THE SCOTTISH GLASS INDUSTRY 1610-1750

Jill Turnbull

For Gael, Steve, Jonney and Carrie

Cover illustration: *Distant view of Leith*, Paul Sandby, 1747 (*Ashmolean Museum, Oxford*).

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ABBREVIATIONS AND CONVENTIONS

APC	*Acts of the Privy Council of England*, 39 vols, (London, 1890–1938).
APS	*The Acts of the Parliaments of Scotland 1124–1707*, 12 vols, T Thomson & C Innes (ed) (Edinburgh, 1814–75).
CSPD	*Calendar of State Papers, Domestic*, James I; Charles I. (London, 1857–1897).
DNB	*Dictionary of National Biography*, 22 vols, S Lee (ed) (London, 1908–9).
ECA	Edinburgh City Archives.
Edin Burgs	*Roll of Edinburgh Burgesses 1406-1700*, CBB Watson (ed) (SRS, 1929).
Edin Recs	*Extracts from the Records of the Burgh of Edinburgh 1518–1716*, 12 vols, JD Marwick, M Wood & H Armet (ed) (Edinburgh, 1871–1971).
Glas Burgs	*The Burgesses and Guild Brethren of Glasgow 1573–1750; 1715–1935*, JR Anderson (ed) (SRS, 1925, 1935).
Glas Recs	*Extracts from the Records of the Burgh of Glasgow 1691–1759*, 11 vols, Sir JD Marwick & R Renwick (ed) (SBRS, 1876–1916).
HMC	Historic Manuscripts Commission.
IGI	International Genealogy Index.
LULSC	London University Library Special Collection.
NAS	National Archives of Scotland (formerly Scottish Record Office).
NLS	National Library of Scotland.
NRA(S)	National Register of Archives (Scotland).
NRO	Northumberland Record Office.
OPR	Old Parish Records.
PRO	Public Record Office, Kew.
RCAHMS	Royal Commission on the Ancient and Historical Monuments of Scotland.
RMS	*Registrum Magni Sigilli Regum Scotorum*, 12 vols, T Thomson *et al* (ed) (Edinburgh, 1814-1914).
RPC	*Register of the Privy Council of Scotland 1545–1689*, JH Burton, D Masson, P Hume Brown & H Paton (ed) (Edinburgh, 1877–1933).
SBRS	Scottish Burgh Record Society.
SRS	Scottish Record Society.
YBC	York Buildings Company.

Frontispiece
From William
Cooper *The Crown
Glass Cutter and
Glazier's Manual*
(Edinburgh, 1835)

Crown Glass Cutter & Glaziers

MANUAL

BY WILLIAM COOPER

Glass Cutter, Glazier & Stained Glass maker in ordinary to the

KING FOR SCOTLAND

VIEW OF A CROWN GLASS HOUSE.

INTRODUCTION

The aim of this monograph is to set down, in as much detail as possible, the history of the various glassworks operating in Scotland from the date of the first patent in 1610 to the mid-18th century, by which time glass production, particularly bottle making, was a well-established industry. Glassmaking was among the earliest manufacturing industries to be set up in Scotland, but one about which very little information has been published.

The manufacture of glass began after 1610, under a patent to make iron and glass granted to Sir George Hay, later Chancellor of Scotland and first earl of Kinnoull (col illus 1). Thanks to the politics surrounding the English glass monopoly and Hay's powerful position, the industry thrived and Scotland was deemed to be self-sufficient in glass only 11 years later. The Italian workforce responsible for this success left in *c*1646, but despite all the many upheavals of the 17th century, glass continued to be made at various sites. This monograph will show that, albeit on a small scale and with difficulty, glassmaking did, in fact, persist throughout the period 1610 to 1750, with the probable exception of two short breaks.

