1928, except for 1218, the principle which dominated the method of dealing with 'charges', to use the Denny nomenclature, was to record 15 per cent of the total cost of materials and of wages for both hull and machinery. Of the 96 ships in this phase 72 are costed in accordance with the common principle and 24 are not. A deviation from the standard seems to have arisen if the recording of the 15 per cent allowance would have failed to leave a profit. So long as the prime or direct costs of wages and materials were covered a nil profit was recorded and whatever surplus remained after meeting prime costs was recorded as charges. A loss was recorded only when prime costs were not covered and accordingly when there was no allocation to charges. The first three ships where the standard allowance of 15 per cent was not recorded, 1129, 1140 and 1141, were exceptions; profits were recorded even when the allowance for charges were only 11.1 per cent, 9.5 per cent and 9.8 per cent respectively. Of the remaining 21 which did not follow the common allocation of 15 per cent the general practice governing departures from the norm were followed. Fourteen recorded nil profits, but with various allowances for charges, while seven recorded a loss and no allowance for charges. In Phase I, apart from the three early exceptions, a profit was recorded only when the full allocation of 15 per cent was recorded, a nil profit indicated an allocation of less than 15 per cent, and a loss was recorded only when the allocation to charges had been entirely eliminated.

Phase II, which for reasons which will be explained later, may itself be divided, covers ship 1218, launched 13 December 1928 and ships 1223, launched 6 August 1929 to ship 1275, launched 3 May 1935. The same procedure for calculating the allocations for charges was made as in Phase I but the percentage allowed on the materials and wages costs on the hull rose from 15 to above 17 per cent, though that for machinery remained at 15 per cent. The standard allowance on the hull varied within narrow limits, and these minor variations can be ignored.

Probably because of the different economic conditions in shipbuilding after 1929, a higher proportion of contracts than in Phase I do not record the standard allocation, taken at above 17 per cent for the hull and 15 per cent for machinery. Of the 54 ships covered by Phase II only 25 followed the standard practice and of the 29 which did not, there was similarity and contrast with the 24 cases of non-standard procedure in Phase I. Similarity was in two cases where losses were recorded as they were also cases where no allocation was recorded for charges and where prime costs were not covered. But of the remaining 27 cases, which on the practice of Phase I would have been classified as providing a nil profit with any surplus over prime costs being attributed to charges, only 14 were so treated. In the other 13 cases, as in the first three exceptions in Phase I, a profit was recorded on the contracts even though the standard allowance for charges was not made. If the practice of Phase I had been followed three of the 13, recorded as making a profit, would have been recorded as making a loss, and the profit recorded on the others would have been reduced.

The main difference between Phases I and II, therefore, was that in Phase I any excess over prime costs was attributed, first, to overheads up to the limit of 15 per cent of direct costs, and then, second, any surplus remaining was recorded as profit, but in Phase II an excess over prime costs in 13 cases, out of a total of 54, was recorded as profit even before the standard allocation of over 17 per cent of the direct costs of the hull and 15 per cent of the machinery, had been recorded.

Phase II may be divided further into two sub-phases, though this division is less relevant in judging the profitability of individual contracts than other factors examined so far. In the case of 20 ships from 1930 (1244, 1249, 1252, 1257-9, and 1262 to 1275) the profit was determined after deducting from the price as received a sum allocated to National Shipbuilders' Security Ltd., a practice which was more formally recognised in the method of recording in Phase III.

Phase III which begins with ship 1276, launched 15 October 1935, provided three points of difference in its procedure, which in any case was more elaborate. First, wage costs were split between direct and indirect wages, but the latter was a standard $33\frac{1}{3}$ per cent of the former. Second, an amount for charges was recorded equal to 50 per cent of the direct labour costs in both hull and machinery. Later from ship 1303, the allowance on the hull was reduced to 45 per cent. Third, the levy paid to National Shipbuilders' Security Ltd. was not recorded formally but appears in the difference between the price paid and the price received. The latter figure was used to judge profitability so that the classification of the levy as a cost in Phase II, or as the difference between the gross and net prices paid in Phase III, did not affect profitability, though it is relevant to any analysis of the structure of costs.

In Phase III the new principles were applied much more consistently, partly because improved trading conditions made it possible to do so. In only four cases was nil profit recorded when the price received was inadequate to cover the standard allowance for charges.

The contrast between the procedure of Phases II and III can be demonstrated because four ships are recorded under both and the comparable figures are given in Table 1. Material costs are identical under both; wages are slightly higher under Phase II; charges vary, but less strikingly when the charges under the procedure of Phase II are calculated at the standard allowance of 15 per cent.

No one system of allocating costs, especially overhead costs, is more valid than another, but different methods of costing can produce different results. The major difficulty for a historian lies in frequent changes in principles and in practice. This note suggests that is exactly what happened, especially in a period of economic stress. Changes in costing principles and practice by themselves became means of influencing the profitability of contracts, and so of interpretations of the prosperity of shipbuilders, or whatever firm may be under examination. To demonstrate the problem further all cases in which the appropriate standard allowances for charges in Phases I and II were not recorded are given in Table 2. The table gives the allowances and profit/loss which was recorded and the comparable figures on the basis of the appropriate allowances. Table 3 gives the loss which would have been incurred in Phase III on the four ships which were recorded as nil profits because the full allowances, which were always recorded in Phase III, could not be covered adequately to allow a profit. The complexities are further illustrated in Table 1, where the two columns on the right show the change in profitability which is involved by adherence to the standard procedure of Phase II and of Phase III.

It is not suggested that the recalculated figures for profit/loss should be adopted, or that they provide a more accurate representation of the profitability of the contracts on these ships. They are given merely to highlight a problem of using some financial records, to suggest that figures for profitability of contracts in one firm can be used only if at the same time the possibility of variation in accounting principles and practices are also taken into account. Otherwise profitability will depend not only on trading conditions but on accounting techniques. There is evidence in other business records that the case of Pennys is not unique. The warning on this aspect of the use of its records is of much wider applicability.

University of Stirling.

Table 1 Ships 1272 to 1275 costs as

Ship	Phase	Hull				Material
		Material	Wages	Charges	Total	
1272 (15% charges)	(II)	12,273	11,032	432 (3,962)	23,737	6,112
	(III)	12,273	11,430	4,970	28,673	6,112
1273 (15% charges)	(II)	11,490	10,812	2,230 (3,791)	24,532	6,243 ¹
	(III)	11,490	11,199	4,870	27,559	15,692
1274 (15% charges)	(II)	26,344	14,262	3,798 (6,903)	44,404	19,640
	(III)	26,334	14,776	6,424	47,544 ²	19,640
1275 (15% charges)	(II)	17,843	12,876	2,864 (5,222)	33,583	18,741
	(III)	17,843	12,875	5,598	36,316	18,741

¹ As given, but should be £2654² As given, but should be £47,534

recorded under Phases II and III

Machinery			Total	Profit/Loss	
Wages	Charges	Total		As recorded	With standard overheads
6,370	233 (1,872)	12,715	36,452	Nil	-5,619
6,533 (+sub-contract	2,450 13,038)	15,095	43,768	Nil	-7,316
3,289	624 (1,475)	6,867	44,437	563	-1,849
3,680	1,380	20,752	48,311	Nil	-3,311
12,100	4,677 (4,761)	36,417	80,821	Nil	-3,189
12,409	4,653	36,702	84,246	Nil	-3,425
10,336	3,372 (4,362)	32,449	66,032	Nil	-3,348
9,336	3,501	31,578	67,894	Nil	-1,862

Table 2 Exceptions to standard procedure

<u>Recorded charges</u>					<u>At standard procedure</u>		
Ship	Launch	Hull	Mach.	Profit	Hull	Mach.	Profit
Phase I. 15% for Hull and Machinery from 1126 to 1222 (except 1218)							
1129	1919	814	(1)	533	1,100	(1)	+247
1140	1920	27,555	8,845	20,930	43,484	14,015	-169
1141	1921	24,142	11,733	20,650	37,081	19,850	-406
1153	1924	4,695	1,644	-	19,607	6,855	-20,123
1163	1924	445	727	-	477	884	-191
1164	1924	-	-	-7,533	14,720	7,534	-29,787
1165	1924	-	-	-1,481	17,716	6,566	-25,763
1167	1924	20,237	6,984	-	22,071	7,616	-2,466
1170	1925	-	-	-387	5,061	3,777	-9,225
1171	1926	-	-	-16,038	9,421	7,385	-32,844
1172	1925	69	outside	-	299	outside	-230
1182	1926	272	outside	-	6,056	outside	-5,784
1190	1927	448	570	-	1,000	1,274	-1,256
1191	1927	440	555	-	1,010	1,274	-1,289
1192	1927	-	-	-41,708	28,244	17,436	-87,388
1193	1927	-	-	-1,090	22,843	9,849	-33,782
1194	1928	5,512	2,250	-	22,274	9,093	-23,605
1195	1928	8,574	3,529	-	21,756	8,956	-18,609
1200	1927	-	outside	-564	1,474	outside	-2,038
1201	1927	539	809	-	864	1,296	-812
1202	1927	713	1,142	-	764	1,224	-133
1203	1928	4,230	3,039	-	13,868	10,890	-17,489
1206	1928	20,002	7,330	-	22,015	8,069	-2,752
1217	1929	4,608	1,803	-	10,234	6,919	-10,742
Phase II 17% for Hull (or above) and 15% for Machinery (Ships 1218 and 1223 to 1275)							
1223	1929	8,456	4,075	5,476	11,251	6,112	+644
1229	1929	coal(2)	-	-3,957	8,105	1,344	-12,114

(1) Hull only

(2) A charge of £1,292 was recorded for coal

Table 2 Exceptions to standard procedure
(continued)

Ship	Launch	<u>Recorded charges</u>			<u>At standard procedure</u>		
		Hull	Mach.	Profit	Hull	Mach.	Profit
1233	1929	13,055	4,784	10,554	16,152	7,175	+5,066
1234	1929	11,855	4,303	17,210	15,947	6,454	+10,967
1243	1930	1,176	611	-	1,576	948	-737
1244	1930	10,577	4,716	-	20,718	11,791	-17,216
1247	1930	289	305	-	489	607	-502
1248	1930	930	1,066	-	1,105	1,388	-497
1249	1930	6,429	3,880	-	7,926	5,301	-2,918
1250	1931	5,412	3,315	-	12,961	8,900	-13,134
1251	1930	913	1,129	-	1,244	1,650	-852
1252	1931	12,012	5,482	6,185	16,310	8,224	-855
1256	1931	3,780	796	2,652	4,909	1,194	+1,125
1257	1931	10,173	4,515	17,657	13,964	6,773	+11,608
1258	1932	4,924	2,903	4,900	7,399	4,363	+965
1260	1932	-	-	-240	706	831	-1,777
1261	1933	223	2,563	3,843	7,180	4,294	-4,845
1262	1933	3,117	1,853	4,642	5,299	2,779	+1,534
1263	1934	7,079	8,922	-	17,112	19,024	-20,135
1264	1934	9,821	13,287	-	15,944	19,029	-11,865
1265	1933	6,905	4,095	-	15,006	7,853	-11,859
1266	1934	465	314	-	4,318	2,568	-6,107
1269/ 71	1934	710	984	1,021	805	984	+926
1272	1934	432	233	-	3,962	1,872	-5,169
1273	1934	2,230	624	563	3,791	1,475	-1,849
1274	1934	3,798	4,677	-	6,903	4,761	-3,189
1275	1935	2,864	3,372	-	5,222	4,362	-3,348

Table 3 Loss on ships recorded as nil profit in Phase III, if full
allowance for charges made

1276	-	-£30,864
1279	-	-£ 8,980
1282	-	-£24,938
1289	-	-£52,202

The Ayrshire Salt Industry, c.1707-1879

by C. Whatley

Introduction

Of all of the processes associated with the Scottish chemical industry practised in Ayrshire, it is the manufacture of salt from sea water which attracts most attention. Not only was the industry widespread and long-lived, but it also played an integral part in the development of Ayrshire's agricultural economy. Most importantly, the process was closely associated with the coal industry, and, for long periods, it appears that without the salt business many of Ayrshire's successful coastal collieries would have been the victims of bankruptcy during periods of slack Irish demand, caused by cessation of income to coal-masters in much of the county in the eighteenth century, when domestic demand was too small to justify intensive coal mining.

On the Ayrshire coast where outcrops of coal occurred, salt water boiling had been a feature long before 1707, and can be positively identified with Prestwick, Saltcoats and Ardrossan in the sixteenth and seventeenth centuries, if not earlier. (1) Between the beginning of the eighteenth century and the first few years of the nineteenth however, there was a vast expansion in production, with pans being established or extended at Shalloch, Turnberry, Ayr, Newton, Troon, Saltcoats, Ardrossan and Hunterston. Most of the works were small and short-lived ventures. On the other hand, the works at Newton upon Ayr and Saltcoats lasted well into the nineteenth century, providing rare examples of the survival of what was Scotland's oldest chemical industry.

With the exception of the works at Hunterston, all of the ventures were directly linked to collieries. Such integration was a common feature of Scottish eighteenth century economic life, there being 'few ... leading coalmasters with no interest in salt.' (2)

Throughout the period, which ended with the closure of the Saltcoats works around 1879, Ayrshire salt was sold mainly in local markets for the purposes of cheese making, meat preservation, bacon curing and seasoning. Perhaps surprisingly, there is little evidence to show that Ayrshire salt was used in any quantity for fish curing. The main reason for this appears to have been that Scottish marine salt was particularly

(1) See, for example, D. Murray, Legal Practice in Ayr and the West of Scotland in the Fifteenth and Sixteenth Centuries (Glasgow, 1910), p.52; O. Kelly, The Salt pans at Saltcoats (Saltcoats, 1972)

(2) B.F. Duckham, A History of the Scottish Coal Industry, Vol 1: 1700-1815 (Newton Abbot, 1970) p.15

unsuitable for such purposes being generally 'dirty', having been cleaned by the use of animal blood which gave a 'nauseous' flavour to it.(3)

Production, sales and markets

Compilation of a series of production figures for Ayrshire salt throughout the period is an impossible task owing to the scanty evidence presently available. Descriptive reports from contemporaries and isolated Customs and Excise figures must suffice. Even where figures from individual concerns do exist for particular periods it is hardly practicable to project these into annual output tables owing to the irregularity of production peculiar to the marine salt industry as a whole. Heavy downfalls of rain could effectively halt output. Excessive amounts of fresh water running into the sea from swollen rivers rendered the saline content weak and caused the end product to be unsatisfactory.(4) One reason given for the peculiarly long periods of success enjoyed by the Saltcoats saltworks was that there was no major river, or even a stream, near the pans.(5) Such a claim is entirely reasonable; at Brora in Sutherland the strong saline content of the salt allowed the sellers to charge a relatively high price per bushel.(6) Even at Saltcoats, however, rain could seriously interfere with production. In 1725 the 'constant rains' of that summer curtailed production for almost six months. Only 2,821 bushels were made in that year, compared with a possible 8,000 bushels, which is the figure based on the 'normal' weekly output of one hundred and sixty bushels.(7)

Apart from the problem of water, there is also the problem of ascertaining which pans were in operation at any given time. In the 1720s there were definitely pans in operation at Turnberry, Saltcoats and Ardrossan. On the basis of there certainly being four pans in operation (two at the Saltcoats works) one could suggest that the county's maximum possible output, based on Saltcoats figures, was in the regional of 16,000 bushels per annum. Such an estimate however, is based on the unlikely possibility that maximum production was ever attained. On the other hand the figure does not include the possible outputs from pans which may then have been in operation at Shalloch and Ayr.

In the absence of county statistics the presentation of available Saltcoats figures may give an indication of trends in the industry during the eighteenth and early nineteenth centuries.

(3) J. Headrick, A View of the Mineralogy, Agriculture, Manufactures and Fisheries of the Island of Arran (Edinburgh, 1807) p.374.

(4) Ibid.

(5) Kelly, op.cit.

(6) For an excellent study of the coal and salt industries of Sutherland, see S.B. Calder, 'The Industrial Archaeology of Sutherland', unpublished M.Litt. thesis, University of Strathclyde, 1974.

(7) Carlisle Record Office (C.R.O.), D/Lons/W. Collieries, Misc., Lowther Muniments, Report of Robert Stephens, 1725

Table 1. Salt Production, Saltcoats, 1725-1823

<u>Year</u>	<u>Quantity Produced</u>
1725	2,821 bushels
1737	2,027 "
1767	6,102 "
1774	5,909 "
1776	6,436 "
1792	8,816 "
1817	2,742 bolls (8)
1823	2,144 "

Sources : Scottish Record Office (S.R.O.), CE71/1/1-5, Customs and Excise Books, Collector (Irvine) to Board; C.R.O., D/Lons/W, Collieries, Misc., Lowther MSS, Report of Robert Stephens, 1725; North Ayrshire Museum (N.A.M.), Cunninghame of Auchenharvie Muniments, Misc. Colliery Accounts, 1817-1824.

The table shows that a marked increase in production took place during the eighteenth century. Particularly noticeable is the sharp rise which took place between 1737 and 1767. The pattern was followed throughout the rest of the county, as is indicated by non-quantitative material. At Ardrossan a second pan was added during the 1760s and by 1773 the two pans there, which belonged to the Earls of Eglinton, were producing 5,402 bushels between them.(9) Further expansion might have taken place at Ardrossan had suitable supplies of coal been available. The lessees of the pans had been unhappy with coal at Kyleshill and moved the pumping and other machinery to Stanley Burn, nearer to the sea and pans, only to discover 'no Coal but a black skailly substance good for nothing'.(10)

(8) Exact conversion from Ayrshire bushels to bolls is not possible owing to there being so many local variations in weights and measures. Reference to Duckham, op.cit., 368, suggests that the ratio of bushels to bolls may have been in the region of 2.25:1. On the other hand Aiton, General View of the Agriculture of the County of Ayr (Glasgow, 1811), p.584, suggests that the ratio may have been in the order of 8:1 for Ayrshire. The Old Statistical Account gives a figure of 3,262 bolls as an average for the four years 1786-1790, so strengthening the validity of the former estimate.

(9) S.R.O.CE 71/1/3, Customs and Excise Books, Collector (Irvine) to the Board, 17 March 1774.

(10) Court of Session Papers (C.S.P.), (Signet Library, Edinburgh), 132; 13, William Orr and ors. v. Earl of Eglinton and ors., State of the Process.

At Ayr in 1777 David Loch noted that great quantities of salt were made in the area.(11) This evidence of rising production adds weight to the suggestion that there was a problem of keeping up with rising west coast demand in the eighteenth century. The increased industrialisation and rising demand for foodstuffs which this partially created was undoubtedly the main reason for the increase in Ayrshire's salt production.(12)

A shortage of salt during the Napoleonic wars further encouraged suppliers, and between 1806 and 1816 John Taylor and his sons had ten pans built in the Newton region.(13) In 1814 at least one of the Ardrossan pans was built in the improved 'furnace' style (called bander pans on the east coast) which was very much bigger than earlier models.(14) During this final flurry of activity in the Scottish west coast marine salt industry, a waggonway was used to connect the pans at Newton with both the harbour and the coal supply. At Troon too the industry appears to have made advances under the guidance of John Samson, a 'salt manufacturer' who was also to become a partner in the Shewalton colliery.

Alterations in the laws relating to salt could also affect production. The changes in the salt laws of 1798-1799 had the effect of further encouraging the illegal export of English rock salt from Ireland to the Scottish west coast, thus further hurting the marine salt producers who were already having to compete with large amounts of smuggled salt. Robert Reid Cunninghame at Saltcoats was temporarily forced to close down one of his pans, and was considering further cutbacks in production.(15)

Far more serious and long lasting in their effect on the Ayrshire salt industry was the 1825 alteration in the salt laws, which abolished all taxes on salt, thus lifting all protection from Scottish salt makers and exposing them to free competition from the superior and cheaper English rock salt producers. There can be no doubt that the repeal of these duties effectively killed the chances of survival for Ayrshire's more marginal saltmakers. That the pans at Newton and Saltcoats were able to continue production for a considerable time afterwards underlines their special circumstances, both with regard to markets and management.

Ayrshire, unlike the saltmakers of the Forth, had no long-standing trading links with northern European countries, and had developed very different markets. Facing the Irish sea and Ireland, which after the Cheshire rock salt deposits had begun to be effectively exploited after the 1720s and 1730s was supplied from there, Ayrshire producers had to seek out more local purchasers. Although some Ayrshire salt had gone to Ireland

(11) D. Loch, Essays on the Trade, Commerce, Manufactures and Fisheries of Scotland (Edinburgh, 1778), Vol 11, p.75.