Because most readers are unlikely to be familiar with technical aspects of glass production in the 17th century, the first chapter attempts to provide sufficient explanation to make the later text more comprehensible. In order to establish some aspects of the background against which the glass industry in Scotland was founded, commercial practices prior to the Act of Union in 1707 are then explored, particularly the emergence of joint-stock companies and the gradual development of practical business methods. The impact of the Union, especially the removal of special privileges for Scottish manufacturers and trade restrictions with England, is the focus of a later chapter. Patterns of consumption were obviously of relevance to the potential demand for the products of the glasshouses and these are examined in Chapter 3, using contemporary household bills, inventories and descriptions. By the end of the period, the commercial infra-structure was in place to facilitate future industrial expansion and a new generation of glassworks was ready to take advantage of expanding trading opportunities and the increasingly affluent domestic market.

The main narrative describes the chronological history of each known glassworks as thoroughly as extant material permits. Most of the sites were on the east coast of Scotland – at Leith, Morison's Haven, Westpans and Port Seton in East Lothian, Wemyss and Kirkcaldy in Fife – but a glassworks also operated at Glasgow from 1701. All required the recruitment of skilled workers from

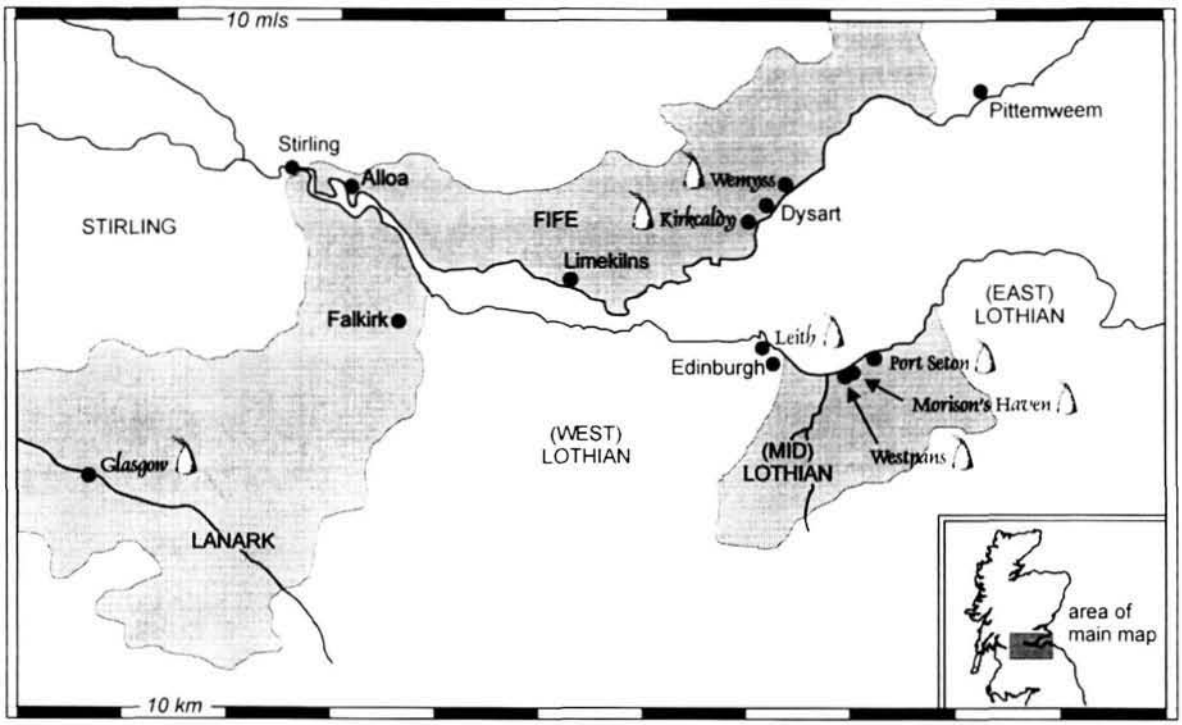
England. The entrepreneurs responsible for funding and managing the glassworks have been traced and include Scottish aristocrats, Members of Parliament and men involved with the Charitable Corporation and the York Buildings Company.