(12) See A. and N.L. Clow, The Chemical Revolution (1952), p.50

(13) Ayr Advertiser, 27 June 1816

(14) I.H. Adams, 'The Salt Industry of the Forth Basin', Scottish Geographical Magazine, LXXI, 1965, p.155

(15) 'Selections from the Auchenharvie Papers', Ayrshire Collections, Vol. 6, 1958-60, Letters IV and V, Robert Reid Cunninghame to the Commissioners of Excise, 16 February 1799.

(mainly Dublin) in the first decades of the eighteenth century, the pattern of local inland sales quickly developed and actually became the successful mainstay of the local salt industry. Small quantities were shipped to Dumbarton and the Hebrides during the 1760s, but these cases appear to be the exception to the general rule.(16) In 1757 the produce from the Shalloch pan was being sold to villages within a fifteen mile radius of the works. Salt was being bought from Shalloch in Turnberry, Straiton, Adamton, Cumnock, Dailly, Dalmellington, Ayr and Maybole.(17) Although no documents survive to show the use to which the material was put, it seems safe to assume that it was used predominantly for curing purposes. Such was the case in nearby Galloway. The trend continued throughout the eighteenth century. Between 1786 and 1790 the Saltcoats pans produced 13,049 bolls, most of which was sent inland, although small quantities were used in Nithsdale and Galloway, thus suggesting that Saltcoats salt was then acquiring its reputation as a high quality dairy additive.(18) Little local salt was used for fish curing purposes, for reasons already outlined. Of the 8,816 bushels produced by the Saltcoats pans in 1791, only forty bushels were used for fish curing.(19) Indeed, in 1757, when pans at the latter village and Ardrossan were in constant operation, Archibald Steel and Company, who were Saltcoats fish merchants, were importing white salt from Portugal in order to cure fish.(20) Clearly, local manufacture was geared to the production of 'common' salt, which did not require the slow evaporation process necessary for making salt suitable for fish preservation.(21)

The exact period at which Saltcoats salt established its firm connections with the Ayrshire dairy industry is not clear. The stability of the link, however, ensured that the works remained open for some thirty years after the Newton works closed in 1842. By the mid-nineteenth century Saltcoats salt had gained a county wide reputation and when the Ayr works closed, their proprietor bought newspaper space to inform his former customers that he had arranged for 'a regular supply of salt' from the superior Saltcoats pans, which he promised to sell at the same price for which it was available in Saltcoats.(22) The noose which had constricted the Ayrshire salt industry can be clearly seen in the same advertisement which also contained the notice that sales of fine and coarse English salt would continue.

(16) S.R.O., C/ 71/1/2, Customs and Excise Books, Collection (Irvine) to the Board, 1 November 1765.

(17) S.R.O., GD 25/61/1, Ailsa Muniments, Accounts of Salt sold, 1757,

(18) Old Statistical Account, VII, p.18

(19) S.R.O., CE 71/1/4, Customs and Excise Books, Collector (Irvine) to the Board, 6 April 1792.

(20) S.R.O. CE 71/1/1/1, Customs and Excise Books, Collector (Irvine) to the Board, 3 March 1757.

(21) Kelly, op.cit.

(22) Ayr Advertiser, 12 May 1842

Although it is not possible to say how much salt was being produced in Saltcoats in the 1850s and 1860s, (23) continuing production there was a matter of much satisfaction to local farmers, one of whose number declared in 1861 that he had used English salt until 1859, when he had experimented with 'Ayrshire marine' which 'completely preserved the hay, and the cattle appeared to relish it more. (24) It was the Dunlop cheesemakers who made most use of the Ayrshire salt. Indeed the Saltcoats article was considered to have been better for that purpose than English salt, and with the expanding markets for food in the nineteenth century, there is more than a hint that Saltcoats production rose during the period. In 1822, for example, there were six pans in operation there, making over two hundred bolls per week. Farmers, it was said, 'that never bought above seven pounds at one time, now take a bushel.' (25)

From 1854 however, Ayrshire cheesemakers began to make 'Cheddar' cheese. While it was not radically different from the traditional Dunlop style, its manufacture was characterised by precision, cleanliness and quality. (26) Of vital importance to the Ayrshire cheesemakers was the growing demand for the better quality article, which was reflected in the cheese market prices.

Table 2. Cheese Prices, 1855

<u>Type of Cheese</u>	<u>Price per cwt.</u>
Best Cheddar	62/- (£3.10)
Middling Cheddar	60/- (£3.00)
Dunlop	42/- - 46/- (£2.10-£2.30)

Source : Ayr Advertiser, 18th May 1855.

Not only did Cheddar obtain a better price, but it also had a wider appeal. In the early 1850s Ayrshire cheesemakers became increasingly aware that they were not selling any cheese in the lucrative London market, and that their only outlet was the Glasgow Bazaar and predominantly working class consumers. (27) The decline of the manufacture of Dunlop cheese in the traditional manner was a lingering affair, and some 'marine' salt was still being used by manufacturers in 1867. (28) Another factor in the equation was the increasing threat from overseas competitors. The 'Australian export mania' caused great panic among native producers in Cumnock in 1854, when they began to seek out cheaper production methods. (29)

(23) There were two hundred tons per week being made in the 1830s, New Statistical Account, V, p.460

(24) Ardrossan and Saltcoats Herald, 8 June 1861

(25) Ayr Advertiser, 10 April 1822

(26) Glasgow Herald, 26 July, article on Ayrshire agriculture.

(27) Ayr Advertiser, 18 May 1855; Glasgow Herald, 26 July 1870

(28) A. Sturrock, 'Report on the Agriculture of Ayrshire', Transactions of the Highland and Agricultural Society of Scotland, 1866-67, p.91

(29) Ayr Advertiser, 11 May 1854.

The cost of salt was one item which could be reduced, by stopping using the expensive local material. Despite the fact that it had once made a superior product, one local newspaper warned against:

Acting upon opinions ... which were formed long ago under totally different circumstances (and that) the Ayrshire farmer continues to pay a triple price for an inferior article.(30)

By 1879 competition from America had become so intense that in that year many Ayrshire manufacturers produced nothing, as their product was too expensive. With virtually no Dunlop cheese being made, demand for marine salt was curtailed and the pans at Saltcoats were forced to close. They had earlier been inspected by the manager of the Eglinton ironworks at Kilwinning, John Smith, in 1874, and he had then advised that they were not worth repairing. Thus, with the events of 1879, the small but unique works were closed down. It was claimed that they were the last works in Scotland making pure marine salt; those on the east coast were apparently blended marine salt with English rock salt.(31)

Other sales of the Ayrshire salt industry went to other sectors of the embryonic Scottish chemical industry. The impurities from the pans (which, ironically, made the salt unsuitable for fish curing) could be used in various processes. Thus in 1802 the magnesia works of William Burns was established at Saltcoats.(32) The utilisation of the otherwise wasted 'bittern' provided a small but useful addition to saltwork income. An annual average of £40 worth of 'bittern' was sold to the magnesia works from Saltcoats between 1817 and 1824.(33) The works continued to thrive, although by 1847 the sons of William Burns, who had carried on the works, had directed their attentions to the manufacture of bicarbonate of soda. This article had doubled in price between 1846 and 1847 owing to the failure of the potato crop in 1846, which had resulted in bicarbonate of soda being 'used for purposes it was never before applied to.' (34)

(30) Ibid., 11 January 1856

(31) A. Boyd, John Smith (Ardrossan, 1930), p.25; Ardrossan and Saltcoats Herald, 8 June 1861

(32) New Statistical Account, V, 460

(33) N.A.M., Cunninghame of Auchenharvie MSS, Misc., Colliery Accounts, 1817-1824.

(34) Ayr Observer, 16 March 1847.

The Taylor family, working collieries in the Ayr district, (35) also used their salt waste in an enterprising manner. Epsom salts may have been made at Newton from around 1808, although the Town Council turned down a request from John Taylor for the right to erect a soda work on the grounds that it would be a 'nuisance'. Despite the refusal Taylor began working on the building, only to be halted in 1810 by an interdict applied for on behalf of the Council. (36) In 1816 however the 'bittern' from the ten pans was being advertised for sale, along with the equipment necessary for making Epsom salts and 'marine acid'. (37) Three years later the work was well under way and one hundred and seventy tons of soapers salt was being exported from Ayr harbour. Soap was made locally, both legally and illegally. In 1820 excise officers discovered a 'manufactory of soap in the townhead of Ayr', which was producing 'soap' by mixing a small quantity of genuine soap with 'soda, the spirit of salt', and some glue. In this manner the makers (of which there were rumoured to have been a number) made twelve pounds of 'bad' soap from three pounds of genuine soap. (38)

Financial aspects

For the average Ayrshire saltwork, operating costs could be remarkably low. This, combined with their favoured position vis-a-vis salt duties until the beginning of the nineteenth century, undoubtedly eased their profitability problems. Fuel was obviously a key factor in the production process and was often cheaply available. This was even more so when the saltwork was an 'appendage' of a colliery. In these cases the fuel cost was often a book cost rather than an actual cost. In other words, the type of fuel which was used at saltworks, which was often unsaleable elsewhere, was charged to the saltwork at a nominal cost, plus the expense of the carriage to the saltwork. For the integrated concern then, the only fuel cost was the carriage involved. Even the effect of this was lessened if one accepts the arguments of some coalmasters, which was that the mere act of bringing up the 'panwood' or dross was a saving on colliery costs.

This argument makes much business sense. In 1725 one viewer at Saltcoats argued that it would be necessary to 'build four additional salt pans if coal production itself was to be increased, the reason being that there was 'no other demand' for the 'panwood'. (39) It was essential to bring

(35) John Taylor and his sons had wide interests in the county. Collieries belonging to them in the 1820s were to be found at Blackhouse, Kilwinning, Shewalton and Irvine (Bartonholm).

(36) S.R.O., B6/27/3, Newton Council Minute Books, 22 October 1810.

(37) Ayr Advertiser, 27 June 1816

(38) Ayr Advertiser, 18 May 1820

(39) C.R.O., Report of Robert Stephens, 1725.

up the coal referred to 'otherwise it would hinder the circulation of air in the pits' and thus 'inconvenience' the colliers - in other words the poor ventilation in the pits and the narrow levels made working impossible unless the dross was raised. Later in the century, and referring to the same colliery, Robert Reid Cunninghame argued that by using the 'panwood' in the salt pans he was saving the coalwork one half-penny per load (or fourpence per ton) in wages 'as the colliers would have charged that rate if they had to stow the small coal below ground.' (40) It is probable that he took a lease of the Earl of Eglinton's pans at Ardrossan during the 1770s for this very reason, as he was then engaged in rebuilding his own pans and thus had no outlet for the otherwise unusable and cost-increasing dross coal. (41) As the failure rate amongst Scottish coalmasters was exceedingly high during the eighteenth century, (42) any saving in cost would favourably affect the chances of survival of a colliery. Thus it may not be coincidental that Ayrshire's most successful coalmasters in the late eighteenth century (Cunninghame of Auchenhavrie and John Taylor of Blackhouse, for example) also had extensive and successful saltworks linked to their collieries.

The potential profitability of saltworks in the period prior to 1825 can be seen by the amounts of capital directed towards the industry by a variety of entrepreneurs. In 1751, Robert Paterson, the tacksman of Ardrossan salt pans, had to pay over ninety one pounds for new plates for the pan - plus an additional fifteen guineas for carriage costs from the 'iron mill at Dalkeith', (43) there being no such establishments in Ayrshire able to provide iron plates. A few years later a new pan and storehouse was erected at the same place, costing a total of over three hundred pounds. The partnership comprised a Kilbirnie merchant and Thomas Mitchell, who had formerly been a Stevenston shoemaker. (44) In 1814 Hugh Currie, formerly a smith, spent over £3,000 on a triple-pan-work at Ardrossan. Little financial help was offered by landowners, again an indicator of a potentially profitable enterprise. In Currie's case he was bound to take all of his coal from Eglinton's pits at an expensive rate (two-thirds of the pithead selling price for round coal). (45)

There is no evidence which shows anything other than failure amongst those saltworks which had to pay a competitive rate for fuel. The works at Hunterston were only a memory to their late eighteenth century recorder. (46)

(40) S.R.O., Unextracted Process, Currie Mack B 26/1, P. Warner v R.R. Cunninghame, 1798, defender's proof.

(41) S.R.O., GD 3/E 127/5758, Eglinton Muniments, Tack, William Bone, 1778.

(42) R. Bald, A General View of the Coal Trade in Scotland (Edinburgh, 1808), p. 28.

(43) C.S.P., 132; 13, William Orr and ors. v. Earl of Eglinton and ors., 1764, pursuer's proof.

(44) Ibid., C.S.P., 46; 50, Memorial for Ninian Crawford, 1760

(45) S.R.O., GD 3/E 60/4151, Eglinton MSS, Tack, Hugh Currie, 1814; Ayr Advertiser, 8 November 1821

(46) Old Statistical Account, XII, 410

This pan had presumably been fired by coal which had been brought from Saltcoats, which was seven miles distant and would thus have involved prohibitive transport costs. The pan could conceivably have been using peat - but even for that fuel there is evidence of significant price rises during the eighteenth century.(47) For a pan to be profitable it had to be attached to a colliery concern.

When 'one Paterson' leased the Ardrossan pans during the 1750s he failed after he had been forced to purchase coal from a neighbouring colliery - at a competitive rate, and incurring carriage costs.(48) In contrast, at Saltcoats, where 'panwood' was supplied to the saltwork at a rate far below what it was alleged that limeburners would pay, very high profits were made. In the last years of the eighteenth century Robert Reid Cunninghame had been charging the saltworks 3/0 $\frac{1}{2}$ d. (15p.) per ton for small coal, whilst it was claimed that coal of a similar quality could be sold openly for 6/- (30p.). (49) Even in the nineteenth century, close association with Stevenston colliery provided favourable links for the salt pans, which were a separate business entity by 1852. In that year the lessees of Stevenston collieries were obliged to supply and deliver coal to the pans at 4d. (1 $\frac{1}{2}$ p.) per load of four hundredweight, or 1/8d. (8 $\frac{1}{2}$ p.) per ton. (50) This was a remarkably low price to pay for coal - albeit dross.

On the question of eighteenth century costs though, no definitive claims can be made. One variable that has to be considered is whether or not there was sufficient demand for dross from other sources. If demand was irregular or light, the selling of coal to a saltwork at a preferential rate could be justified, particularly if the saltwork and the colliery were a joint concern, and thus the fortunes of one increased the gross income for the total concern.

In terms of consumption saltwork demand can be described as useful. To estimate the coal consumption of salt pans as a percentage of the county's coal output is not possible; even if it was, such a figure would be largely artificial, as the coal used by saltworks was, as has been indicated, not usually of a variety which was generally included in series which indicate the county's annual coal output. This was particularly the case in the eighteenth century, when there was little demand for 'panwood'. Only small quantities of large or round coal were used by

(47) C.S.P., 418;72, Petition, John Gemmell and ors., 1800

(48) C.S.P., 132;13, William Orr and ors. v. the Earl of Eglinton and ors., 1764, pursuers' proof.

(49) N.A.M. Cunninghame of Auchenharvie MSS, Misc., P. Warner v R.R. Cunninghame, State of the Conjoined Process, 1801.

(50) S.R.O., CS 246/2124, P. Warner and ors. v Merry and Cunninghame, 1875, excerpts from 1852 lease.

saltworks. At Ardrossan in 1764, for example, only 1/3d.(6p.) worth of round coal was used.(51) In terms of quantity this amounted to less than half a ton. At Saltcoats in the early nineteenth century a similar situation prevailed:

Table 3. Coal Consumption, Saltcoats Saltworks*

<u>Year</u>	<u>Round Coal</u>	<u>Parrot Coal</u>	<u>Small Coal</u>	<u>Value</u>
1820	311	112	27,311	£1,005
1821	408	215	21,576	£ 711

* Weights expressed as loads. Values expressed to nearest £.

Source : N.A.M., Cunninghame of Auchenhavrie MSS, Misc., Colliery Accounts, 1817-1824.

Clearly, sales of round coal to the saltworks were insignificant in relation to the quantity of small coal used in salt production. On the other hand, the value of coal sales was fairly impressive, again underlining the importance of saltworks to given collieries' profitability. Not all collieries were graced with such a lucrative source of income. Shewalton colliery in 1820 was sending no more than seventy tons to the Troon saltworks. (52) Ayrshire works generally did not approach the scale of the vast saltmaking plants of the east coast, where at Bo'ness, for example, 10,000 tons of coal was used annually. Saltcoats pans were probably Ayrshire's largest, consuming around 3,000 tons of coal in the 1820s.

Operating costs other than fuel and labour were relatively small. Lime and blood were used in small quantities. At Shalloch in 1757/1758 two bolls of lime were used to 2,935 loads of coal. The other major cost was that of labour. Bound to their pans like the colliers were to their pits in the eighteenth century, saltworks employees appear, if anything, to have fared worse than their hewing contemporaries.

Firstly, employment could cease or be interrupted during periods of heavy rain or while searches were made for suitable coal. At a stoppage at Ardrossan which had followed the exhaustion of adequate coal, 'subsistence' money had to be paid by the employers to enable the salters to buy bread.(53) Further, the conditions of life were crude. Saltwork employees were bound to their places of work both physically and legally. Workers and their families lived in rooms at the end of the pans - and at Ardrossan the entry to the living quarters was found only by going past the steaming pans themselves.(54) There is no evidence to suggest that the Ardrossan conditions were atypical.

(51) C.S.P., William Orr and ors. v the Earl of Eglinton and ors., 1764, pursuer's proof.

(52) Kelburne Castle Muniments, Kelburne, Largs, Deed Box 8, bundle 'Railways', papers concerning Shewalton Colliery.

(53) C.S.P., 99;15, Petition of Alexander, Earl of Eglinton and ors., 1764.

(54) C.S.P., 132;13, William Orr and ors. v the Earl of Eglinton and ors., 1764, answers for William Orr.

Comparison with the wage rates of colliers does nothing to brighten the picture. Although strict comparison is impossible, as there are no exact occupational counterparts in the salt industry, a fairly good indication of relative positions is provided by examining the case of the 'blowermen' or 'furnacemen'. Their job was simply to keep the pan fires going. They were paid a fixed weekly rate for the job, and thus one does not encounter any major problems of wage determination.

Table 4. Blowermen's Wages, 1764-1841

<u>Year</u>	<u>Weekly Wage</u>	<u>Works</u>
1764	4/- (20p)	Ardrossan
1800	6/- (30p)	Saltcoats
1836	12/- (60p)	Saltcoats
1841	10/- - 12/- (50p-60p)	Ayr

Sources: C.S.P., 99;15, Petition of the Earl of Eglinton, 1764; R.R. Cunningham, A Plan of Book-Keeping (Dalry, 1800); New Statistical Account, V; G. Lockhart, Directory of Ayr (Ayr, 1841)

It should be pointed out that the 1836 and 1841 rates do not apply specifically to furnacemen. The rates do apply to stated average earnings within the salt industry though, and as the sources do not indicate any job distinction, one could reasonably assume that any small job differences which were earlier reflected in wage rates, had disappeared by the early nineteenth century. Such problems do not detract from the major conclusions. In the 1720s, colliers and their bearers were earning 2/1d (10 $\frac{1}{2}$ p) per day.(55) While there were regional pay differences, and while colliers' wages in some pits might have fallen, or may have always been below the rate given (with two-thirds of the sum going to the collier) the rate of 4/- (20p) per week for a blowerman in 1764 is still far below the weekly wage for any Ayrshire collier working a five day week. For the year 1800, direct comparisons can be made. In the very week when blowermen at Saltcoats were earning 6/- (30p), colliers at Stevenston colliery were averaging 3/6d (17 $\frac{1}{2}$ p) per day, or 21/- (£1.05p) for a six day week, which they were then working.(56) Similarly, in 1836 the stated average wage for colliers at Stevenston was 5/- (25p) per day (although this was probably temporarily inflated owing to the long strike amongst the Lanarkshire miners). At the same time the weekly wage of the salt worker was 12/- (60p). As far as the 1800 rate is concerned, the salter was rated on a par with the colliery gin-boy, who also made 6/- per week.(57) Perhaps the situation was partially balanced by the payment

(55) See N.M. Scott, 'Documents Relating to Coal Mining in the Saltcoats District in the First Quarter of the Eighteenth Century', Scottish Historical Review, Vol XIX, 1922, for a discussion of wage rates in this period.

(56) Cunningham, Book-Keeping, 22-23

(57) Ibid.

ment of a bounty to salters if a pan produced more than eighteen bushels per week. Data is frustratingly thin on the ground however; what does exist shows only that this would have made a marginal difference.(58)

Examination of the wages of grieves substantiates the case made thus far. At the same time it should be borne in mind that a salt griever would probably have had less responsibility than his counterpart in the coal industry. Fewer men were under his charge, output value was less, he was responsible for less expensive machinery, and the safety problems were much slighter.