There is, of course, a paradox inherent in constructing a history such as this from extant documentary material: one business may bequeath a large archive, while another of equal or perhaps more importance, may leave no records. The volume of paperwork is often in inverse proportion to the efficiency of the business it concerns, since it is generally related to problems experienced by the owners and management. The Glasgow bottleworks, which was built in 1701 by three merchants and was producing bottles on the same site, with the original partnership agreement still extant 40 years later, has left little evidence. Not even a formal tack was written until 1742. In contrast, the Morison's Haven glassworks suffered from mis-management, disagreements and financial difficulties, leaving behind a wide variety of records, many of them related to legal proceedings. As a result it has been possible to write only little about Glasgow, but a great deal about Morison's Haven. It should, therefore, be borne in mind throughout this monograph that the volume of material presented bears no relation to the relative significance of the establishments discussed.

A further constraint which inevitably distorts the record, is access to archival material. The name of Wemyss is, for most glass historians, synonymous with the early Scottish industry. There is, however, virtually no documentary material available about the first period in the history of the glassworks there, and very little concerning the second. Until it is possible to obtain access to the Wemyss Castle archives there seems little chance of expanding our knowledge of this important site. Although more material about other sites has come to light than I ever dared hope when I began my research, there are inevitably some important gaps. Newhaven is particularly frustrating: there seems no doubt that a glassworks was built there, but we do not know when – it was 'old' in 1724 and no information about it has been found. The Citadel glassworks at Leith is also problematic: it is well documented for a short period, but after its sale in 1664, there is nothing.

Finding the products of all of this industry has been even harder. There is a complete lack of surviving glass artefacts which were definitely produced in Scotland during the period covered by this monograph so it has been necessary to rely on material from English excavation reports and items found – but not necessarily *made* – in Scotland for illustration. More surprisingly, despite a search in the National Galleries of Scotland and elsewhere, only one painting showing glass actually in use in Scotland before 1750 has come to light (col illus 12) – although there are probably others in private collections.

Two factors are common to all the glasshouses discussed: proximity to water transport, and easy access to supplies of fuel, which, with one possible exception, was coal. The correlation between the Scottish coalfields and the glassworks sites is shown in the map of central Scotland (illus 1). The later glassworks, from the



1
Map of central Scotland, showing the coalfields in grey tone and the glassworks. (*Map by Jan Dunbar Aberdeen City Council Archaeology Unit; based on the Ordnance Survey map © Crown copyright.*)

1660s, can be roughly divided into two groups: those at Leith and Glasgow were set up by entrepreneurs with no direct involvement in coalmining; the sites were feued for the purpose; all the raw materials had to be bought in (although in Glasgow the coal was mined nearby) and for much of the time production was limited to bottles, for which there was a known market. On the other hand, the glassworks at Morison's Haven, Port Seton and Wemyss were built on land belonging to, and with the active involvement of, coal owners who needed a local outlet for their product; the glassworks formed one part of a large estate business which was chiefly concerned with farming, but which also relied on coal, salt and glass production in symbiotic relationship.

Writing in 1976, Baron Duckham suggested that 'efforts to chart English influences in Scotland over wider economic fields than coal mining would be worthwhile', citing glass manufacture as one obvious example (Duckham 1976, 45). There is no question that the Scottish glass industry was always overshadowed by the economic power of its neighbour, and more immediately by the larger glass industry of Newcastle, although there was co-operation at times, as well as rivalry. The bench-mark for quality and price was always English or Danzig glass, and most of the skilled workforce in the Scottish glassworks was recruited in England. Although there has been no attempt to single out the English influences on the early Scottish glass industry for particular comment, its existence will be evident throughout much of the narrative.

The only book purporting to cover the whole Scottish glass industry is J Arnold Fleming's *Scottish and Jacobite Glass*, published in 1938. Fleming's opening lines set the scene:

> Being unable to discover, or obtain in some cases, sufficient or satisfactory evidence for my purpose, I have been inclined when defeated in my search to throw the reins on that delightful horse Pegasus and allow him to find his way. Because this noble steed has been known to carry one pleasantly over the fields of imagination, some of which may be very homely, with which let us be content (sic) (Fleming 1938, 1).

He lives up to his word, with frequently frustrating consequences for the reader. Yet despite the whimsical and digressive style, the embroidered quotations, inaccurate descriptions and confused chronologies, Fleming's book contains many nuggets of interesting and relevant material, which require investigation. I have refrained from quoting more than a few examples of Fleming's style, but his work has certainly provided a spur to my search for more accurate information.

Given the paucity of well-researched secondary sources, it is hardly surprising that economic historians have generally written little about the early Scottish glass industry. It was, of course, of minor importance, so is naturally worthy of less attention than, for example, the textile and salt industries. Nevertheless, it played its part in supplying local demand, and thus reducing the need for imported goods; in fact, it eventually became a major player in the export market, as custom records after 1742 clearly show. It is my hope that this book will provide the evidence to enable the glass industry to be considered more fully alongside the other manufactories introduced into Scotland in the 17th century, which together formed the base on which the industrial expansion of the later 18th century was built.

Notes to the volume

The Scots still have their own legal system, of course, and the language contains unfamiliar terms, especially in the 17th century. A glossary has therefore been included, which explains very briefly the legal terms and some of the vernacular words used in contemporary documents. A further glossary offers simple explanations of the glass terminology. Weights and measures also varied not just from those south of the border, but from area to area within Scotland, making comparisons difficult. Figures quoted in the text are those appearing in the original documents and readers are referred to Table 1 in this Introduction which gives the approximate English and metric equivalents.

The reader will also be aware of numerous references to currency in Scots and sterling, which can be confusing. An equivalent of £1 (sterling) to £12 Scots has been adopted as the standard throughout the period discussed. After the Act of Union, Scots money continued to be used for a considerable period and no assumption can be made about the currency, whatever the date. Whenever it has

Table 1

A guide to Scottish money, weights and measures

MONEY Equivalents:

Scots	*Sterling*	Modern Decimal
1 PENNY	1/12 penny	–
2 pennies = 1BODLE	1/6 penny	–
2 bodles = 1 PLACK	1/3 penny	–
3 bodles = 1 BAWBEE	1 halfpenny	–
2 Bawbees = 1 SHILLING	1 penny	0.42p
13s 4d = 1 MERK		5.5p
20 shillings = 1 POUND	1s 8d	8p
12 pounds	1 pound	

LIQUID capacity measures (according to the standard of Stirling).
Common bottle sizes are in capitals.

Scots	*Imperial*	Modern Metric
1 gill	.75 gill	0.106 litres
4 gills = 1 MUTCHKIN	3 gills	0.42 litres
2 mutchkins = 1 CHOPIN	1.5 pints	0.85 litres
2 chopins = 1 PINT	3 pints	1.7 litres
2 pints = 1QUART	6 pints	3.4 litres
4 quarts = 1 gallon	3 .58 gallons	13.6 litres

LINEAR and AREA equivalents:

Scots	*English*	Modern Metric
1 inch	1.0016 inches	2.54 centimetres
12 inches = 1 foot	12.0192 inches	30.53 centimetres
3 1/12 feet = 1 ell	37.06 inches	94.13 centimetres
1 mile	1.23 miles	1.81 kilometres
1 acre	1.25 acre	*c* 0.51 hectares

Sources:

Robinson, M (ed) 1985 *The Concise Scots Dictionary*. (Aberdeen), 818.

Zupko, RE 1977 'The weights and measures of Scotland before the Union', *SHR* 56, 2 No 162 (1977), 119-145.

not been defined in the documents, an indication of the most likely currency has been made in the footnotes. Again, a table showing the equivalents has been included in this Introduction.

Primary sources are cited in footnotes and secondary published sources are quoted within the text with their full references listed at the back of the volume. A list of the commonest abbreviations precedes this Introduction. Many of the primary sources quoted will be from NAS papers, but a wide variety of documentary and printed material has been used from England as well as Scotland. Any anomolies, for example of page numbering, will be mentioned in the appropriate footnotes.