Table 5. Saltwork Grieves Wages, 1764 and 1800

<u>Year</u>	<u>Weekly Wage</u>	<u>Work</u>
1764	5/- (25p)	Ardrrossan
1800	10/- (50p)	Saltcoats

Sources: Cunningham, Book-Keeping; C.S.P., 99;15, Petition of the Earl of Eglinton, 1764.

The nearest comparison with the coal mining industry for 1764 is for a griever at the small Dalzielowie colliery, where in the same decade he was paid 6/- (30p) per week, or 1/- (5p) more than the saltwork griever.(59) At Stevenston colliery in 1800 the pit grieves were paid 12/- (60p) per week and the coal yard griever 20/- (£1.00); the nearest comparable wage to the 10/- (50p) paid to the salt griever was that of the 'stower', or a pitheadman, which were both less skilled mining jobs with little responsibility and who were paid 9/- (45p) weekly. (60)

Unfortunately the lack of a general monograph on the Scottish salt industry as a whole (61) prevents one from making comparisons between Ayrshire and elsewhere. What one can say with some certainty however is that overall, wages in the county's salt industry were continually lower than those paid in the coal mining industry - a matter of some interest considering the close relationship between the two.

(58) Ibid., 16; C.S.P., 99;15, Petition of Alexander, Earl of Eglinton and ors., 1764.

(59) S.R.O., GD 25/9/45/1, Ailsa MSS, Notes, relating to the colliers complaints, 1766.

(60) For more detail on job description, see Duckham, op.cit., 116.

(61) For a useful study which relates mainly to the English salt industry, see E. Hughes, Studies in Administration and Finance, 1558-1825 (Manchester, 1934).

As an employer of labour the salt industry had little impact. Salt panning was not a labour intensive industry. At Saltcoats in 1800, for example, the four pans employed few others than four blowmen, four salters, a watchman and his assistant, and a griever.(62) Thus there was a labour force of eleven at the county's largest salt producing centre at the beginning of the nineteenth century. While the industry's peak years during the Napoleonic wars would have seen an increase in numbers employed, it is unlikely that there was ever more than one hundred persons directly employed at any time during the period. There would have been work for masons, smiths and others in repairing and building panhouses and stores, but this would have been on a temporary basis. The impact of the 1825 laws, and the increase of English imports was reflected in the decline of the Ayrshire salt industry's importance as an employer. By 1841, the Ayr Directory referred only to five 'hands' there, while the numbers employed at Saltcoats would not have significantly increased the total. During the eighteenth century there are very real doubts as to whether the industry could have employed more persons than it did, even if markets had allowed for greater expansion. Like the coal industry salt producing was plagued by periodic shortages of skilled labour, particularly during times of rapid expansion. Midway through the century, at Shalloch, for example, the labour force of 'east Country men' deserted, and for a time new recruits could not be found, either on the 'free' market, or by enticing them away from other works.(63) It is little wonder that 'subsistence' money had to be paid at Ardrossan, with the salters 'starving and threatening to run away and leave the Work altogether'.(64)

Prices obtainable for Ayrshire salt often appear to have been good, especially when it is considered that most of the imported salt (either smuggled or legally purchased) could be obtained cheaper than the locally produced article, particularly after the first years of the nineteenth century. In the nineteenth century local salt producers were able to exploit the demand for the specialised marine product. Even though east coast salt was cheaper than that of Ayrshire in the later years of the eighteenth century, Saltcoats was still able to produce and sell around 3,262 bolls in the local market.(65) Even in 1836 the more expensive Ayrshire salt was preferred to the cheaper English version for the specialised dairy purposes outlined.(66)

(62) Cunninghame, Book-Keeping, 16-18

(63) S.R.O., GD 25/9/46/1, Ailsa MSS. Note from Mr. Archibald Kennedy, Shalloch Salt Office, 21 May 1754.

(64) C.S.P., William Orr and ors. v the Earl of Eglinton and ors., 1764, pursuer's proof.

(65) Old Statistical Account, VII, 18.

(66) New Statistical Account, V, 60.

While differing local weights and measures and selling units make it difficult to produce a local price index, even poor accounts allow one to make some brief comment on the profitability of some works. Those at Saltcoats were the most impressive - and during the period 1749 to 1761 when the coalworks there were experiencing a period of decline (making a profit only twice during the years quoted) the salt works pulled the concern through and made John Reid a profit of £3,236. (67) In the 1760s at Ardrossan, a period of three years and three months produced clear profits or over £613. Average weekly profit at the same place was said to be £1. 15/- (£1.75p) per pan. (68) At the smaller Shalloch pan a clear profit of over thirty two pounds was made between 1757 and 1758. (69) After Robert Reid Cunninghame had developed the coal and saltworks at Stevenston/Saltcoats in the period after 1767 it was claimed that by selling salt at 11/- (55p) per boll he made a clear profit of £11,778 - plus over a period of twenty eight years from 1770. (70) Although there was some dispute over his claims, Cunninghame's own private notes (not designed for the eyes of contemporaries or posterity) indicate that a profit of over £549 was made between 1802 and 1808. (71) Although there is little evidence concerning the profitability of the pans belonging to the Taylor family, the expansion of production there and the technological advances made, which cut fuel costs by half, (72) suggests that the work was highly advantageous to those involved.

The entrepreneurs

While the development of an industry relies to different degrees on favourable factor endowments, geographical position, the availability of labour, markets, and capital, the entrepreneur and his ability to lead the concern is undoubtedly a major factor leading to the success or failure of particular businesses. Owing to the close relationship between coal and salt, it is not surprising to discover that coal lessees were often saltwork lessees, and vice-versa. Even so, it is of some importance to outline briefly the backgrounds of the men who took the vital investment decisions in the Ayrshire salt industry, even though salt may not have been their main concern.

In some cases, particularly in the early eighteenth century before a substantial market for coal had developed, the manufacture and sale of salt was the prime concern of the businessmen involved. The importance

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- (67) N.A.M. Cunninghame of Auchenharvie MSS, Misc, The Generall Ballance of the Coal and Salt works of Stevenston from Lammas 1749 to Whitsunday 1761
 (68) C.S.P., 132;13, William Orr and ors. v the Earl of Eglinton and ors., 1764, pursuer's proof.
 (69) S.R.D., GD 25/9/46/1, Ailsa MSS, Accounts 1757-58.
 (70) N.A.M., Cunninghame of Auchenharvie MSS, Misc., P. Warner v R.R. Cunninghame, State of the Conjoined Process, 1801.
 (71) N.A.M., Cunninghame of Auchenharvie MSS, Misc., Notes, State of Stevenston Colliery and Saltworks, 1808.
 (72) J. Sinclair (Sir), General Report of the Agricultural State, and Political Circumstances of Scotland (Edinburgh, 1814), Vol.11, p.300

of salt as a means by which landowners could use their coal was stressed in a lease between Sir John Kennedy of Culzean and John Goudie of Tradenock (sic) wherein the latter could not 'Quite the pann without Quitting of ye heugh also.' (73) Probably the first lessee of the Turnberry saltpan was Hush Hamilton, in 1709 or 1710, when he was given permission by the aforementioned John Kennedy to 'build ane salt pan' and a storehouse at the 'Maidenheid' of Turnberry. Hamilton was an Ayr merchant who was later joined in partnership with Patrick Young, a writer in Maybole (74) - underlining the point made about the considerable amounts of capital necessary to enter the salt panning industry. The rent of the joint coal and salt works in 1719 was the not insignificant sum of 500 merks Scots plus four boils of salt and four hundred loads of coal per annum.

The lessees of the joint coal and salt works of Stevenston/Saltcoats in 1720 was the English partnership led by Daniel Peck, who had formerly been the purchasing agent for the Company of Mine Adventurers of England. (75) His first partner was John Potter, the northern agent for the Proprietors of the Invention of Raising Water by Fire, who held the patent on Richard Savery's steam pumping invention and were thus the only persons in Britain legally entitled to erect steam engines. (76) The salt pans were not an unimportant consideration in the Englishmen's decision to lease the colliery in Ayrshire, and it was reckoned that with luck, the pans could cover the colliery rental costs, leaving them free to deal with their ongoing costs with the colliery profits.

In the 1750s the tacksmen of the Ardrossan salt pans were Samuel Mitchell and William Orr. Samuel Mitchell had settled in Saltcoats in 1740 to practise his shoemaking trade. As early as 1748 he had displayed an independent spirit by refusing to attend meetings of, or to pay money to the incorporated trades of the village which he considered were 'hurting' the public by 'augmenting their prices'. (77) After entering the salt industry he showed a degree of entrepreneurial initiative by applying to Susanna, Countess of Eglinton, for permission to sink new coal pits and enter the Irish coal trade. Previously Ardrossan coal had been used solely for the salt pans. Permission was granted, and Mitchell and Orr were soon sending 'considerable quantities' of coal to Ireland. As salt-masters they were not at all fortunate however and poor coal and flooding pits caused them to fail in 1758. (78)

(73) S.R.O., GD 25/8/6/976, Ailsa MSS, Tack, 1719, Salt Pans of Turnberry.

(74) S.R.O., GD 25/8/6/1876a, Ailsa MSS, Agreement between Sir John Kennedy of Culzean and others as to the Salt pans at Maidenhead of Turnberry, 1710.

(75) W.R. Scott, The Constitution and Finance of English, Scottish and Irish Joint Stock Companies to 1720 (Cambridge, 1910) Vol. II. p.451

(76) L.T.C. Rolt, Thomas Newcomen (Newton Abbot, 1963) p.75

(77) C.S.P., 46;50, Memorial for Ninian Crawford, 1760.

(78) C.S.P., 132;13, William Orr and ors. v the Earl of Eglinton and ors., 1764, pursuer's proof.

The variety of backgrounds of entrepreneurs in the salt industry were diverse. Apart from the merchants, lawyers, and others already mentioned, there was William Bone, a 'farmer in Mid Moncur', Hugh Currie, a smith, and several 'unknowns'. The two most notable Ayrshire saltmasters were undoubtedly John Taylor and Robert Reid Cunninghame. While the complex background and affairs of the latter deserve fuller attention, the examination of the background of John Taylor sheds light on an interesting but comparatively unusual facet of Ayrshire's industrialisation, namely the lack of active involvement among the legal profession. Most lawyers tended to play a more passive role, as investors, notably in the bank of Douglas, Heron and Company and the Cassillis Mining Company which was established around the same time.

John Taylor (d. 1810) had entered the legal profession in the 1760s when he had been apprenticed to Alexander Mackenzie, Writer to the Signet. He made fairly rapid progress and in 1775 was himself admitted to the Society of Writers. While in the service of Mackenzie he had involved himself in winding up the affairs of some of the creditors of the York Buildings Company. It is at this point that questions about the morality of Taylor's proceedings are raised. He claimed that he obtained £90,000 for the creditors of the Company, of which he was entitled to ten per cent, or £5,000. It was alleged however that he and a Thomas Lloyd embezzled £130,000 from the creditors, presumably under the cover of 'a thick and palpable dust' (79) which had been allowed to gather over the affairs of the Company, which had been formed in the earlier eighteenth century. (80) Whatever the truth of the matter, by 1785 Taylor had ended his connection with Mackenzie and in 1786 he had joined with the 'company of Edinburgh gentlemen' (a group of lawyers) who took over the Newton colliery, which had lain unused for four years. (81) Although the partnership was not itself a success, there is no doubt that Taylor's management, after he had been left by his partners, was a highly exciting period. Coal production at Newton, which had been around 1,200 tons per annum in the period 1786-1790, rose to 25,056 tons in 1808. (82)

Expansion of coal production obviously led to an increase in the quantities of unwanted coal raised. To burn the 'parwood', which had previously been little wanted in the Ayr district (83) Taylor and his sons (who had subsequently joined him) built saltpans, a brick and tile work, a lime kiln and a glauber salt work, all before 1810. (84) John

(79) C.S.P., 278;1, J. Taylor v A. Swinton, Petition and Complaint, John, William and George Taylor, 1812.

(80) See D. Murray, The York Buildings Company (1883)

(81) S.R.O., B 6/27/15, MSS Notes upon Newton upon Ayr, by the Rev. Dr. Peebles, 1800; S.R.O., B 6/27/1, Newton Council Minutes, 25 April 1787.

(82) S.R.O., B 6/27/3, Newton Council Minute Books, 23 November 1807, 25 February 1808 - the figure is based upon two winter quarterly returns.

(83) S.R.O., CS 271/46373, Bill Chamber Process, Trustees of Blackhouse Estate v John Beaumont, 1784, answers for John Beaumont.

(84) See the various Newton Council Minute Books deposited in the S.R.O.

Taylor had not limited his activities to Ayrshire, and on his death he was found to have had shares in various ventures throughout Scotland, including a four hundred pound stake in the Tulliallan coal and salt work on the Forth.(85)

Conclusion

The paper clearly shows that Ayrshire's salt industry holds a unique place in the development of the salt industry generally, certainly with regard to markets, where the county's experience was very different from both the Scottish east coast and the north east coast of England.(86) Although the industry was never a major employer of labour, as an important and identifiable contributor to the profitability of some of Ayrshire's seasale collieries, both large and small, it has so far been underestimated. Clearly, with regard to Ayrshire's important dairy industry it had an importance not previously indicated and thus deserves the fuller attention of the county's agricultural and economic historians. For the industrial archaeologist, unfortunately, few traces of the buildings remain, and the 'artificial collections of boulders' found on some beaches (87) provide the only physical monuments to Ayrshire's contribution to this widely dispersed and much neglected Scottish chemical industry.

(85) Ayr Advertiser, 21 December 1826

(86) Adams, *passim*; see also, P. Pilbin, 'A Geographical Analysis of the Sea-Salt Industry of North East England', Scottish Geographical Magazine, Vol.51, 1953 (Both these areas exported to the Continent, and the latter served the local fishing industry as well).

(87) J. Butt, The Industrial Archaeology of Scotland (Newton Abbot, 1967) p.135.

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NOTES ON RECORD OFFICES AND SURVEYS

The Scottish Film Archives

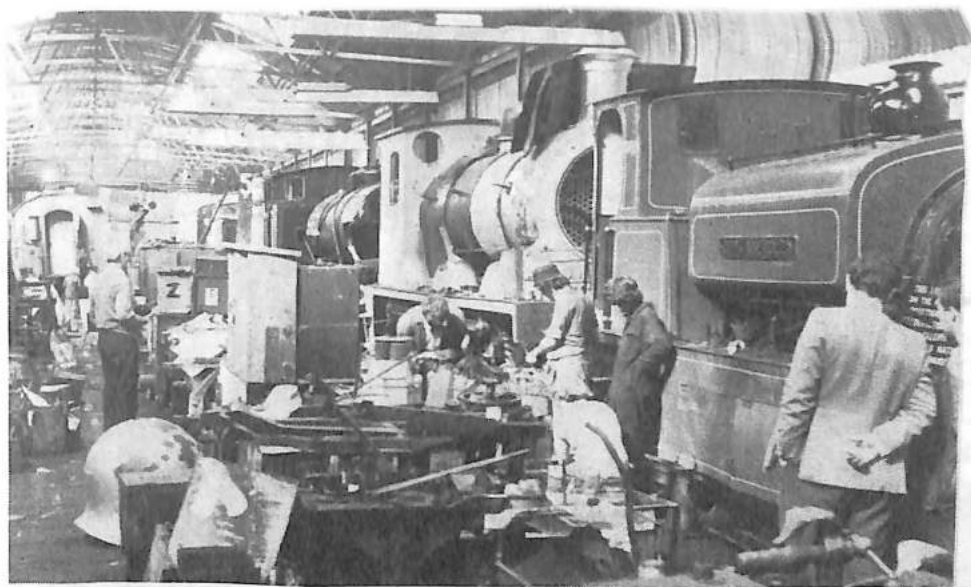
A new venture into film archives in Scotland began in November 1976 under the sponsorship of the Scottish Film Council and financed by the Job Creation Programme. A team of archive, technical and clerical staff was brought together to work on an amorphous and varied collection of films, largely unidentified, which had been acquired by the Film Council from different sources over the past few years. It soon became obvious that the Archive could not act effectively as a cataloguing unit alone and the fields of survey, acquisition and access were therefore added to that of preservation.

The collection already within the Archive is steadily being made available for research purposes as the films are viewed, 'shotlisted' and the information fed into an index system. There are still many thousands of feet to be viewed and the work will continue well into the year's operation. Certain physical problems prove difficult in cataloguing the content of a film and rendering it accessible. The problem of nitrate-based film stock involves a race against time to get the film copied onto safety stock before the image fades and the film record is lost forever. All nitrate material worth preservation within our archive collection is sent to the National Film Archive in London for copying and this necessarily means the withdrawal of that material from use until the NFA can cope with its work load and return a safety print for us to use. Film also varies widely in quality depending on its age, conditions of storage and general handling.

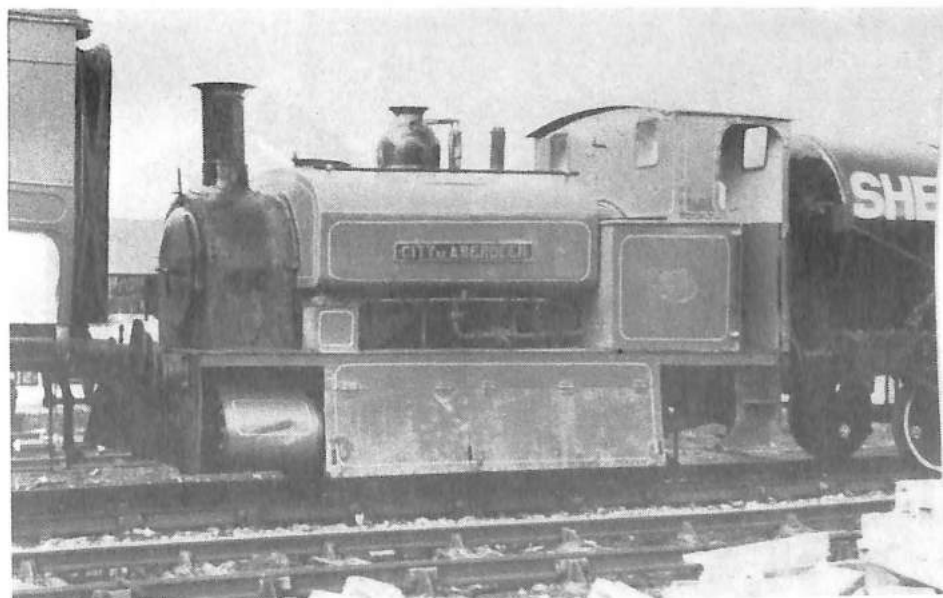
Survey and acquisition have still to gather momentum. At the time of writing, circulars were in preparation for distribution throughout the film industry, local institutions and trades organisations. Publicity has been extended nationwide through television and radio and it is hoped to prove fruitful. For the time being the deterioration factor of nitrate (i.e. pre-1950) film material necessitates a concentration in that field and from our appeals to the public and private sectors we hope to acquire potential archive film. Any footage, of any length or quality, will be welcomed and will be viewed with regard to possible preservation within the archive collection, if agreeable to the donor.

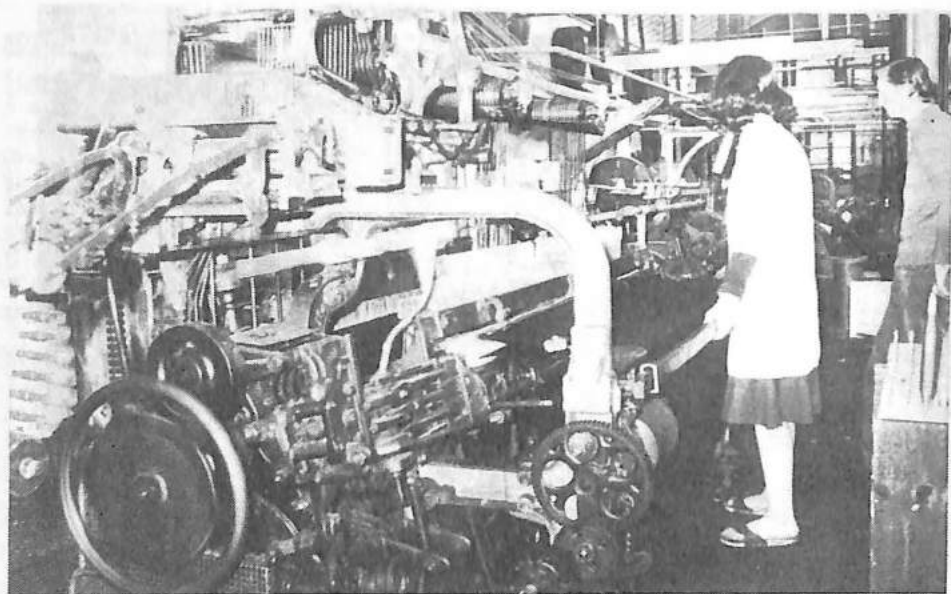
Access presents problems of a different kind. Unlike the Film Library, housed in the same building, archive film is not available for hire. Often an archive print is the only remaining copy in existence of the film may be in a delicate condition and would not stand up to the rigorous treatment of a projector. Archive material can be viewed on a special viewing table on the premises and if a researcher wishes to make use of any material in reproduction he must tackle the knotty problem of copyright. A considerable amount of material held on deposit is cleared for copyright, however, and can be utilised freely.