Dates given in various formats have been standardised to avoid confusion and the year has been assumed to begin on 1 January. English dates have, therefore, been adjusted accordingly. Until the English calendar was reformed by Act of Parliament in 1751, the year was deemed for most purposes to start on 25th March ('Lady Day'), according to the old Julian calendar. Dates in English records prior to 1 January 1752 are therefore often written as, for example, 12 February 1731/2, which would, in this monograph, be given as 12 February 1732. In Scotland the year began on 1 January after 1600.

1

THE MANUFACTURE OF GLASS: SOME ASPECTS OF TECHNIQUE AND TECHNOLOGY

Glass is an extraordinary substance, created from very ordinary materials for at least 4000 years – and something we now take for granted. This was not always the case. In 1621, James Howell, who had worked in Sir Robert Mansell's crystal glassworks, and was then in Italy acting as his agent, wrote to his brother from Venice:

> The art of Glasse-making here is very highly valued . . . and it is not without reason, it being a rare kind of knowledg and chymistry to transmute Dust and Sand (for they are the onely main Ingredients) to such a diaphanous pellucid dainty body as you see a Crystal-Glasse is (Howell 1650, 47).

During the period covered by this monograph, glass production in Britain changed from a small, fragmented and precarious minor industry, patronised by a few wealthy customers, to a large-scale manufacturing process providing windows, drinking-glasses, bottles, mirrors, scientific and chemical instruments for an ever-increasing public. Despite the change in scale and efficiency, however, the basic technology, apart from the switch from wood to coal-fired furnaces, remained much the same until well into the 19th century and many of the techniques are still in use today. In order to understand the industry in the period of transition, some aspects of the technology require explanation, although others will be covered in the text.

THE RAW MATERIALS

There are many descriptions of the constituents of glass; Felix Mehlman is succinct:

> Glass is created by fusing a silica such as sand, quartz or flint, with an alkali such as soda or potash. The latter acts as a flux, assisting the silica to melt, and encouraging the batch, or mixture, to combine more readily (Mehlman 1982, 8).

Silica, soda and potash, however, are not straightforward constituents; each is of a complex character, and extremely variable. Professor WES Turner's research (1956) into early glass and glassmaking processes clearly demonstrates that variability and his analyses show a wide range of chemicals contained, in

unpredictable amounts, in both sand and plant ash. He concludes that 'these facts explain why it was possible for the ancient glassmakers over many centuries to be making soda-lime-magnesia-silica glass and yet be unaware that they were so doing until the second half of the 18th century' (Turner 1956, 277). Silica provides about 60-70% of the glass batch (Mehlman 1982, 8). It was known in the 17th century that some sands produced better glass than others, as well as varying colours, but since the chemical reasons for the differences were not understood, selection of the constituents, like other aspects of the process, was by trial, error, and experience. As Turner comments, it is no wonder glassmakers closely guarded their secrets, when it was so precarious a trade.

ASH AND BARILLA

While wood was used to fire the glass furnaces, the supply of alkali in the form of ash for the flux was ensured, beech ash being particularly efficacious. Transition to coal-fired furnaces, which will be discussed in more detail later, meant that ashes had to be bought in. One source of soda, imported for the production of crystal, came from a marine plant *Salsola soda*, obtained from the Mediterranean area, and usually called *barilla* (Newman 1977, 34). An interesting description of it was given by Howell, writing from Alicante, the main source of supply, in 1621:

> It grows thus, 'tis a round thick Earthy shrub that bears Berries like Barbaries, but twixt blue and green, it lies close to the ground, and when it is ripe, they dig it up by the roots, and put it together in Cocks, wher they leave it dry many days like Hey, then they mak a Pit of a fadom deep in the Earth, and with an Instrument like one of our Prongs, they take the Tuffs and put fire to them, and when the flame comes to the Berries they melt, and dissolve into an Azure Liquor, and fall down into the Pit till it be full, then they dam it up, and som days after they open it, and find this Barillia-juyce turn'd to a Blew stone, so hard, that it is scarce Malleable (Howell 1650, 40).

In France, as well as wood ash from the fuel, bracken was employed to make *verre de fougère*. Other plants could also be used, with varying degrees of efficiency, and Christopher Merret writing in 1662 describes mixed ashes being bought to make green English glass, (Merret 1662, 264-5)[1] often leading to a poor quality product (Godfrey, 1975, 158). The ash of some northern marine plants, usually referred to as kelp, could also provide soda and potash, and was of particular relevance to Scotland, where there was an abundance of suitable seaweeds. The purest form of alkali, used at the end of the 17th century to produce 'flint' glass (lead crystal) was pearl-ash. This consisted of potash which 'must . . . be still further purified by solution and subsidence and then evaporating the fluid to dryness', the process leading to a loss in weight of 30-40% (Lardner 1832, 145).

1 Merret translated Neri's *The Art of Glass* of 1611 and added his own comments. References will be listed under the appropriate name.

2
The production of a major glass-making component. Main picture: women burning kelp at Birsay, Orkney. The photograph was taken in the 19th century, but the process of burning the seaweed in a pit had not changed.(George Washington Wilson Collection, Aberdeen University). Insert: a kelp-burning pit, one of many uncovered during excavations on Links of Noltland, Westray, Orkney (Photograph: IAG Shepherd).

KELP

The kelp industry was of major importance to the economies of remote areas, like Orkney, in the 18th century, but it is significant that one of the earliest Scottish glass producers, James Ord (who will be discussed later), applied for the sole rights to burn and prepare kelp in Scotland as early as 1621 (*RPC* 12, 771-2). A full description of the process is given by William Thomson in *Kelp-making in Orkney* (1983), so a brief note will suffice here. Both tangle, washed ashore from deep ocean beds, and rock-growing weed, which was harvested, were used in kelp production. After being dried, the weed was burned slowly in 'kilns' (illus 2), trenches or circular pits in the ground near the shore, the air being excluded. Correct combustion produced a molten mass, which was stirred with 'rakes' in

Orkney or 'clatts' in the Hebrides, 'long wooden poles sheathed in iron with a hook on their ends – until it had fused to a hot and pasty mess' (Leitch 1994). After about two days the kelp became a solid mass, which, when cold, was removed from the kiln and broken into large lumps, ready to be transported to the glasshouses or soap-works as required. It took 20 tons (20.32 tonnes) of seaweed to make one of kelp.

The quality of kelp varied greatly and it was frequently contaminated by stones, sand and unburnt weed. Its chemical content was not scientifically measured until the 19th century (Thomson 1983, 37). An 1883 analysis, quoted by Thomson, showed that the kelp contained both soda and potash in variable quantities. In good kelp, the potash content varied between 21.95% and 15.1%, while in a bad product it could be as low as 5.75%. The soda content varied between 16.85% and 2.55%, a graphic illustration of the skills needed by the founder (the supervisor of the mixing of the batch) to produce a consistent metal (molten glass).

THE USE OF OXIDES

Other ingredients could be added to the batch to improve colour and clarity, the need for them depending on the constituents of the basic ingredients and the amount and type of chemicals leached from the crucibles. Manganese and cobalt oxides, in particular, were used as decolourisers, to counteract the effect of iron, which was present in both the sand and ashes. Only one-tenth of one percent of iron oxide 'renders the glass decidedly green, though the effect can be counteracted by decolourizers' (Godfrey 1975, 157). Lime was an essential constituent for the stability of the glass, but often occurred naturally, and was not deliberately added in England *(ibid)*.

In the 1670s there was a highly significant change in the constituents of fine English glass. Working in London with John Baptista da Costa, George Ravenscroft obtained a patent for the use of lead oxide in the glass batch, eventually perfecting the production of lead crystal, superior in durability, colour and brilliance to the earlier soda glass, and ideally suited to cold-working, such as cutting and engraving. It was destined 'to establish England as the leader in the production of clear, colourless glass from the end of the seventeenth century' (Vose 1980, 119).