The nature of the material in the collection is extremely varied, both in content and quality. Ministry of Information (later Central Office of Information) productions and now dated educational films withdrawn from the Library catalogue form a large part of the deposits. Newsreels and documentaries comprise another major section with interesting footage of



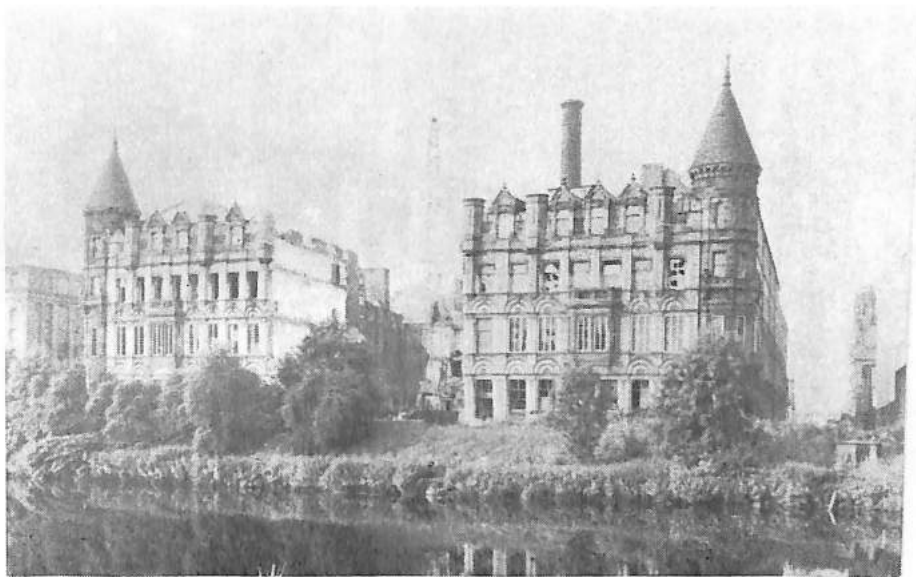
Above The Falkirk shed of the SRPS on 21 August, with Maude being prepared for steaming. Below The Black Hawthorn 0-4-0 saddle tank City of Aberdeen at Falkirk on 27 August 1977



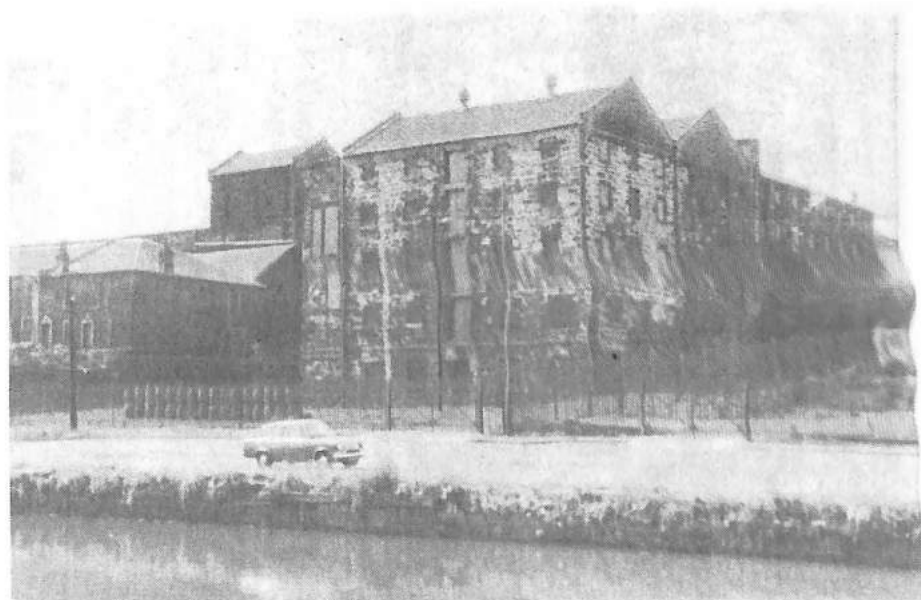


Above A power-loom at Glenruthven Mills, Auchterarder, photographed during the Newcomen Society Summer Meeting. Below Horse-engine house and threshing barn at Burmeston Farm, Little Glenshee. The Allen engine was housed in the horse-engine house



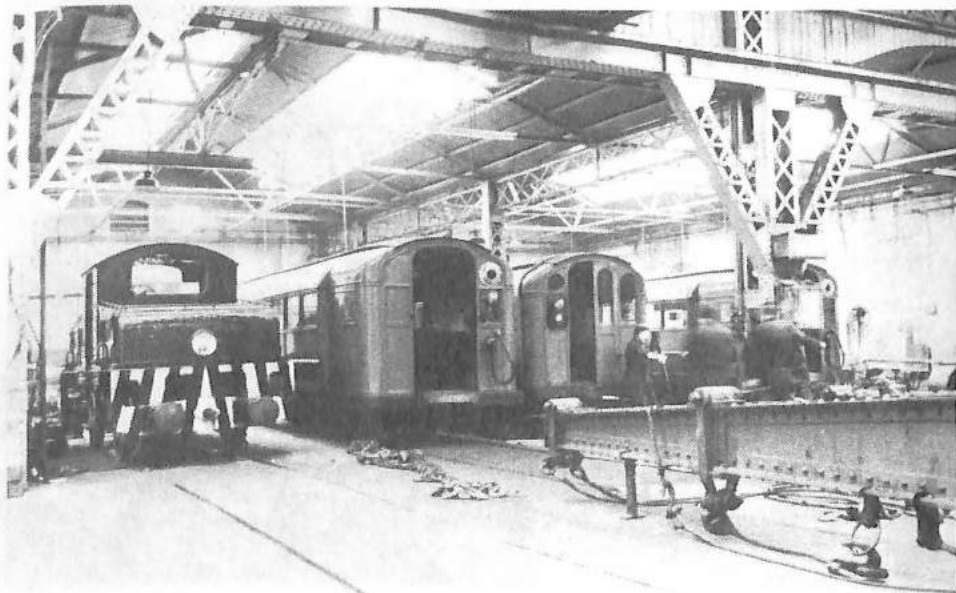


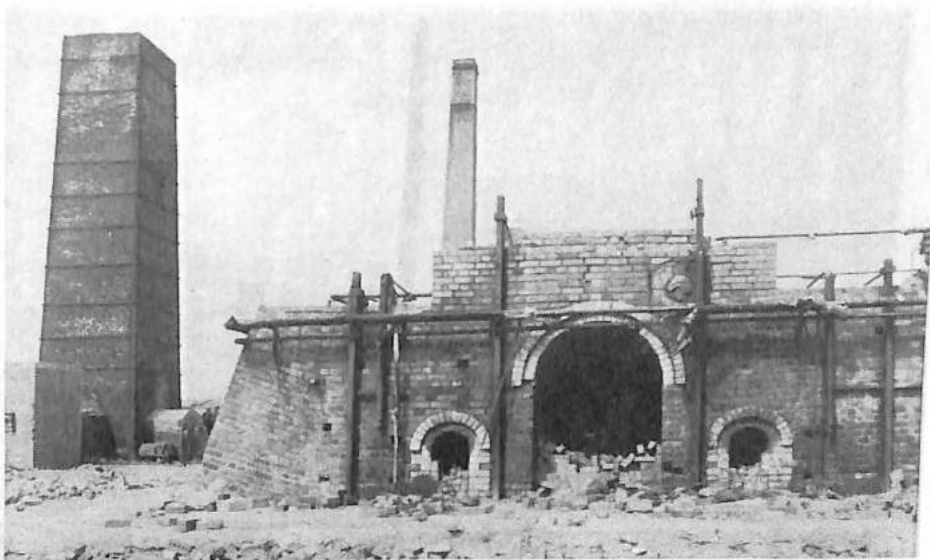
Above The United Cooperative Baking Society's McNeil Street bakery being demolished in August 1977. Below The Port Dundas Grain Mill in 1965, with the beam engine house on the left.



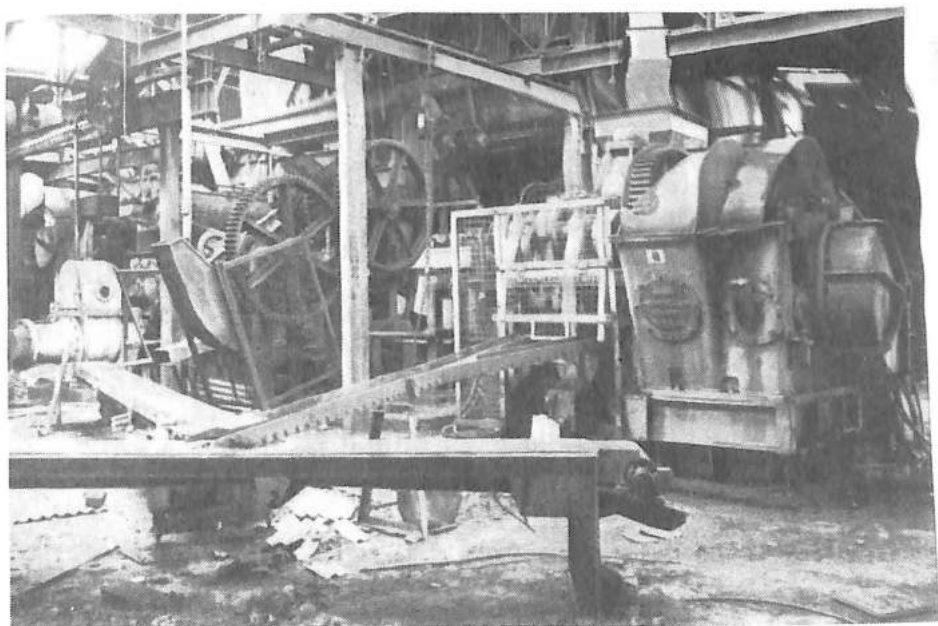


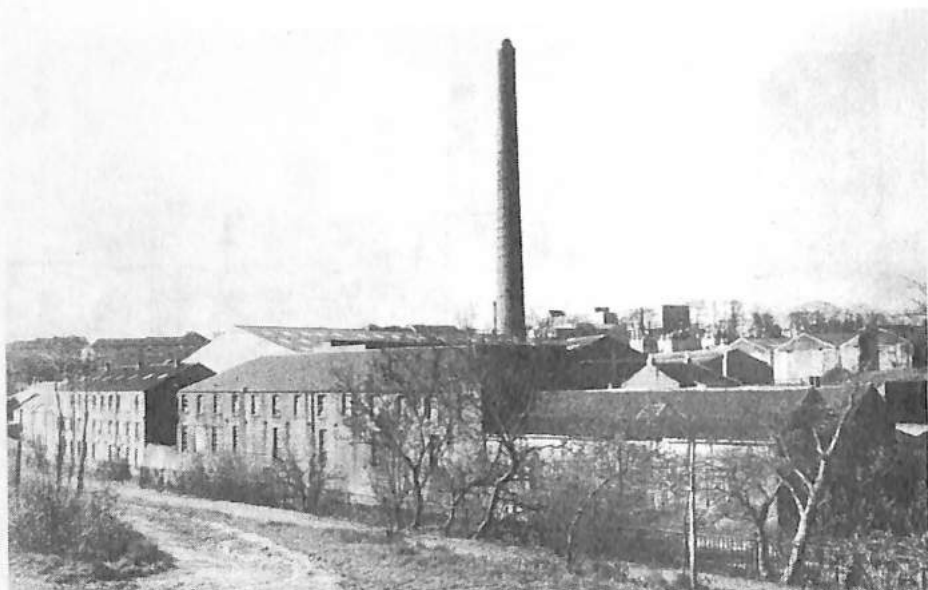
Above Barrhead Station, up platform building. The railway is at 'first floor' level. Below The Glasgow Underground car sheds at Govan, with the battery locomotive on the left, and the carriage-lifting gear on the right



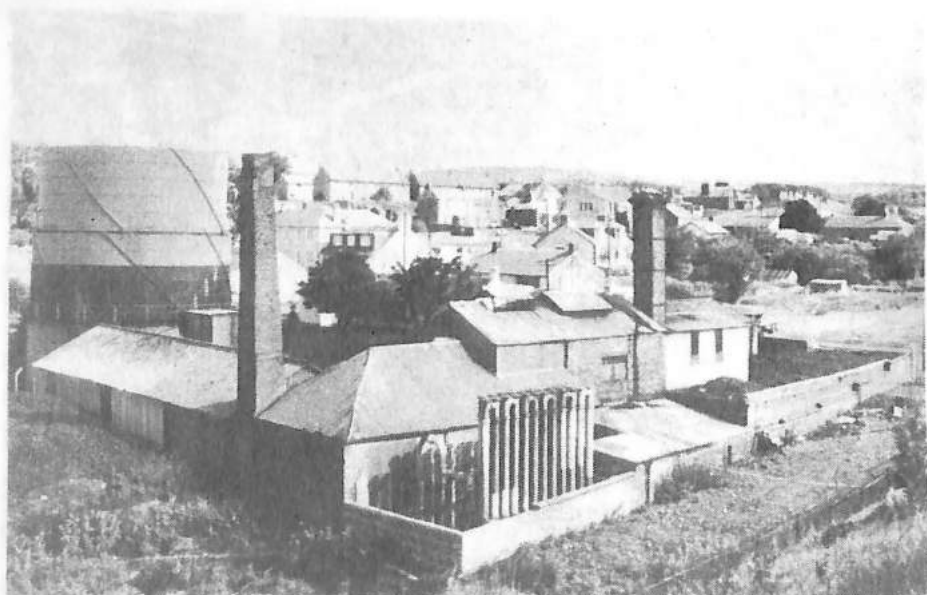


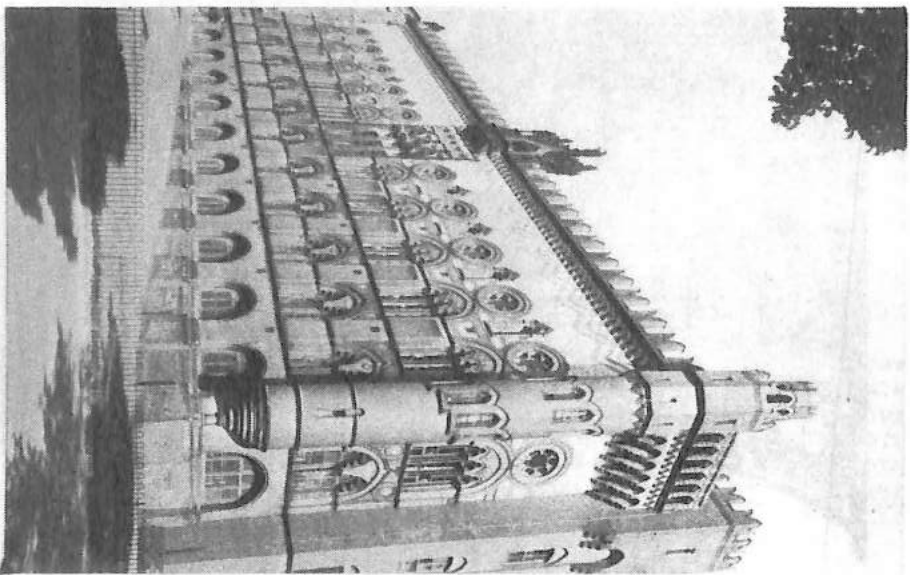
Above Part of downdraught kiln at Dewar & Finlay's Bargeddie Brick Works. Below Plastic-clay brick-making machines at Bargeddie. The one on the right was made by James Mitchell and Son at Cambuslang





Above Edward Collins & Sons' Kelvindale Paper Mill. The chimney has since been dropped. Below Muirkirk Gas Works, with the atmospheric condensers in the foreground





The 'Doge's Palace' at Templeton's Carpet
Factory, Glasgow



Charging a horizontal retort in Muirkirk
Gas Works, August 1977



Above Blair Atholl Mill after restoration. Below The renovated Kelvin Aqueduct on the Forth & Clyde Canal



field hospitals in Great War France, contemporary life, dress and sporting activities in the West of Scotland from 1910-1922 and early transport and commercial activities in the 1930s.

Amateur film can provide valuable historical documentation of events perhaps missed by official agencies. Some excellent amateur footage of the passing of the last tramcar in Edinburgh and Glasgow, with views of the earlier horse-drawn carriages and several instances of steam locomotives add to the value of the archive collection.

On the industrial and commercial front, a major deposit of film material from Upper Clyde Shipbuilders is stored among the archive film and several films have been deposited from individual firms such as Guest, Keen and Nettlefolds and Mavor and Coulson. Any material of this sort, however badly or poorly maintained would be a welcome addition to our industrial film record.

We are anxious to establish ourselves as a Scottish Film Archive and would be interested to hear from anyone who has or knows of any old film material. It is important that there should be some recognised 'home' for our filmed past before much of it is lost forever. It is for this reason that we attach primary importance to ensuring the preservation of that film material which still exists or at least of knowing where to look for it.

The Archive is housed in the Scottish Film Council, 16-17 Woodside Terrace, Glasgow G3 7XN, telephone number 332-9988 Ext. 241, and we would welcome any enquiries about the collection.

Janet McBain

Film Archive Material

Film material on deposit with the Scottish Film Council's Archive can be viewed on the premises by prior arrangement. In addition to the films listed below, there is film coverage of early transport and trams in Edinburgh and Glasgow, general educational tours of Scotland and her agriculture and industry, and the U.C.S. film collection, mostly launches and tank trials (still to be 'shotlisted' in detail).

General Industrial and Agricultural Film

1. Upstream - Salmon fishing industry on the coast. 1932. (Produced by John Grierson)
2. Port of Glasgow - General activities of a commercial port. 1936
3. Launch of Queen Mary - From launch to completion. 1936
4. The Crofters - Picture of life in a Sutherland crofting community. 1944.
5. Western Isles - Life in wartime Harris. c.1945
6. Work Simplification Applied to Clerical Operation. 1946
7. Report on Industrial Scotland. 1948
8. Glasgow - Our City - Sections on industry. 1949
9. New Lease of Life - Industrial Rehabilitation
10. History of the Tailor and Garment Workers Union - Dramatised historical account of the development of sweated industry and organised labour.

Film Made And/Or Sponsored by Particular Industrial Concerns

1. One Hundred Years of Family Business - Shaw McInnes. 1966
2. Clyde Fittings - Clyde Tube Forgings
3. Hessian Loom and Cop Loader. Urquhart, Lindsay, Robertson Orchar
Ltd., Blackness Foundry, Dundee
4. Mayor & Coulson Ltd. - Four films covering general activities of the
"firm, and specific machinery produced for mining in the 1950s.
5. Modern Mechanical Loading of Coal
6. Growth of an Industry. National Cash Register Co., Dundee. c.1953
7. The Story of the Rootes Group and the new Hillman Imp. c.1963
8. Steel Production by Modern Methods. Guest, Keen & Nettlefolds Ltd.
9. Hugh Smith Machine Tools - Technical film
10. Making of the Holy Bible. Collins Ltd. Hand processes employed in
binding and gilding. c.1950
11. Tersons Construction Co. 1958 (Incomplete)
12. Black & Decker Ltd. (Incomplete)
13. Subsidence. Cementation Co. Ltd.
14. The Construction of the King George V Bridge, Glasgow, 1924-27.
Melville, Dundas & Whitson Ltd.
15. World of Steel. Produced by Colvilles Ltd. for the 1938 Empire
Exhibition. Shots of manufacture processes and shop floors in
Colvilles' works at Motherwell and Glengarnock, and at the
Lanarkshire Steel Co. Ltd., Steel Co. of Scotland Ltd., Smith &
McLean Ltd. and Clyde Alloy Steel Co. Ltd. works.
16. Steel and Engineering. Wm. Beardmore & Co. Ltd.

Shipbuilding Records Survey

Mr. Hugh Lyon has resigned as Research Officer from the end of June 1977 and a new Officer will be appointed from 1 October to complete the survey during the next twelve months. Although a great deal remains to be done, it is hoped that the survey can be completed in the time available. The list of the records of the Shipbuilders and Repairers National Association has now been completed. The collection, which includes the papers of the Shipbuilding Corporation (formerly National Shipbuilders Security Ltd.) is to be deposited with the Manuscript Department at the National Maritime Museum.