The only other ingredient regularly added to the glass batch was – and is – broken glass, which, as well as being economical, reduced the melting point, facilitating fusion. Known as *cullet*, it was a commodity in which there was a considerable internal trade, and which was also imported and exported in the 17th century (Godfrey 1975, 160).

THE PROCESS

The process of fusing the ingredients into glass began with converting them into *frit*: the sand and alkali were heated and stirred together until partially fused into large lumps, which were then ground to a powder and placed, with the cullet and any additional oxides, in a clay pot, or crucible. This 'batch' was then subjected to a much greater temperature until completely fused, any impurities being skimmed off the surface with a ladle during the process.

When tests showed that fusion was complete, the glassblowers took 'gathers' (varying sizes of blobs) of the molten metal and, with other members of the team, or 'chair', converted it into window-glass or vessels, often using moulds for the latter (col illus 3 and 4). The final – and vital – stage in the process was to anneal the finished products in an oven known as a *lehr*. Annealing allowed the glass to cool slowly, thus greatly reducing its tendency to shatter easily. It involved a gradual reduction in the heat to which the glass was exposed, either by slowly moving the glass away from the heat source, or gradually reducing the temperature of the oven.

A major change to traditional glass production, the switch from wood to coal as fuel for the furnaces, occured in England during the early years of the 17th century and inevitably involved several technical problems. Coal gave off noxious fumes and smoke, which were deliterious to the men working in close proximity to the furnace, while sulphur and carbon contaminated the hot metal in the open crucibles, discolouring the glass. Such discolouration was eventually used to advantage by the bottle-glass industry, but for most domestic glass of the time it was to be avoided. In a furnace designed to burn wood, coal did not reach a sufficiently high temperature to melt the batch (Godfrey 1975, 148). By overcoming these difficulties, English glassmakers not only enabled expansion of the industry beyond what would have been possible if relying on available wood for fuel, but they developed a technology which was unique to Britain for a considerable period (Hajdamach 1991, 15).

The Scots were particularly fortunate to have available coal eminently suitable for the firing of glass-furnaces. It was a hard coal, described in 1612 as 'the best flamer and consumeth away into white ashes, as having in it more unctiousnesse than sulpharousnesse' (Sturtevant 1612, 110). Glassmakers required a long clean flame, both to reduce contamination of the metal and to provide the best atmosphere for the workmen. Robert Bald, writing at the beginning of the 19th century, gives a detailed, and extraordinary, description of the 'great coal' produced in the Forth basin for the Edinburgh market. The coal was hewn, and transported, in large blocks, which could just be lifted by one or two men. According to Bald (1808, 47-50), smaller pieces, although of exactly the same material, known as 'chews', were resolutely refused by domestic consumers, but were used 'in glassworks, foundries, breweries . . . and when free of culm [dust], they produce a heat much more intense than if large masses of coal were used'. In the early days of coal-burning glass furnaces, Sir Robert Mansell, the English

glass manufacturer, depended on coal imported from the Forth, and was, for some years, convinced that no other was suitable; only when the Scottish shippers were persuaded by his rivals almost to double their prices did Mansell turn away, finding Newcastle coal a viable and cheaper alternative[2].