Sir Denis Brogan Centre for Research in American History, University of Glasgow

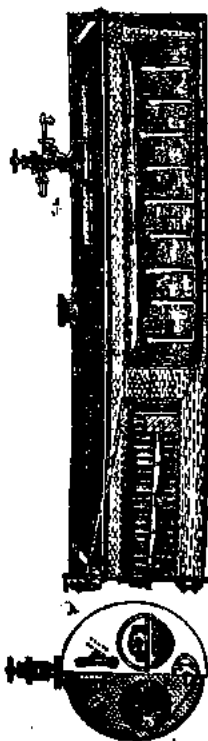
The holdings of the Scottish University and major reference libraries constitute an important body of source material for the study of the history of the United States. 'Research aids, periodicals and government documents for the study of U.S. history in Scottish Libraries' compiled by David S. Cross is a systematic listing of printed material relating to this subject and held by the eight Scottish Universities; the National Library, Edinburgh; and the Mitchell Library, Glasgow. The entries, totalling over 1300 in number, are divided into three sections:

- (1) Research aids and bibliographies; including guides to source material in libraries and archives, guides to dissertations, and

subject bibliographies in American history.

- (2) Periodicals; including American newspapers held in Scotland.
- (3) Federal, state and colonial documents; including the first published listing of the federal documents held by the Mitchell Library, an important collection especially strong for the period 1900-1930.

Each section is sub-divided by subject, period or issuing body as appropriate, and the individual entries include the location and relevant bibliographical details. Professor W.R. Brock, Director of the Centre and Professor of Modern History in the University of Glasgow, has written the preface for what should be an invaluable guide for scholars working in this field. The bibliography costs £1.25, including postage, and is available from the Centre.



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CALEDONIAN IRON WORKS,
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GLASGOW.

SUMMARY LISTS OF RECENT ARCHIVES, SURVEYS AND DEPOSITS1. NATIONAL REGISTER OF ARCHIVES (SCOTLAND)

Surveys completed by the Registrations since the publication of Scottish Industrial History Vol. 1 No.2 Full details are available in the Survey List whose NRA(S) number is indicated. All communications regarding these should be addressed to:-

The Secretary,
National Register of Archives (Scotland),
P.O. Box 36,
H.M. General Register House,
Edinburgh EH1 3YY.

MANUFACTURING : PAPER

14400 THE DONSIDER PAPER CO. LTD., ABERDEEN

Directors minutes 1893-1963
Accounting records 1893-1965
Correspondence 1931-34
Valuation and plan 1914

MANUFACTURING : TEXTILES

422 Wm. HALEY AND SONS, JUTE AND FLAXSPINNERS, DUNDEE

(addit.) Notes on history of firm
Drawings 1860-1950

1444 J. AND J. CROMBIE LTD., WOOLLEN MANUFACTURERS, ABERDEEN

Directors minutes 1883-1932
Accounts 1829-1925
Letter books 1870-1932
Memoranda 1866-1958
Cuttings 1924-55
Plans 1785, 1816-17.

MANUFACTURING : TIMBER PRODUCTS

1406 ADAM WILSON AND SONS, LTD., AYR.

Alexanders Sawmills Ltd., Ayr.
Receipt and accounts 1868-76
Press cuttings 1960, 1974, 1976
Photographs 1912, 1974.

MANUFACTURING : WHISKY

1443 JOHN DEWAR AND SONS LTD., WHISKY DISTILLERS AND BLENDERS, PERTH.

Directors minutes 1897-date
Share register 1897-1957
Accounts 1880-1974
Cuttings and photographs 1897-date
Leases agreements etc. 1881-date
Architects drawings 1893-1959

TRANSPORT : RAILWAYS

- 1275 DUKE OF BUCCLEUCH, DRUMLANRIG.
 (addit.) Papers re railways
 North British
 Dumfries and Hawick
 Carlisle and Hawick
 Great Central
 Border Counties 1829-1854

TRANSPORT : ROADS

- 1407 CUNNINGHAME DISTRICT LIBRARY, SALTCOATS
 Alexander Wood Collection
 Miscellanea re turnpike roads

TRANSPORT : SHIPPING

- 1447 RICHARD IRVIN AND SONS LTD., ABERDEEN
 Ships Stores and Repairing Co. Ltd.,
 Minutes 1920-43

TRADE : MARKETS

- 1439 HAY AND CO. LTD., LIVESTOCK AUCTIONEERS, PERTH.
 Stock ledgers 1896-1900, 1909-date
 Abstracts of sales 1938-72
 Roup rolls 1937-1969
 Railway transport ledger 1939-63
 Feed books 1941-71
 Press cuttings 1919-date

TRADE : WHOLESALERS AND RETAILERS

- 1406 ADAM WILSON AND SONS LTD., TIMBER MERCHANTS, AYR.
 Matthew Wright and Nephew, timber merchants, Irvine.
 Accounting records 1841-1912
 Correspondence 1862-1888
- 1436 ESSLEMONT AND MACINTOSH LTD., RETAIL AND WHOLESALE DRAPERS ,
 ABERDEEN
 Director's minutes 1919-date
 Accounting records 1874-1958
- 1457 ELLIS AND McHARDY LTD., SOLID FUEL DISTRIBUTORS., ABERDEEN.
 Minutes 1928-49
 Fraserburgh Commercial Co. Ltd., Minutes 1883-1974
 The North of Scotland Coaling Co. Ltd., Minutes 1932-75

BANKING

- 1461 ORKNEY ISLANDS COUNCIL
 John Elphinstone-Fyffe Collection including Papers of Captain
 John Baikie, R.N., land waiter and banker 1688-1944

INSURANCE

1329 EPISCOPAL CHURCH IN SCOTLAND

Papers re founding of Friendly Society 1794

1448 THE NORTHERN ASSURANCE CO. LTD., ABERDEEN

Minutes 1836-1949

Correspondence and finance papers 1824-73

Reports 1850-1935

Press cuttings 1865-1962

also minutes etc. of

Scottish Metropolitan Assurance Co. Ltd., 1879-1933

The Welsh Insurance Corporation Ltd., 1900-11

London and Scottish Life Assurance Co. Ltd., 1920-33

London and Lancashire Life Assurance Co. Ltd., 1862-1920

The Provident Clerks and General Guarantee Association Ltd., 1865-1913

The Provident Clerks and General Accident Insurance Co. Ltd., 1876-1925

The White Cross Insurance Association Ltd., 1914-25

The Scottish Freemasons Life Association 1844-50

The Bon Accord Life etc. Co. 1845-49

Forfarshire and Perthshire Fire Insurance Co., 1854

AGRICULTURE : ESTATES

1463 SIR Wm. LITHGOW, Bt., BALLINDEAN ESTATE, PERTHSHIRE

Titles 1743-1918

Rentals 1819-1828

Vouchers and correspondence 1800-1968

AGRICULTURE : IMPROVEMENTS

1071 McCASH AND HUNTER, SOLICITORS, PERTH.

(addit.) Pow of Inchaffray Drainage Commissioners

Minutes 1845-date

Plans 1847

1275 DUKE OF BUCCLEUCH, DRUMLANRIG

Papers re Lochar Moss Improvements 1754, 1840-3

FISHING

1275 DUKE OF BUCCLEUCH, DRUMLANRIG

(addit.) Papers re fishings 1792-1871

1447 RICHARD IRVIN AND SONS LTD., TRAWLER OWNERS AND FISH SALESMEN, ABERDEEN

Directors minutes 1907-56

Balance sheets 1908-24

Photographs 1890-date

2. STRATHCLYDE REGIONAL ARCHIVE

The following business, industrial and commercial records have been

received since the appearance of Volume 1, No.1. Applications for access should be made to the Principal Archivist, Strathclyde Regional Archives, P.O. Box 27, City Chambers, Glasgow, or, if calling, at 30 John Street (basement).

EXTRACTIVE INDUSTRY : COLLIERIES, IRONMINES, ETC.

WILLIAM ARMSTRONG & SON, MINING CONSULTANTS

Xerox copies of this Newcastle-upon-Tyne firm's reports on Scottish mines and industrial plant in the Strathclyde Region, 1848-1890, including Blochairn Ironworks, 1873, Dalmellington Ironworks, 1877, Dundyvan Ironworks in Coatbridge, 1848, the Monkland Iron & Steel Co.'s mineral fields, 1860/1, and Tannochside and Monkland Minerals, 1890. The originals of these records are in the Northumberland County Record Office.

MANUFACTURING : METALLURGY

CALDER IRONWORKS, Old Monkland

Letter book (of Company Secretary?), 1821-1824
Microfilm supplied by Dr. G. Thomson, Airdrie.

MANUFACTURING : ENGINEERING

GEORGE RUSSELL & CO. Engineers, Motherwell

Order books, stock books, and mainly a very large series of plans of cranes of all types built, c.1860-1950 (uncatalogued)

MANUFACTURING : SHIPBUILDING

GRAHAM E. LANGMUIR COLLECTION

Original shipbuilders drawings from Messrs. A. & J. Inglis, D. and W. Henderson, and other yards relating exclusively to Clyde paddle-steamers.

Includes the rigging plans, or profiles, of Mountaineer, 1852, Brodick Castle, 1878, Dandie Dinmont (1), 1881, Mag Merrilees, 1881, Grenadier, 1884, Waverley, 1885, Lucy Ashton, 1888, Neptune, Mercury and Glen Sannox, 1892, Minerva, 1893, and Dandie Dinmont (2), 1911.

A. & J. INGLIS, Shipbuilders, Pointhouse, (additional)

Photograph Album of Yacht Safa-el-Bar built for the Khedive of Egypt, 1894.

MANUFACTURING : PAPER

R. & W. WATSON, papermakers, Paisley

Minutes of executive committee, 1938-9; notes on Board meeting, 1929; trial balance, 1947; plans of plant and estimates for repairs after fire, 1968 volumes of cuttings, prints, samples, 1948-1971; photographs of plant, and machinery, 20th century.
'Mr. Wilson's Story, 1933-65'.

SERVICE INDUSTRY : PHOTOGRAPHERSW. RALSTON LTD., Glasgow

A complete index of the negatives (approximately 27,000) in this collection has been prepared recently under the Job Creation Scheme.

INSURANCE

NORTH BRITISH AND MERCANTILE INSURANCE CO., Glasgow, and associated firms including Aberdeen Fire and Life Assurance Co., Fine Arts and General Insurance Co., Glasgow Rate and Salvage Association, N.B. Insurance Co., Royal Scottish Insurance Co., Scottish Provincial Assurance Co., Universal Life Assurance Co., Western Fire Insurance Co., 1809-1960.

Previously held at the Mitchell Library, Glasgow; deposited by the Commerical Union Assurance Co., Glasgow.

SOLICITORS

R. & J.M. HILL, BROWN & CO., Solicitors, Glasgow (additional)
Sederunt books of Glasgow and West of Scotland executors and testamentary trusts (344 vols.) 1820-1947, including James Thomson of J. & G. Thomson; shipbuilders, James Reid Stewart, Ironmaster, and other prominent businessmen; minute books and other records of Hurler and Campsie Heritable Assets Co., 1857-1934.

TRADE : MERCHANTSDREGHORN MANSION PAPERS, Clyde Street, Glasgow

These records rescued from the roof-space of the Dreghorn Mansion (c.1720) demolished in May 1977, do not appear to derive from the Dreghorn family. They consist of the accounts, invoices, receipts and correspondence of William Miller, Grocer, Saltmarket, and cover grain sales, cloth, pottery, whisky and some imports and shipping records. Very fragile, they are undergoing lamination prior to listing, c.1770-1820. Also refers to James Laurie, Merchant and Shipowner, 1807-8; John McConnell, hardware merchant, 1809-14; McFarlane, Marshall & Co., 1779-80; Robert McLintock, earthenware dealer, 1762-4; Napier & Co., 1803.

WILLIAM DOBIE PAPERS

This collection of commercial records was purchased at an Ayr saleroom by Mr. W. Lind and deposited in the archives. It consists of merchant's accounts and correspondence, particularly with a wide range of Glasgow tradesmen, 1813-1884.

NICOLL AND HALLIDAY, Auctioneers, Argyle Street, Glasgow

Inventories and valuations, 1925-1954; pawnbroking registers, 1948-1973; ledgers, etc. (uncatalogued).

TRANSPORT : PORT AUTHORITIESCLYDE PORT AUTHORITY (Additional)

Technical Services Department (Engineers)

Plans, photographs, reports, etc., relating to navigation improvement and harbour facilities in the Firth of Clyde and Glasgow Harbour, 1755-1966.

GREENOCK HARBOUR TRUST

Minute books, 1801-1905; parliamentary papers, 19-20 cent; abstracts of accounts, 1835-1950 (part of town of Greenock abstracts to 1904); ledgers, 1827-1959; accounts, 19-20 cent; letter books, 1894-1955; plans, correspondence.

ARDROSSAN HARBOUR CO.,

Minutes of directors, 1886-1931; shareholders' records 1887-1955; rentals, 1906-21; accounts, 1887-1966; imports and exports, 1922-1949; miscellaneous, 1891-1966 including arrivals and sailings, 1950-1966.

UNDERTAKERS

WILLIAM WALLACE LTD., Undertakers, Hamilton
Ledgers, 1928-1952.

3. UNIVERSITY OF GLASGOW

UPPER CLYDE SHIPBUILDERS (UCS 3+4)

LINTHOUSE DIVISION

Records deriving from the Linthouse Division of Upper Clyde Shipbuilders, formerly Alexander Stephen & Sons. The firm originated in 1750 and moved to Glasgow in 1851. Its shipbuilding interests were transferred to Upper Clyde Shipbuilders in 1968 although the firm itself continued in business as ship repairers and marine engineers. Before the formation of Upper Clyde Shipbuilders a substantial quantity of the firm's administrative and commercial records had been deposited with the Department of Economic History, University of Glasgow, and drawings, mostly of ships up to no.600, with the National Maritime Museum, Greenwich. In 1965 Alexander Stephen & Sons acquired the business of Simons-Lobnitz Ltd., some of whose records are listed under UCS 4. Histories of Alexander Stephen & Sons were published in 1932 (A Shipbuilding History) and 1950 (J.L. Carvel, Stephen of Linthouse); copies of these are included in this collection.

Lists of ships built (chronological and alphabetical), 1825-c.1968.

Board papers, reports, etc., including minutes of meetings; reports and returns; information on policy, planning, profitability, publicity, labour, wages, industrial relations, training, superannuation and directors' appointments, shareholdings and fees etc.; cost control; acquisition of subsidiary companies; yard alterations; subscriptions and charitable donations; constitution, minutes of meetings and accounts of recreation club; history of firm, papers on Geddes Committee of Inquiry into shipbuilding industry including

submissions about proposed mergers, statistics and appraisal of production and technical resources; Upper Clyde Shipbuilders' negotiations, formation and structure; acquisition of Simons-Lobnitz Ltd., reports, returns, memoranda and circulars of Ship building Conference, Clyde Shipbuilders' Association and other trade organisations, 1917-1969.
 General correspondence files, mainly with Admiralty concerning shipyard extensions and contracts, and with London office, 1914-66.
 Balance sheets, reports and accounts, 1901-67.
 Accounting records (ledgers, etc.), 1848-1951.
 Valuation books (engine and boiler shop machinery and tools), 1932-48.
 Enquiries, estimates and tenders files, 1916-68.
 Estimate books, 1906-42.
 Technical data on turbines, engines, gears, drilling equipment and ship design, etc., 1862-1963.
 Specifications: ships nos. 42-407, 1862-1905.
 Specification books: Stephen-built vessels, ships nos. 342-644, 1892-1952.
 Specification books: vessels built by other shipyards, c.1940-c.1952.
 Ship files, containing contracts, specifications, notes of meetings, certificates, correspondence with owners, Lloyds, Ministry of Transport and sub-contractors, and papers on financial arrangements, costs, insurance, progress and technical matters, ships nos. 454-697, c.1911-68.
 Ship plans, ships nos. 180-697, with gaps, 1883-1968.
 Engine drawings, contracts nos. 453-635, c.1913-50.
 Photographs (negatives): ships nos. 547-698, 1936-68, 1670 negatives: yard, machinery and personnel, etc., c.1943-54.
 Photographs (prints): ships nos. 507-689, 1926-68, 2294 prints; yard, machinery and personnel, etc., undated.
 Particulars of vessels and historical notes, including names, tonnage, freeboard, capacities, displacements, accommodation, weights, launching particulars, trials data, and histories of firm, 1750-1968.
Linthouse Works Magazine, 1919-31, and Linthouse News, 1947-67.
 Material and wages cost books for individual vessels, 1912-66.
 Engine Works job books, 1897-1970
 Engine cost books, c.1929-63.
 Miscellaneous cost records, including analyses and summaries, cost controls and special expenditure, 1881-1968.
 Labour employed in yard, including abstracts of numbers of men and trades employed on various contracts, deployment of labour, charts, and manhour returns, 1927-68.
 Wages books (joiners and boilermakers), 1865.
 Engine Drawing Office copying books, 1902-65.
 Catalogues of standard items, undated.
 Boat books (lifeboats and lifesaving appliance specifications), 1923-64
 Offset books, 1929-50.
 Requisition etc. books, 1934-67.
 Spar books, 1906-47.
 Timber books, 1908-66.
 Launch books (launch particulars) c.1890-1963.

Engine particulars (machinery installations, results of experiments, and estimated, launching and finished weights), 1923-c.1965.
 Trials data and reports, etc., 1885-1936.
 Voyage reports and log abstracts, 1889-1954.
 Lists of spares, tools, etc. (engines), c.1960-62.
 Boiler particulars, 1887-1940.
 Ships' insurances, c.1820-c.1951.
 National and international rules and regulations, 1896-1946.
 Diaries, notebooks and correspondence of the Stephen Family (business and personal affairs), 1813-1946.

SIMONS-LOBNITZ

The firm of Simons-Lobnitz was formed in 1957 by amalgamation of William Simons & Co. and Lobnitz & Co. From 1959 it was a wholly owned subsidiary of G. & J. Weir Holdings Ltd., Glasgow, but in 1964 the yards at Renfrew were closed and the good will of the company passed to Alexander Stephen & Sons (UCS.3). Other records of William Simons & Co. and Lobnitz & Co. were deposited some years ago with the Department of Economic History, University of Glasgow.

List of vessels constructed, William Simons & Co. (chronological and alphabetical), 1810-1961.

List of vessels constructed, Lobnitz & Co. (chronological and alphabetical), 1848-c.1964.

Minute books, 1890-1957.

Share transfers, etc. (applications and allotments), 1900-60.

Ledgers, 1895-1960.

Financial papers, including Lobnitz and Simons-Lobnitz balance sheets, taxation returns, valuations, sales of fixed assets and amalgamation memoranda, 1873-1967.

Board and administrative papers, including articles of association, minutes of meetings and reports, Simons-Lobnitz merger, acquisition by Alexander Stephen & Sons, administrative memoranda, superannuation, insurance, service agreements, yard alterations, sales, subsidiary companies, and lists of vessels built, 1887-1968. 100 folers. (5)

Estimates and enquiries working papers, 1957-64.

Apprentices' time books, 1907-33.

Wages and salary records, 1930-63.

Contract books, etc., 1899-1965.

Cost books, c.1890-1961.

Miscellaneous volumes: insurance register, register of imported material, 1934-63.

Photographs (negatives): William Simons & Co., ships nos. 726-812, 1939-61.

Photographs (negatives): Lobnitz & Co., ships nos. 27-1177, 1859-c.1963.

Photographs (negatives): William Simons & Co., machinery, etc. c.1950-60.

Photographs (negatives): Simons & Lobnitz, yard, etc., c.1943-60.

Photographs (prints): William Simons & Co., ships nos. 243 and 696, 1889-1930.

Photographs (prints): Lobnitz & Co., ships nos. 707-1168, 1911-c.1963.

SOCIETY NOTESBusiness Archives Council of ScotlandAppointment of Surveyor

As most members are aware, the Council decided to investigate the possibility of appointing its own surveyor to fill the vacuum left by the cessation of Treasury grants-in-aid to the Universities of Aberdeen, Dundee and Glasgow.

At the outset it was decided that such an appointment was only likely to be effective if it could be sustained for a period of three years. The cost of operating the survey was estimated to be £4,000 in each year, making a total of £12,000 to be found to cover the three year period.

The Council set about raising this sum towards the end of 1975 by contacting all of the well known trusts, only to find that their objects were not in sympathy with the project and no money was raised from this quarter. The Committee of Scottish Clearing Bankers, on the other hand, did agree to give support by contributing £1,000 to the project.

In spite of the depressing financial climate at the time, an appeal for Treasury support was made to Dr. John Imrie, Keeper of the Records of Scotland. This resulted in the offer of a grant-in-aid of £2,000 a year for the three years on the understanding that the Council raise a similar amount each year to meet its half of the costs. At the same time the Council made substantial increases in the subscription fees paid by its members.

Further appeals were made to the Merchants House of Glasgow and the Trades House of Glasgow resulting in two donations amounting to £350. A similar exercise directed towards business in Scotland has yielded a further £1,200 to date with some decisions still pending. Having raised these sums an Executive Committee meeting was held on 9th September and the decision to appoint a surveyor made.

Although the Council has now raised somewhat over half of the sum required to match the grant-in-aid to be provided by the Treasury, there will still be an uphill battle to provide the balance. It is therefore up to the members of the Council to recruit into their ranks as many new members as they can. At the same time, we must persuade business men and others to make further donations towards the cost of the project. Gifts of such a nature, however, small, will be most welcome.

Scottish Society for the Preservation of Historical Machinery

The SSPHM was represented at the Scottish Railway Preservation Society's Open Weekend of 27-28 August by Bill Mackie with three of the Society's steam engines, the Bow, McLachlan launch engine, the Moffat Gas Works Bryan Donkin exhaust engine, and the Tangye vertical engine from Laphroaig Distillery. These were steamed from Caley O-4-4T 419. The SSPHM also had a presence at the Newcomen Society summer meeting in the shape of a small exhibition mounted by Peter Swinbank and Sylvia Clark,

which attracted much attention. The Society is planning a series of lectures over the winter, of which members have already been notified (see under Forthcoming Events for details).

The Craig & Donald bending rolls from John Inshaw Ltd. and the Harvey long-bed lathe from Port Glasgow (see SIH 1.2) have been moved to East Kilbride. Another recent acquisition is a hydraulic organ motor from Queen's Cross Church, Glasgow (unfortunately not designed by Charles Rennie Mackintosh). A small paraffin engine made by Allan Brothers of Aberdeen at Burmieston Farm, Little Glenshee, Perthshire has also been acquired but not yet moved. The engine dates from before 1923, and has a bore of 6-3/4" and a stroke of about 12". There are double 39" diameter flywheels, a hit-and-miss governor and hot bulb ignition. The engine is housed in a former horse-wheel house. The framing for the horse-wheel still survives. There is a threshing mill in the adjoining barn, made by an Auchterarder firm.

Scottish Society for Industrial Archaeology

The Society's usual Autumn Conference was held in Motherwell Technical College on Saturday, 29th October 1977. Speakers were David Maguire (on Lanarkshire Mining), Dr. T.R. Craig (the development of the iron and steel industry), R.M. Allison, (the progress of the steel industry under nationalisation), T.B. Stewart (coachbuilding and vehicle construction), A.B. Burton (mining machinery - the contribution of Motherwell) and H. Porter (structural engineering - *Motherwell and the World*). An amazingly comprehensive exhibition of photographs, drawings, documents, models and other artefacts was put on for the conference. An edited version will be on display in Motherwell Public Library during the second and third weeks of January.

NEWS FROM OTHER ORGANISATIONS

The Scottish Railway Preservation Society has achieved a long-standing ambition by steaming ex-North British Railway 0-6-0 Maude after a thorough overhaul by members. The overhaul included construction of a completely new tender tank. The first public appearance of Maude was at the open weekend on 27-28 August, when visitors were also able to view the Society's most recent acquisitions, a Gresley ex-LNER Buffet car (secured with the aid of a grant from the Scottish Tourist Board) and Black, Hawthorn 0-4-0 saddle tank City of Aberdeen of 1887, from Aberdeen Gas Works, presented by the Scottish Gas Board. Another attraction was newly-repainted Wemyss Private Railway No.20, restored to full WPR brown livery, with elaborate lining out. The Society has had a very successful rail-tour season.

New Lanark Conservation and Civic Trust can report much progress in the restoration of the village. The first phase of the restorer-purchaser scheme for Braxfield Row is nearing completion and the second phase has been approved. Job creation squads have gutted the interior of New Buildings, have removed excess mortar from the masonry joints, and have done some masonry repairs, all preparatory to modernisation of the interior of this block. Another Job Creation Scheme has involved the reconditioning of the Dyeworks/Foundry, and the cleaning up of the surrounding area. A third project is the reconditioning of the shells of houses in Long Row as a preliminary to another restorer-purchaser scheme. The Department of the Environment has re-erected the roof trusses on the damaged part of the School after consolidation of the masonry of the wall-head. After years when no progress was apparent at New Lanark it is most encouraging to see so much done and doing.

Newsletter No.4 of the Conservation and Civic Trust reproduces the text of a letter discovered in New Buildings during interior work. Written by John B. Winning from Philadelphia in August 1835 to his parents in New Lanark, it contains interesting comments on slavery. There is one item of particular interest to historians of engineering. 'Robert has got back again to us and is working for a Mr. Baldwin at Locomotion Engineers for 8 dollars per week'. Mr. Baldwin was, of course, Matthias Baldwin, founder of the greatest American steam-locomotive-building firm, who had started making locomotives in Philadelphia in 1832. Apparently he had 'few competent mechanics and fewer suitable tools'. If Robert was a New Lanark-trained mechanic he would have been very welcome.

The Linlithgow Union Canal Society celebrated the opening of its canal museum at the basin, Linlithgow with horse-hauled and outboard-motor propelled barge trips on the canal. The very attractive little museum was opened, in the absence of the Marquess of Linlithgow, by Tam Dalzell, the local M.P., on 18 June.

The Biggar Museum Trust reports substantial progress with the re-erecting Greenhill farmhouse. Preparations for the furnishing of the interior are well under way. A 1938 Albion tipper lorry has been recovered from Milnathort and is being restored. Work on the gas works is continuing. James Farr's narrow-gauge locomotive from Granton Gas Works, purchased by

the Royal Scottish Museum, has been moved to the works.

Wanlockhead Museum Trust : Library Restoration Scheme

Wanlockhead Museum Trust which was founded in 1974 to create a museum of the Scottish lead mining industry has been described in the first issue of this journal and it is the aim of this short article to describe only one aspect of its work, the restoration of Wanlockhead's Miners' Library.

The library was founded in 1756, apparently by the mine management rather than by the miners themselves, but it was operated successfully by the latter over a period of one hundred and eighty years and only ceased to be used after the mines closed in 1934. It was managed according to an extremely elaborate set of rules drawn up in the 1780's and not substantially modified thereafter. The miners themselves controlled the library and day to day administration was in the hands of a committee selected from amongst them. The annual subscription was two shillings and books could be borrowed for a month at a time.

Although at first housed in the school the library had its own 'library house' from 1787 onwards. A new building was erected for the library in 1850 which still houses the books today. After the library ceased to be used in the late 1930's both building and books deteriorated, damp being one of the main causes of this. One of the first actions of Wanlockhead Museum Trust was to take over responsibility for the library building and its collection of some 3000 volumes with imprints dating from 1636 to the 1920's, and a comprehensive programme of restoration was planned.

A grant of £1,000 was obtained from the Pilgrim Trust for fabric repairs and £500 was given by the Nithsdale District Council. An application to the British Library produced a grant of £4,000 to be spent on bookbinding and repair to damaged books. More recently in January 1977, £1,500 has been promised by the Historic Buildings Council for fabric repairs.

The first work done between December 1975 and May 1976 was intended to make the building wind and watertight. A watertight membrane was inserted between the library building and the earth bank which surrounds it on two sides. A new door was put on and new windows inserted whose design was based on old photographs of the library exterior. Meanwhile the books most urgently in need of repair were sent to Dunn and Wilson, Bookbinders, in Falkirk. With the help of advice from the Historic Buildings Council restoration of the interior of the library was carried out in March and April of this year. The ceiling and shelving which at some time in the recent past had been lowered were restored to their original height. Two blocked up fireplaces were re-opened and the whole interior was re-decorated in the original Victorian colour scheme. An unobtrusive heating system designed to combat damp has been installed and complete rewiring has been carried out.

The books which had been in store were moved back to the library at the beginning of April and unpacked and reshelfed by two Job Creation workers who then began dusting and repairing the books. When this work is completed

cataloguing of the stock by a qualified librarian will begin.

Once the work on the library has been completed it is hoped to create an archive of the Scottish lead mining industry which will be housed there. The library should be open to visitors and researchers from 1978 onwards.

Glasgow College of Technology

John Crawford.

Newcomen Society Summer Meeting

As forecast in SIH 1.2, the Newcomen Society held its Summer Meeting in Stirling University, from 20th to 25th August. This is only the second occasion on which the Society has met in Scotland, the earlier meeting was Glasgow, in 1969. Apart from a symposium on Scottish engineers and engineering (see below), the programme consisted of visits to museums and industrial establishments characteristic of Central Scotland. Places visited included Bonawe Ironworks; Cruachan Pumped-storage Hydro-electric power station; Oban Distillery; Glenruthven Mills, Auchterarder; Glentana Mills, Alva; United Glass Works, Paton & Baldwin's Kilncraigs Mill and Weir Pumps Alloa; Walter Alexander & Co. (Coachbuilders) Ltd., Falkirk; B.P. Oils Ltd, Grangemouth Refinery and Stanley Mills, Perthshire. Members and their wives also cruised on Loch Lomond in PS Maid of the Loch. A supplementary visit on 26 August to Deanston Distillery was enjoyed by a small group of members and friends.

The symposium on Scottish engineers and engineering was an innovation at the meeting. It was organised by Dr. Angus Buchanan, of the University of Bath, as a follow-on from a meeting in Edinburgh of the International Committee on the History of Technology. Speakers were Professor John Rae, of Harvey Mudd College, California, on Scottish Engineers in America; Professor John Abrams, of the University of Toronto, on Sandford Fleming, engineer of the Canadian Pacific Railway and advocate of the All-Red Cable network; Professor Warsaw University, on Scottish Engineers in Poland; James L. Wood on Douglas & Grant Ltd., the Kirkcaldy engineers; and John Robinson on John Robertson, builder of the engine for Henry Bell's Comet.

Prestongrange Mining Museum

There have been open days on the first Sunday of each Summer month this year. Attendances have been very good. The pug in steam was certainly the main attraction. Its track now extends to the car park at the entrance to the site. Work to lift track at other sites and relay it at Preston-grange continues.

The steam crane is not yet in steam but it is being moved so that it can run on the main length of track. The District Council have had contractors doing drainage and landscaping work on the site. It is hoped that the former will remove the problem of water accumulating in the basement of the former power house so that it can be cleared and used for the exhibition of underground machinery.

A great variety of skilled and unskilled work is needed at Prestongrange. Volunteers will be welcome at any time.

W.D. Nimmo

Site News

Argyle Line, Glasgow The reconstruction of the former Glasgow Central Railway [the line from Rutherglen through Central (Low Level) station to the west] has involved the destruction of one of the remaining 1896 buildings Stobcross, and of Glasgow Cross Station, built c.1923 during street widening. Bridgeton Cross will also go, and it is unlikely that Glasgow Green (roofless) will survive. This will leave Kelvinside (currently unoccupied) as the sole example of the most remarkable series of suburban stations built in Scotland. All were designed by recognised architects, including James Miller and Sir J.J. Burnet.

UCBS Bakery, McNeil Street, Glasgow (NS 599639) This striking polychrome brick building, illustrated on page 30 of Butt, Donnachie & Hume Industrial History in Pictures : Scotland is currently being demolished. Built 1886-1916 by the United Cooperative Baking Society, to designs by Bruce & Hay. It became the largest bakery in the city. Its demolition leaves only two important polychrome brick buildings in the city: Templeton's Carpet Factory (see below) and Kingston Grain Mills, 21-23 West Street. It is to be hoped that both of these can be retained.

Albyn Cotton Mill, Ballater Street and Moffat Street (NS 599639) One of Glasgow's dwindling number of former cotton mills has been demolished during the modernisation of Long John's Kinclaith/Strathclyde distillery complex. Built c.1845 for McBride & Co., cotton spinners and power-loom cloth manufacturers, the older part was five storeys high, 6 by 15 bay, with three rows of cast-iron columns and wooden floors. Latterly it was used as a bonded store.

Barrhead Station (NS 499593) One of the oldest stations in the Glasgow area, has been rebuilt, leaving Pollokshaws West as the only station on the former Glasgow Barrhead & Neilston Direct Railway still with its original buildings. The engineer of the line was Neil Robson, who also had pretensions to be an architect, so Barrhead may have been his work.

Port Dundas Grain Mills, 88 North Speirs' Wharf Glasgow (NS 589665) built c.1843 for Andrew Hamilton, has been demolished. It was latterly used as a barrel store in connection with Port Dundas Distillery. The most interesting feature was the beam engine house on the west side. Pinkston Power Station (NS 597667) is also being demolished, almost a year after the giant cooling tower was dropped. Pinkston was built in 1900-1 to supply power to Glasgow electric tramways. Its equipment provided a case study in the transition from the use of reciprocating steam engines in the generation of electricity. With the disappearance of these two buildings the characteristic skyline of Port Dundas has been yet further eroded. The 1812 Forth & Clyde Canal Offices (NS 588666) are looking very sad. Let us hope some action can be taken to save these and the adjoining range of warehouses.

Drumpark Brickworks, Bargeddie, Lanarkshire (NS 704643) of Dewar & Finlay Ltd. were closed and sold up in May. One of the few Scottish works making plastic-clay facing bricks, Drumpark had an unusually wide range of kilns. The main kiln range was, unusually for Scotland, of the Staffordshire type, and there were circular and rectangular downdraught kilns. Much of the clay preparation and brick moulding machinery was by James Mitchell & Son, the Cambuslang clay machinery specialists.

Lenzie Station, Dunbartonshire (NS 655718) built in 1850 as a nucleus for suburban development, has lost its original buildings, which had been deteriorating for a number of years.

Glasgow Underground The reconstruction of the Underground is being so thorough that little trace of the original buildings will be left. The old surface buildings at St. Enoch are being retained, and the car sheds at Broomloan Road are being adapted for storage. The old rolling stock has been sold, largely to museums. Glasgow Museum of Transport has secured one power car, and is having a trailer cut down to represent one of the four-wheeled cars which operated on the system in cable days. The restored cars will be displayed in a reconstructed version of Merkland Street Station. Of the other cars, several have gone to the North of England Open Air Museum at Beamish, one went to Arran (without planning permission) and one has gone to the Ratho Inn, where Ronnie Rusack is using it as a reception centre for his restaurant boat 'Pride of the Union', which operates on the Union Canal.

Those who missed a farewell trip on the 'subway' which closed prematurely owing to subsidence, are reminded that the film made by the Audio-Visual Unit of the Universities of Glasgow and Strathclyde (16mm colour, sound) is available for hire from the Centre for Educational Practice, University of Strathclyde, Glasgow G1.

Muirkirk Gas Works, Ayrshire (NS 695270) By the time this issue of Scottish Industrial History is published, the conversion of gas supply to piped natural gas will have been completed in Britain by the closure of the coal-gas works at Muirkirk on 16th September, when the town is connected to the gas grid. The Muirkirk works had three settings, each of seven retorts, and was entirely typical of the medium-sized country works. The remaining coal-carbonizing gas works, at Golspie, Langholm, Millport and Newton Stewart, will be converted to liquefied natural gas over the next few years. Change in the gas industry is not being confined to the older works: gas-holders of the traditional type are being phased out, while the catalytic reforming plants, which converted naphtha from oil refineries to hydrocarbon gas, such as those at Dawsholm and Provan are also to disappear.

Templeton's Carpet Factory, Templeton Street, Glasgow (NS 603641) is closing. Founded on this site by James Templeton & Son in 1857, the original building was a cotton mill of c.1823, now cut down to 2 storeys. The glory of the site is however William Leiper's Venetian Gothic 'Doge's Palace' of 1888-92, which is a listed building, category A. Built for

the weaving of spool Axminster Carpets, this remarkable edifice has housed this process continuously. It seems likely that a new use will be found for some, at least, of the existing buildings, including Leiper's masterpiece.

Kelvindale Paper Mills of Edward Collins & Son Ltd., Kelvindale Road, Glasgow (NS 563686) has been closed, and the machinery dismantled, bringing to an end paper manufacture in the Glasgow area after nearly 300 years. The mills were founded in the 18th century as Balgray Snuff and Paper Mill. The site is likely to be cleared.

Kelvin Aqueduct, adjoining the Kelvindale Mills (NS 562679) is the latest of the major Scottish aqueducts to receive a facelift from British Waterways Board. This important monument, built between 1787 and 1790 to designs by Robert Whitworth, can now be seen to advantage for the first time in many years, cleaned and restored, from the Kelvin Walkway constructed by Glasgow Parks Department. Almond Aqueduct, West Lothian (NT 105706) has also been recently restored.

Phoenix Shipyard, Paisley (NS474656) The engineering shop in this site has been demolished in the course of redevelopment of the area by the present owners Leonard Fairclough Ltd. This building was of the normal type, i.e. one bay wide with cast iron columns and a Belfast timber truss roof clad with corrugated sheeting. Lean-to erections were built on both sides and across one gable the sides of the building were clad in timber, an unusual feature in structures of this type.

W. Lind

London Works, Renfrew (NS505686) The sheerlegs erected on the east side of the fitting out basin were demolished at the end of March 1976. These were almost the last surviving examples of this type of heavy lifting equipment which was, at one time, standard equipment in many shipyards. Although perhaps outdated in relation to the changes in ship construction they were still to be seen lifting engines and heavy pre-fabricated sections into ships up to ten years ago. The sheerlegs at Inverness Harbour are now the only survivors of the type.

W. Lind

Levenford Engine Works, Dumbarton (NS393753) Part of this building had to be demolished in March 1977. Falling brickwork due to lack of maintenance caused the owners to remove part of the structure of the erecting bay. A brief outline of Matthew Paul & Co. who developed the site in the last half of the eighteenth century was given in the S.S.I.A. Newsletter No.6, 2 + 3, December 1974.

W. Lind

Cartbank Laundry, Kilbarchan (NS414626) This range of buildings formerly used by the laundry, which closed in 1974 and was latterly occupied by Smith & MacLaurin Ltd., paper manufacturers, as a store, was destroyed by fire on 30th July. The site is now cleared and no trace of the building remains.

W. Lind

Friockheim Viaduct, Angus (NO 588496)

The partial collapse of this interesting structure, which was reported in SIH 1.2, has been followed by the dismantling of the rest. Demolition was complete by July.

The Courier and Advertiser, 5 July 1977,
per William Lind.

Brora Colliery, Sutherland (NC 898040)

The remaining buildings here, including the manager's house and offices of 1811-14, have been demolished as part of an SDA financed environmental improvement scheme.

Project Scotland 11 August 1977
per William Lind.

Arbirlot Mill, Arbroath, Angus (NO 601407)

Angus District Council is appealing for financial aid to restore this unique building, which is on the Panmure Estate. It has a detached bow-fronted kiln at a higher level than the main mill building. The cost of restoration is estimated at about £20,000.

Project Scotland, 4 August 1977
per William Lind.

Threat to Devon Colliery Engine House, Clackmannanshire (NS 898958)

The proposed development of this building to house a museum, it is reported, is being threatened by vandalism.

Project Scotland, 21 July 1977
per William Lind.



MISCELLANEA

Shell Inland Waterways Restoration Awards

This admirable scheme is intended to allow voluntary groups to carry out restoration projects on the inland waterways of Britain. Three categories of project are eligible for consideration for an award: the improvement of navigation on rivers and canals; other restoration work not directly concerned with navigation; and the improvement or enhancement of waterway environment. Both existing voluntary groups, and new groups formed for particular projects, may apply for awards. Money can be awarded for work not completed as entries will be judged on their merit, on what has been achieved to date and what may be achieved ultimately. There is a separate adjudicating panel for Scotland and Northern Ireland, with more than £1,000 to award. The closing date for entries is 1 NOVEMBER 1977, so don't delay, apply now. Entry forms are available from Shell Inland Waterways Restoration Awards, UOMK/6112, 3 Savoy Place, London WC2 0BN.

Laggan Locks

The reopening of Laggan Locks, on the Caledonian Canal (see SIH 1.2) was scheduled for 29 August 1977. The locks had been closed since 31 October 1976, when part of a lock wall collapsed. The repair work has included the rebuilding of two sections of lock wall, and the renewal of three pairs of fixed cills. The main contractor was Sigmund Nuttall Ltd., and the steelwork for three new lock gates was constructed by Lewis's shipyard of Aberdeen. The gates were fitted by the Board staff. Other remedial work included pressure pointing and grouting, undertaken by subcontractors Whitley Moran Ltd. In the south-east gate recess, which was rebuilt, the stones were numbered for identification and grouted back into their original places. Laggan Locks are listed and scheduled, hence the care taken in maintaining the appearance of the structure.

Domestic Glass in Argyll - a Query

Mr. Littlewood of Auchindrain has been excavating domestic glass in Argyll dating from 1770. He is now anxious to further his research and wishes information on possible reference sources relating to the manufacture and distribution of bottles and domestic glass in that part of Scotland. Anyone who can help is invited to write to A. Littlewood, Auchindrain Museum, by Inveraray, Argyll.

Consolidated Index of Clyde Shipyard Lists

A job-creation project is under way in the Strathclyde Regional Archives to compile a union catalogue of Clyde-built ships, listing also the locating of plans, photographs and models where these exist. Anyone with lists of ships built in particular yards, or photographs, plans or builders' models in their possession is invited to contact Richard Dell, Principal Archivist, Strathclyde Regional Archives, P.O. Box 27, City Chambers, Glasgow G2 1DU.

Cycling In Glasgow

The Friends of the Earth (Glasgow) are trying to encourage the use of bicycles as an alternative to cars for short-distance travel in the city. With this aim, they hope to persuade the local authorities to provide

segregated cycle-ways, and bicycle-parking facilities. Anyone interested in this scheme, is asked to contact Friends of the Earth (Glasgow) at 54 Caernarvon Street, Glasgow (041-332-6285).

Paisley-Built Traction Engine

Scottish-built traction engines were never common, and as most were built in the 1860s none was thought to survive. Bill Lind recently located one preserved in Centenary Park, Bulawayo, Rhodesia. This was built in Paisley by Bow, McLachlan & Co., probably in 1897, and is almost certainly one of the pair supplied in 1897 'to the order of the Marvia Trading Company for service in Rhodesia'. According to Engineering (29 January 1897) 'The company have found great difficulty in the transport of goods throughout the district in which their operations are conducted. The mortality among horses is very high, nor do mules, which have been imported from South America, withstand the climate. The engines built by Messrs. Bow and McLachlan are each of 10 horse-power, and have been specially designed for the country to be traversed. They are of exceptionally broad gauge, and the firebox stands so high that streams of 4 ft. in depth may be crossed without extinguishing the fires. The fuel to be used is wood, which will be stored at stations along the route, and the engines are provided with tanks sufficiently large to carry a 12 hours' supply of water. The engines are to be placed on the route between the present terminus of the Beira Railway and Fort Charter and Salisbury; and should they prove the success anticipated, this experiment may lead to the difficulties of transport throughout Rhodesia being greatly mitigated'.

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BOOK REVIEWS

Robert Q. Gray, The Labour Aristocracy in Victorian Edinburgh, Clarendon Press, Oxford, 1976, Pp.220, £8.00

As everyone agrees, what we need are more local and regional studies, because so many aspects of nineteenth century politics, of the nineteenth century economy and of nineteenth century society can only be fully understood in the context of local circumstances. The need for such studies has long been apparent, but there have been remarkably few attempts to answer this need. Perhaps, more accurately, one should say that few such works have been published, though there seem to be large numbers hidden away among those ever-lengthening lists of postgraduate theses. Some local studies that have seen the light are, of course, of doubtful value, with the usual elements of antiquarianism. In Robert Gray's examination of a section of the working class in nineteenth century Edinburgh we have a quite exemplary local study. Based firmly on local material, he shows how valuable such material can be in answering questions that are of interest to historians and to sociologists and which have a significance far beyond the confines of the local area. The book is the work of one of the relatively new breed of social historians who finds that he can only write about class in the language of sociology and using the techniques of the sociologists. The difficulty for some seems to be finding the right balance between the two disciplines. But by maintaining a sound historical perspective Dr. Gray seems to get the balance just about right.

He concentrates on four main groups of workers - in printing, in building, in engineering and in shoemaking - the skilled artisans, with a well-defined sense of craft, who were generally regarded as the élite of the working class. But, as he shows in his very useful and carefully-done chapter on 'Wages and the Standard of Living', in which he makes use of a range of both qualitative and quantitative material, there were, within the ranks of this skilled élite, considerable variations of earnings, of liability to cyclical and seasonal fluctuations and of vulnerability to technological change. Also, these variations could alter over time. The skilled were not always more secure or markedly better-off than some unskilled groups. Nonetheless, there were enough common features to distinguish them from the mass of the unskilled and semi-skilled and to make them a 'labour aristocracy'. They tended to have better quality housing, in which, in return for higher rents, they were less overcrowded. A significant proportion, one in five of bookbinders and joiners and (astonishingly) almost one in three ironmoulders, married daughters of businessmen or of white-collar workers, a fact which no doubt encouraged the aspirations towards better homes. Their children would be significantly taller than those of the semi-skilled and unskilled workers, though still probably a couple of inches smaller than equivalent children among the middle class.

What distinguished them most clearly from other workers, however, was their search for that all-pervasive, and yet often elusive, Victorian attribute of 'respectability' and Dr. Gray has many useful insights into this. He is particularly good on recreation. There were new amusements and leisure pursuits 'of a refining and elevating nature': soirées where the printers in 'superfine black coats and spotless shirtfronts', with

their wives 'in tasteful dresses and bonnets of the latest mode' could listen to suitably bowdlerised Burns' songs and hear lectures on the 'noble art' of printing; the Volunteer Movement, where patriotism and citizenship would be inculcated with fresh air and healthy exercise; or there was the golf club or the bowling club or the flower show, where the skilled man could rub shoulders or compare chrysanthemum blooms with the petty bourgeoisie. Then there was the association with thrift and savings institutions, which not only provided some security but could be the start of the route to self-employment. Surprisingly, Gray has little to say about the rôle of the churches in this search for respectability or, indeed, about their part in providing recreational pursuits.

'Respectability' was not, however, simply a striving after upward social mobility nor a process of embourgeoisement. Trade-union membership could be respectable although it involved a rejection of middle-class emphasis on individualism. The co-operative movement was a reflection of self-help, if one wished to see it in these terms, or it was an example of that distinctive working-class solidarity and mutual dependence. Rightly, Gray makes clear that the struggle for 'respectability' did not necessarily produce deference, but was often an assertion of self-respect and of independence - attitudes, let it be said, very much admired by at least some of the bourgeoisie - which could produce tensions with other classes. Gray's final chapters deal with the manifestations of these tensions in the local labour movement. Here his approach is a much more impressionistic one and the danger of the local study becomes apparent. He rarely makes clear when particular events stem from purely local initiative and when they are the spin-off of more important happenings elsewhere.

His thesis is that around the late 1880s and early 1890s changes had taken place in the position of the labour aristocracy. They were less secure, more subject to unemployment, under pressure from ever more cost conscious employers and increasingly facing competition from the semi-skilled man operating a machine. All this had the effect of creating among the skilled men a consciousness of their class identity with those unskilled men who had never had security or status. There was a kind of symbol of this change in the transformation of football from one of a number of healthy recreational pursuits run under middle-class auspices, as it was in the 'sixties and 'seventies, into a solidly working-class spectator sport as it had become by the 1890s. Even more important was the political impact of such changes, convincing many workers of the rightness of the socialists' analysis. While there is nothing basically wrong with this thesis he does perhaps try to make the change of the 1890s too sharp a one. There is, as is now generally accepted, plentiful evidence of tension and conflict between artisans and their employers in the mid-victorian period. Indeed, Dr. Gray might have made more of this by looking at the sense of class that comes out in the 1860s in the Edinburgh Trades Council, when, alone among trades councils, it takes upon itself the task of organising unions among the unskilled. There was also pioneering activity in municipal politics which was at least moving towards independent action. In his examination of the changed attitudes in the 'nineties the problem of the local study again comes out because of the lack of comparison. The remarkable thing about Edinburgh is the weakness of the independent

labour movement and the slowness with which it emerges. Not until 1900 is a labour councillor returned for Dalry ward. Dr. Gray looks at the factors that encouraged the growth of the independent labour movement. It would have been useful to understand what were the strengths of Liberalism, what it was that produced a revitalisation of it and a resistance to socialism in the 1890s. In spite of the structural changes that were taking place in the shoemaking industry, it was a cordwainer, John Mallison, secretary of the Trades Council, who led the resistance to socialism. It was he who told the 1890 Trades Union Congress, 'By all means let us have a workers' political party, only let it be kept outside Trade Unionism', and even in 1900 a branch of the Amalgamated Carpenters was writing to the Trades Council 'that political questions should not be introduced by members of this Council but that their whole time ought to be devoted to trade matters'. Commitment to independent labour was much slower than Gray allows.

In this relatively short book (190 pages of text followed by useful appendices on occupation classification in the census reports and by a very full bibliography) Dr. Gray has many perceptive comments to make about class relations. Like the gentry in earlier centuries the labour aristocracy emerges by the second half of the nineteenth century as a crucial linking group. It was the labour aristocracy who developed the viable organisations that were powerful enough to force concessions from the capitalist order. It was through the labour aristocracy that many of the values of the bourgeoisie were transmitted to the working class, while, at the same time, the expectations and aspirations of the working class were transmitted through it to the local middle-class élite.

This is a major contribution to the debate on the concept of the labour aristocracy recently revitalised by John Foster's Class Struggle and the Industrial Revolution, to which Gray pays due deference. Wisely, however, he avoids Foster's often polemical tone and, as a result, is less likely to find his work caught up in the almost political debate that Foster's work has occasioned. Perhaps wisest of all, his 'Victorian' Edinburgh gets underway in the 1850s and 1860s with little discussion of the nature of class before then, thus avoiding the controversy on whether there was a discontinuity somewhere around 1850. That a distinct and identifiable labour aristocracy did exist in Victorian Edinburgh emerges quite clearly from this book; that its relations with other classes and with other sections of the working class were highly complex is even more clearly demonstrated. One can only reiterate the author's final plea - 'Only when we have some comparative account of class structure and class formation in a range of localities can we begin to write working-class history as the history of any class must be written - by beginning from the life situation, the hopes and fears of the members of the class'.

Jean Lindsay, The Scottish Poor Law : Its Operation in the North-East from 1745 to 1845, Arthur H. Stockwell Ltd., Ilfracombe, Devon, 1975
Pp.265. 2 tables. £2.50.

Until recently, the Scottish Poor Law has been a much neglected topic among historians. Most scholars either were not aware of its existence or assumed it was similar to the English Poor Law. Dr. Lindsay has made an attempt to rectify the situation.

The book has a number of shortcomings. The first and perhaps the major one being that Dr. Lindsay clearly was unaware of recent work on the subject. Her current effort is basically her 1962 Ph.D. thesis written at Aberdeen. Beginning in 1970, several people at Edinburgh and Glasgow have made detailed studies of the Scottish Poor Law, each publishing a number of articles on the subject. Yet, Dr. Lindsay has not revised her work.

Secondly, the book is disorganized and highly descriptive, filled at times with excessive amounts of tedious detail. Few explanations are offered as to why events occurred. Furthermore, the book makes few attempts to distinguish between the law and actual practice. Thus, the reader is often confused and left to drown in a sea of seemingly irrelevant detail.

Thirdly, the jacket description is misleading, as it claims that the book discusses the arguments of Dr. Thomas Chalmers. Yet Dr. Chalmers is mentioned briefly on only two pages! In the bibliography just one work by Dr. Chalmers is cited. Hence, the author has fallen into the same trap that has claimed so many other scholars, accepting at face value Dr. Chalmers' claims that his experiment at St. John's Parish in Glasgow was a success.

Dr. Lindsay is wise in discussing the Scottish Poor Law system on both the rural and urban front. For, as she correctly indicates, both law and practice were different for the two areas. But by concentrating on an area near Aberdeen, she presents a distorted picture of the operation of the law, as regional variations are not apparent. For example, if her study had been more comprehensive, she would not have claimed that the parish provided the sole means of support to those placed on its regular poor roll; rather she would claim that the amount of relief given was usually viewed as a supplement to other sources of livelihood. With a broader study Dr. Lindsay would have discovered that not all Scots eligible for relief were treated equally; members of dissenting congregations frequently were denied relief, forcing their congregations to supply the necessary funds.

Despite the book's faults, it does make a contribution to the literature. It allows the reader to begin to understand the complexities of the Scottish Poor Law system. It enables the scholar to determine areas where more research needs to be done. Let us hope, therefore, that Dr. Lindsay's book receives the recognition that it deserves, and that it encourages others to continue to research this fascinating, but largely neglected field.

University of New England, N.S.W.

R.A. Cage

John R. Hume, The Industrial Archaeology of Scotland: 1. The Lowlands and the Borders, B.T. Batsford, London, 1976. Pp.256. £5.95.

This, the first of two volumes giving a comprehensive picture of Scotland's industrial heritage as it existed in 1971, supersedes Professor Butt's pioneer work of 1967 as a guide to what still survives. In lay-out it is similar, comprising an introductory survey followed by a gazetteer, but Butt's seven chapters on industrial development and typology are condensed to a single introduction in which the characteristics of each type of industrial site and building are tersely but very readably set out with a profound understanding of their technological development. A comparison of the gazetteer with that of the earlier work, or with Butt, Donnachie & Hume's excellent Industrial History in Pictures: Scotland (1968) will reveal many sad losses, but the far greater comprehensiveness of the new gazetteer, not only in the inclusions but in the quality of the information given, reflects the vast increase in knowledge of the subject over the last decade, an increase very largely due to John Hume himself.

Most of the entries are no more than two to six lines long, yet they always contain enough to give a mind's eye view of the site, the aim being 'to list as many sites as reasonably possible ... where there are complete or substantial remains'. I for one can find but few omissions of any consequence. It represents a formidable feat of survey and selection considering that only Galloway and Glasgow had previously been comprehensively searched for industrial sites, the latter by the author himself. The text is backed up by clear, well-chosen photographs - the dismal reproduction which marred some plates in his Glasgow volume is entirely absent - nicely balancing the typical with the outstanding yet still managing to almost completely avoid repetition of subjects illustrated in earlier volumes. Particularly impressive are those of the Fairfield Engine Works, the long louvred facades of the tannery at Tullibody and the monumental engine houses at Shotts and Ferguslie, all hitherto unillustrated.

This is an indispensable book for any one interested in industrial history, full of hitherto unpublicised sites and new-found information - even the author's own magnificently comprehensive Glasgow volume is usefully updated on a number of points where further information has recently come to hand.

Edinburgh

David Walker

R. Winsbury, Thomson McIntock and Co. - The First Hundred Years, 1977, Ill. Pp.164. Printed for private circulation.

This volume was produced to mark the hundredth anniversary of the founding of the firm of Thomson McIntock and Co., Chartered Accountants. It is essentially a narrative of the major events and a description of the leading personalities of the firm.

Many business histories are criticised on the grounds that they concentrate too much on the personalities but this type of approach is inevitable, indeed necessary, in a study of chartered accountants. As the author points out there are no physical assets and no financial reserves. The only assets are the staff; the only reserves are their skills, experience and probity. To the credit of the firm and the author the pen portraits of partners are not hagiographies. For example Sir Wm. McIntock who led the firm during the inter-war years and was responsible for the formal separation of the London and Glasgow offices in 1934 is described as being 'irascible, impatient and, even at times unreasonable' (p.41) in addition to having many fine qualities which made him a leader of his profession.

There is little in the book for those seeking guidance on what accountants actually do but there is some mention of the major developments in the profession over the past century, e.g. the early involvement with group accounts and the growth of management accounting. A notable omission, however, is that the founder's involvement with the winding up of the City of Glasgow Bank in 1878 is mentioned but there is no discussion of the rise of independent auditing which developed from this time. Nor is there any real discussion of the possibility of personal friendships between company directors and accountants interfering with the audit function although the author clearly demonstrates the importance of inter-personal relations in bringing new business to the firm.

The second half of the book is concerned with the development of the firm since the re-connection of the Glasgow and London offices in 1959. In particular it describes the forces which drew the firm to establish an international service for its customers in 1964. The formation and development of McIntock, Main, Lafrentz is described in detail as is the 'inter-active, non-authoritarian way' (p.85) in which the firm arrives at its decisions.

Throughout the work the author makes judicious use of oral history which he supplements where possible with written sources. In a few places anecdotes serve to highlight the personalities and to throw light on the development of the firm, e.g. at one time the founder, when involved in the bankruptcy of a shop, himself sold goods over the counter at retail price so that creditors would get a bigger dividend than if the goods had been auctioned. How many accountants would be prepared to do that today?

Thomson McIntock and Co. and Mr. Winsbury are to be congratulated on producing a book which is a very good example of its type. It is to be regretted that it is not more generally available.

Michael S. Moss and John R. Hume, Workshop of the British Empire, Engineering and Shipbuilding in the West of Scotland, Heinemann Educational Books Ltd., London and Edinburgh, 1977. Pp. XV + 192. £12.50

There are relatively few cases of the presentation of industrial history in terms which combine the textual and the visual on a more or less equal and merged basis, doing so at such a level as to make a real contribution to understanding. Too often the picture material is too slight, or those who are using it do not appreciate its full meaning, or they are afraid of boring their readers by entering into it. Michael Moss and John Hume have risen above such difficulties, producing an amalgam that is remarkably successful. They have done so by drawing upon their shared knowledge of engineering in the West of Scotland, and upon their separate expertise as archivist-historian and scientist/technologist-historian. From these skills they have derived their own standards of what is meaningful. They have been aided by the work done by the Western Survey of the National Register of Archives (Scotland) (carefully described for the use of others). But then, they themselves had much to do with that venture. They have been further aided by the production skills of their publishers.

Three groups of industries are discussed and illustrated: iron-founding and engineering, shipbuilding and a miscellaneous set of 'others'. The time span is roughly from the industrial revolution, through the great apogée of high Victorian and Edwardian times, and the first World War to the inter-war decline. Though there are some link passages to the present, the core of the book lies between 1870 and 1939. With shipbuilding as the centre-piece the story is one of *some* seventy years, ~~almost~~ equally divided between optimistic expansion to 1914 in response to world market demand, followed by distortion and decline. The contrast between the pre-1914 triumph and what followed is stark. 'Up to 1914', say the authors, 'foreign competition was largely ineffective in making inroads into the most important sectors of the engineering and shipbuilding industries ... where competition was encountered, or where new products of foreign origin were introduced, the response of the region was vigorous and successful.' Not much sign here of failure of entrepreneurial response, so much discussed in recent literature!

But did success generate its own destruction? How, for example, could Glasgow hope to hold the 50% of all UK ironfounding output if supplied by 1907, or the West of Scotland keep 80% of the world production of sugar processing machinery, or the Clyde continue to launch not far short of one-fifth of the output of ships of the entire world?

Most of the challenges before 1914 arose from erratic demand and changing technology. On the demand side in the leading sectors of shipbuilding and heavy engineering the authors discuss the counterdevices used against the trade cycle, including vertical extension. In tight times finance could become paramount in determining survival, with cash crises killing firms otherwise sound - indeed works, we are told, seldom closed down, but often changed hands, no doubt after having been revalued downward and thus cleared of debt. But finance was even more pressing in expansion as

materials and wages rose, shortages appeared and prices rose, repelling buyers. As to technology, fixed investment could arbitrarily be rendered obsolescent, halving or wholly destroying its value.

The pictures carry a powerful charge both of drama and of nostalgia. The massive machines of heavy engineering stand in their cathedral-scale buildings, vast embodiments of the power to manipulate metal so that it may harness the newly discovered natural laws. Such machines embodied the kind of motion that, once set to work, could be intuitively understood, for the eye could see what was connected to what and how the whole thing articulated as a system. Then there are the iron-founders displaying their virtuosity in a different way, with gorgeous park gates, sweeping circular stairways and artistic urinals. A deep pathos hangs over all this: such marvellous artifacts and their makers, so confident and assertive in their day, are now all gone, pushed from the scene by the relentless course of science and technology, their sites derelict and given over to rose-bay willow herb.

The great casualty of technology in employment terms has been the unskilled labourer, he who found jobs in such numbers, and who rendered so much of industry labour-intensive. Moss and Hume in their photographs show in iron foundries, tanneries, ropeworks, carpet factories and the rest all that lifting, carrying, holding, pushing, filling and emptying of materials and wastes. Handling gear has disposed of these armies of men.

There are two aspects with respect to which one might have wished for something more: management has been largely omitted from the pictures though discussed in the text: the workers are present in the pictures but have little place in the text. Of course it is not easy to render management visible. Portraits are not the most satisfactory evidence, and the really high management was not a part of shopfloor life, though there were exceptions like William Beardmore. Perhaps policy and management are inaccessible to the camera? Or perhaps a few portraits, board directors in session, country houses and leisure pursuits might have added to the book? Ship launchings provide the kind of cameos needed, for on such occasions the contrast between the shining prosperity of those on the dais and the cloth-capped multitude of the shipyard workers tells a powerful tale.

On the labour side the failure to make much of the human aspect of the work thus made visible is perhaps less understandable. It may be said that this is mainly a book for entrepreneurs and engineers, but even so an opportunity seems to have been lost. We do not often see foremen, labour aristocrats, labourers and boys together on site. But here a photograph presents the entire workforce, posed in front of some vast machine, the produce of their joint labours. Are the horizontal differences that divide them (partly visible in their clothing and headgear) and which make necessary an elaborate structure of union rules for the allocation and spreading of work, forgotten at least for a moment, in the pride of their immense joint achievement, the best, they believe, in the world? This is the context out of which, quite suddenly, came Red Clyde, the result of the

threat to skilled men of dilution, the hardest area for Lloyd George as Minister of Munitions to hold in line, and the birth-place of the shop stewards' movement. Neither Red Clyde nor shop stewards are mentioned in the index.

The University of Glasgow

S.G. Checkland.

Joan Lane (compiler), A Register of Business Records of Coventry and Related Areas, Lanchester Polytechnic, Department of History, Priory Street, Coventry, CV1 5FB, 1977. Pp.165. £3.

This volume records the results of a survey of business records carried out by the Lanchester Polytechnic in the past three years. Apart from a short introduction, the volume comprises lists of the records of various industrial concerns in the Coventry Area. The books makes disappointing reading, only 29 firms appear to have been approached, of which six had no records. Each list is prefaced by a useful short history of the concern referred to. However, in general the style of presentation of the lists is poor. They are inconsistent and there seems to be a preoccupation with publicity material and trivia. For instance, the correspondence of Jaguar cars between pages 60 and 62 concerning various rallies could have been easily summarized into half a side. More seriously the compilers have chosen to omit collections deposited in the Coventry City Record Office and the Herbert Art Gallery and Museum. For example the papers of Sir Alfred Herbert are listed in great detail, while the commercial records of Alfred Herbert Ltd. deposited in the Coventry City Record Office are not listed. Throughout the survey, commercial records seem to have been sadly neglected. This is particularly disappointing as it is from these sources, coupled with technical information, that the business historian can judge the performance of a company and compare it with its competitors. The majority of the firms recorded are motor car manufacturers or firms associated with the motor trade. Although Coventry's motor industry is undeniably significant, the survey does not reflect the balance of trade in the area. No mention is made of the building and food processing industries and hardly any reference to other light engineering businesses, particularly foundries. Despite these criticisms, it is a sad fact that where lists of business records are concerned, something is always better than nothing and the lists presented in this volume do contain amongst the dross much material which will be of value to the business historian.

University of Glasgow

Michael Moss

William Taylor, The Military Roads in Scotland, David & Charles, Newton Abbot, 1976. Ill. Pp.197. £4.95.

In the sixteenth years before 1740, the celebrated General George Wade built some 250 miles of military road in the Highlands south of the Great Glen. In the following 27 years his frequently neglected assistant and successor, William Caulfeild, supervised the building of three times as much, mostly in the same area but in one case, or perhaps two, penetrating to the north-west coast, and also including a road from the English border to the Irish boats at Portpatrick. It is one of Dr. Taylor's strengths that he gives Caulfeild full and due attention, correcting the implication of Haldane that little occurred between Wade and the advent of the Commissioners of 1803. The roads were initiated by Wade purely to facilitate the movement of troops, and the programme continued after Culloden even although there was then so little fear of further trouble that the road-building soldiers were almost unarmed. Only after Caulfeild's death did construction slow down, as the treasury complained of increasing expense.

Dr. Taylor's book is essentially an exercise in historical geography and topography, and his research has been thorough, particularly with reference to the costs and organisation of construction. The military roads, which include all those built, realigned or maintained by the army, had in general little impact on the economic life of the Highlands - even the cattle drovers avoided them as the gravel hurt the hooves of their beasts - and Dr. Taylor has correspondingly little to say on this aspect. After a brief general introduction, and a useful section on the techniques of road construction, each separate road is treated twice, with reference firstly to its construction and history, and thereafter to its present condition. This arrangement can lead to some duplication of information - we are told three times in ten pages that soldiers received double pay for road work - but more importantly it ensured that little escapes Dr. Taylor's net.

The volume is generally well-produced, with no more than the usual quota of misprints, of which one would have gladdened the heart of G.K. Chesterton by making a road go from Dunkeld to Amulree by way of Aberdeen. But, as the author says when referring to his sources, 'Maps are the very life blood of a book of this kind'. It is therefore to be regretted that his own are so inadequate. Apart from a map of Scotland on a scale of over 50 miles to the inch, there are no maps to show the whole of any individual road, and much of the detail of the historical section of the book may be lost on readers without a comprehensive knowledge of Scottish topography. The final section, on the present state of the roads, is illustrated by limited sketch maps, on various unstated scales and giving little information, of some sections only of the roads. Any reader wishing to follow Wade and Caulfeild's routes will find an admirable descriptive text, well garnished with grid references, but will need to equip himself with the appropriate sections of the Ordnance Survey. It is Dr. Taylor's achievement that many readers may be tempted to explore the military roads for themselves, and that they will be usefully informed on the effort and organisation that went into their construction.

John Thomas, Forgotten Railways : Scotland, David & Charles, Newton Abbot, 1976. Ill. Pp.224. £4.50.

For many years Mr. Thomas has delved comprehensively into Scottish railway archives, and this is the tenth volume to result from his labours. It is tempting to see it as an accumulation of the odd and entertaining incidents which failed to fit neatly into the previous books. The 'Forgotten Railways' title of the series (and a railway is apparently forgotten as soon as it is closed, regardless of how well it may be remembered and mourned by those condemned to alternative transport) imposes few constraints on the author. Mr. Thomas flits lightly from episode to episode, visiting over 50 railway companies in 200 pages, and ranging from the eccentric 'coffeepot' locomotives of the Morayshire to station garden competitions on the Blane Valley and to the sad Edwardian career of the Invergarry & Fort Augustus, which increased its revenue by ceasing to run any trains at all. There are no overt themes in the book, but some emerge, such as the regular bullying of small companies by large ones - of the Montrose & Bervie by the Caledonian, for instance, of the Morayshire by the Inverness & Aberdeen Junction, and of almost everybody by the North British.

The coverage given to individual lines varies with Mr. Thomas' whim rather than with their importance - as an example, there is just over a page on the main line to Portpatrick, but six pages on its small satellite the Wigtownshire. There is particularly good coverage of the lines around Crieff and Banff. Most of the companies discussed were local promotions, created in the mid and late Victorian years by impecunious enthusiasts with little idea of railway management, and their continuing saga of amateurism, individualism, occasional deceit and frequent near-catastrophe is surveyed with sometimes exasperated affection. The bulk of the material comes from the early years of the companies, which makes it unclear why the illustrative timetables should date from 1947. There are few heroes in the story, and Mr. Thomas is very hard indeed on Thomas Bouch, who engineered many of the postmania cheap railways: certainly he was a difficult man to work with, and the low construction cost of his railways had to be paid for in later trouble and expense, but he was designing lines for promoters with minimal budgets, and the small towns of Scotland certainly preferred having Bouch lines to the only realistic alternative of having no lines at all.

The book is well provided with nostalgic photographs and useful maps. As with his other books, however, it is to be regretted that Mr. Thomas does not provide, or has not been allowed, footnotes. And there is nothing to be said for the infuriating habit of adding a bracketed decimal equivalent to all sums involving shillings and pence: an 1857 wage rate given as '10s Od. (50p)' may lead the innocent to assume equivalence in real terms, and an entry such as '£166 3s 4d (£166.16)' adds nothing to understanding. Overall the book does not approach the hard centre of economic history. It describes a picaresque series of isolated episodes, and does not pretend to analysis. But it is a great pleasure to read, and can be recommended as a bedside book for any railway

enthusiast: for the energetic there is also a short gazetteer to guide them to a series of derelict stations and other survivals.

University of St. Andrews

C.J.A. Robertson.

Andrew Cluer (ed), Walkin' the Mat : past impressions of Aberdeen, Lantern Books Ltd., P.O. Box 1, Aberdeen, AB9 8PE, 1976. Profusely ill. Pp. 166. £4.99 net.

What the Cluers did for Plymouth (Plymouth & Plymothians, vols. 1 & 2, Lantern Books, 1974, 1975) they have now done for the Granite City - but with a difference. Walkin' the Mat is a blend of ancient and modern photographs, quotations, reminiscences and comment which evokes the character of that great northern city in a remarkable way. Its publication at this time is apposite, as much of the character of Aberdeen is being lost in the headlong rush for North Sea Oil. The photographs are for the most part superb, and many are of direct interest to readers of this journal.

The compilation and design of this book are so good that it seems churlish to criticise. As a work of art it is superb, but from the point of view of the historian it is somewhat disappointing. The captions are brief, often to the point of meaninglessness, no attributions are given (though a copy of the book acknowledging the source of the plates has been deposited with Aberdeen City Library), the pages are not numbered, and there is therefore no index, and many of the photographs lose some of their value as historical documents through being reproduced on too small a scale. But these are quibbles: buy Walkin' the Mat and you have a passport to an enchanted city.

University of Strathclyde

John R. Hume

Erratum

The editors regret that, owing to careless proof-reading, a line was omitted from Professor R.H. Campbell's review of Leslie Hannah's The Rise of the Corporate Economy in SIH 1.2. The third sentence in the second paragraph of the review should read: 'Hence the 1930's and 1940's may be viewed either optimistically, as, for example, a response to managerial difficulties, or pessemistically, as, for example, a failure to continue to press ahead with economies of scale'.

BOOKS RECEIVED

J. Butt and J.T. Ward (ed.), Scottish Themes, Scottish Academic Press
 D.S. Cross, American History in Scottish Universities, University of Glasgow
 D.R. Grace and D.C. Phillips, Ransomes of Ipswich, Institute of Agricultural History
 R.J. Overy, William Morris Viscount Nuffield, Europa
 K. Tucker (ed.), Business History, Cass.

CORRESPONDENCE

Having noted the reference in Scottish Industrial History Vol. 1.2. Spring 1977, to James Fleming & Co. Albert St. Leith, I thought that you might be interested to know that Mr. James F. Flint, former Managing Director of James Fleming Ltd. donated their food-processing machinery to this museum when they left Albert St. to continue business at Newbridge Industrial Estate. Midlothian EH28 8PA, where they now trade as 'James Fleming (Manufacturers) Ltd.'

The items which were acquired by this museum include a cast iron Malagar Pan Mill with granite rolls, a motor-driven pine Dresser for spice, a Winnower of pine construction for chocolate manufacture, an Almond Stripping Machine, a wooden Shaker for grading almonds and a Slingsby sack-lift Trolley and Ellison motor starter. Further details of the machines are available if wanted.

Fleming's continue in the same type of business and their present letter heading includes the legend : 'Sugar Products for the Baking Industry'.

Miss P. Walsh,
 Museum Assistant, Royal Scottish
 Museum.

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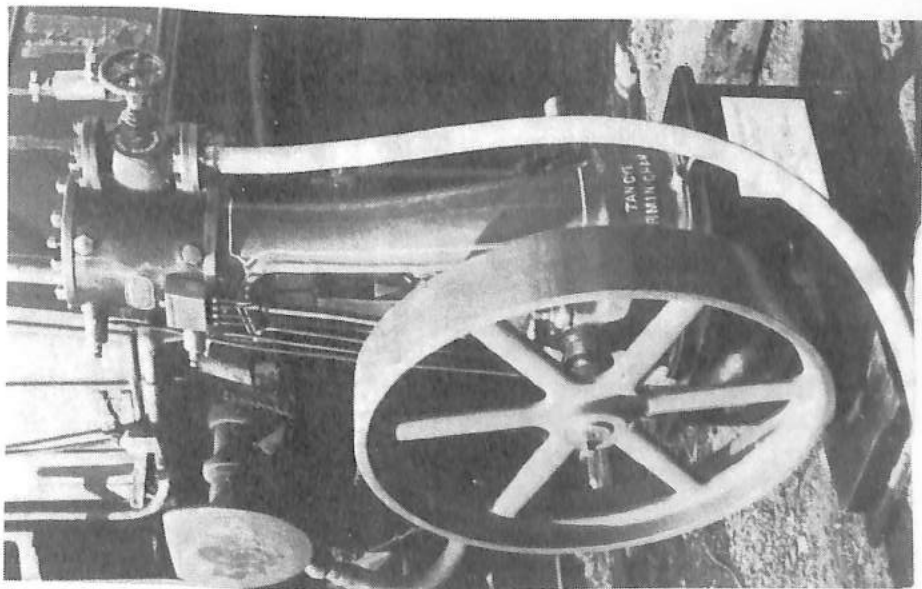
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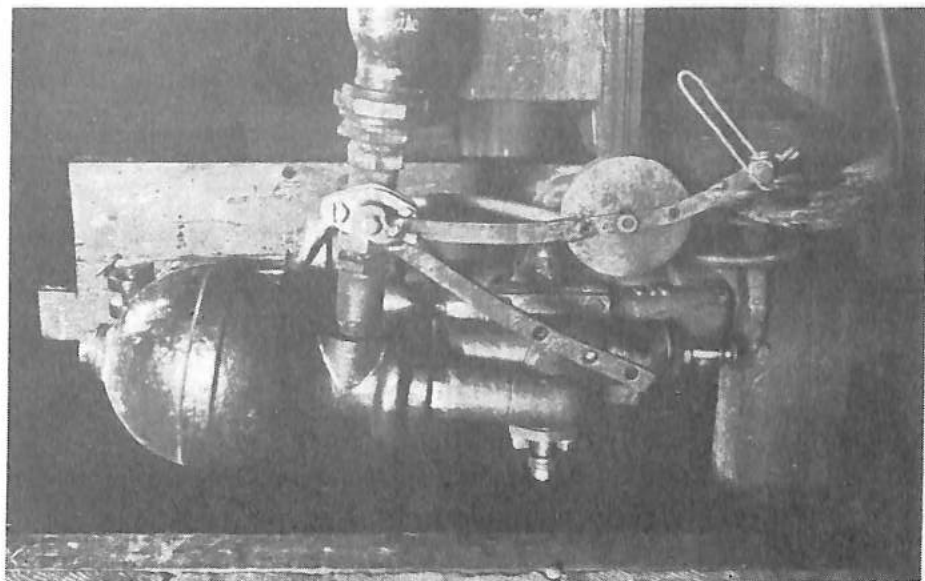
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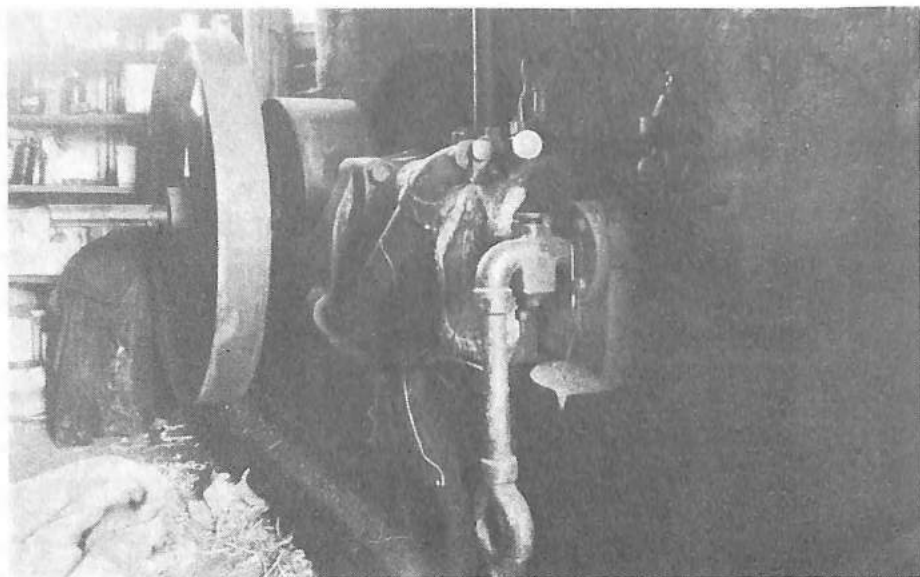
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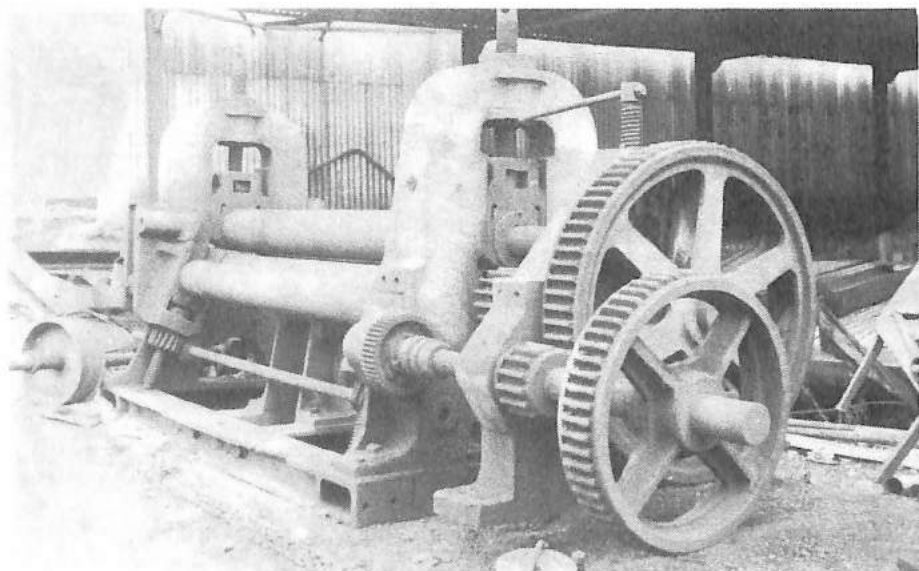
Tangye vertical engine, ex Leithroaig Distillery,
Islay, at Falkirk on 27 August 1977



Hydraulic organ motor in Queen's Cross Church,
Glasgow, before removal by SSPHM



Above Allen Bros lamp-start paraffin engine at Burmeston Farm, Little Glenshee, Perthshire. This engine has since been removed by the SSPHM. Below Craig & Donald four-roll plate bending machine at Inshaw's tube works, Shettleston



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ITS TERMS are therefore well calculated to meet the requirements of intending Assurers. They are specially adapted to the case of Provisions under Family Settlements or otherwise, where it is important to secure, for the smallest present outlay, a competent provision, of definite amount, in the case of early death.

It has taken a leading part in the Removal of RESTRICTIONS and GROUNDS OF CHALLENGE. The Rule was adopted in 1849 that error in the original statements did not involve forfeiture unless "fraudulent as well as untrue."

Foreign Residence and Travel.—Members (not seafaring men) are free to reside in any part of the World to the north of 35° N.—excluding Asia—and to the south of 30° S. Licences for places beyond the free limits are given on favourable terms; and when an extra is charged it has the advantage, according to the equitable principle of the Office, of bringing the Assured sooner to share in Profits.

Examples of Annual Premium for Assurance of £100 at Death (with Profits).

AGE.	25	30	35	40	45	50
PAYABLE DURING LIFE.	£1 18 0	2 1 6	2 6 10	2 11 9	3 5 9	4 1 7
LIMITED TO 21 YEARS.	£2 12 6	2 15 4	3 0 2	3 7 5	3 17 6	4 12 1

Thus a person of 30 may secure £1000 at death, with Profits, for a yearly premium of £20 15s., which in the other Scottish Mutual Offices would assure £800 only.

Or, if unwilling to burden himself with payments during the whole of life, he may secure a Policy for £1000 (with Profits) for a Premium of £27 13s. 4d., limited to twenty-one payments, being nearly the same as most Offices require during the whole of life.

THE RATES TO CEASE AFTER 7, 14, OR OTHER NUMBER OF YEARS MAY BE HAD.

FINANCIAL POSITION AS SHOWN BY STATISTICS.

By the publication of the "British Life Insurance Chart, 1871," compiled by W. White, Esq., F.S.S. (C. & E. Layton, Fleet Street), the Directors are enabled to give an analysis of facts, showing from authentic sources the high position which the Institution occupies among the Assurance Offices of the kingdom, not merely in extent of business, but even more markedly in the growth of its resources.

The New Business of 1871 was £713,045, in 1324 Policies. Subsisting Assurances about Seven Million Six Hundred and Sixty Thousand. Annual Revenue exceeds £297,000. Accumulated Fund arising entirely from Premiums, above £1,902,000.

ANNUAL REPORTS, with every information, may be had at the Head Office in EDINBURGH; or at the

OFFICE IN GLASGOW, - - - - 67 ST. VINCENT STREET.

LOCAL SECRETARY, WILLIAM CHURCH, JUN., ACCOUNTANT.