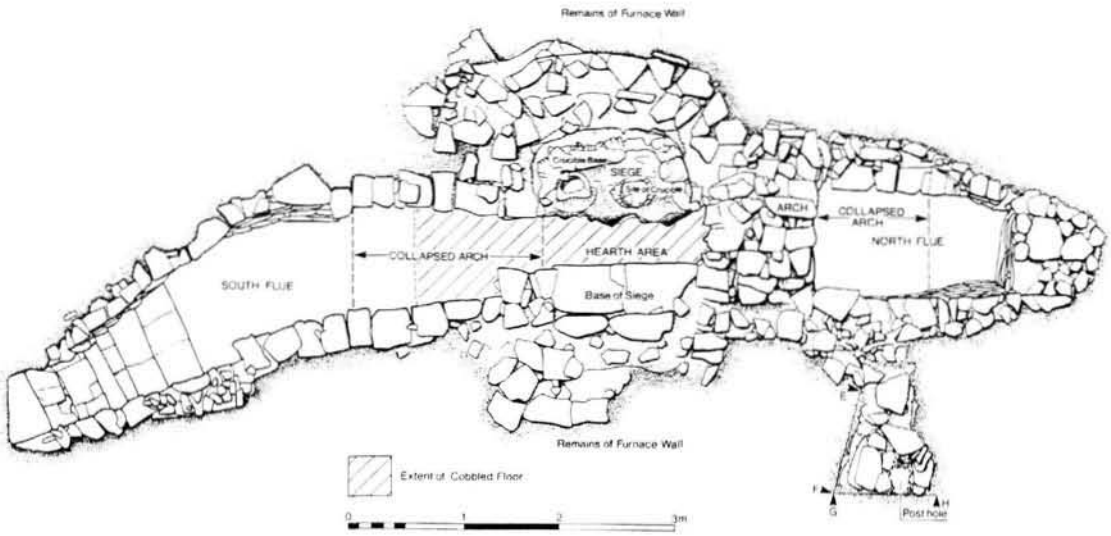
An assessment of the quantity of coal required to manufacture glass has been made (Godfrey 1975, 194), using the estimates of a factor at one of Mansell's furnaces at Wollaton, Nottinghamshire. He calculated a consumption of between five-and-a-half and six tons of coal to produce one ton of glass, which was confirmed by later accounts. Godfrey's discussion concludes that 'we may assume . . . that about 450 tons of coal were needed yearly in a broad-glass furnace operated by a single team', while a drinking-glass furnace consumed slightly less – some 400 to 425 tons (*ibid*, 195). However, Scottish great burn coal is said to have burned more quickly than its English counterpart (Hatcher 1993 1, 104), so consumption may have been relatively greater in Scotland. Faujas de Saint Fond visited Prestonpans in 1784 and commented: 'The coal of the place . . . has the deserved reputation of being of an excellent quality. It burns with a vivid, bright, and long flame; its cinder is grey and light. All that can be said against it is the trifling objection that it burns away rather quicker than the Newcastle coal' (De St Fond 1907, 173).

FURNACE DESIGN

The design of wood- and coal-burning furnaces has been described in detail by Charleston (1978), Godfrey (1975), and Kenyon (1967) and only a brief summary is appropriate here. Glass furnaces were built on the reverbatory principle by which the heat is deflected down onto the object to be heated, the smoke and flames escaping through the working holes. The fire itself was built on the furnace floor between the *sieges*, the platforms on which the crucibles stood; the low, arched roof deflected the flames and gases onto the pots (col illus 2). Green glass required a higher temperature than crystal and the intense heat often caused damage to the furnace (Godfrey 1975, 143). Kenyon (1967, 53) estimates that the temperature reached 1200°C. In addition to the main furnace, subsidiary ones for the melting of frit and preliminary heating of the crucibles was required, as well as a lehr, as mentioned above.

Crucial changes to furnace design enabled coal, instead of wood, to be burned in glassworks. Firstly, a metal grid on which to place the coals, with an ash pit underneath, was introduced. In conjunction with this, tunnels under the fire grate, extending to the exterior of the building, created a draught which greatly improved combustion, a system described as the wind furnace (illus 3). A crucial later development was the evolution of the cone to house the furnace and provide a workshop. Outlets in the cone could be closed, creating an enormous draught through the underground flues (Charleston 1978, 30-32). The increase in temperature resulting from these measures solved the problem of melting the

2 State Papers Domestic, Jas I, Vol 162, No 63, *in* Hartshorne 1968, 428.



3
The main furnace plan, Haughton Green, showing the two flues and the central hearth area, with the one remaining siege, on which were the bases of crucibles (from Vose 1994, 10).

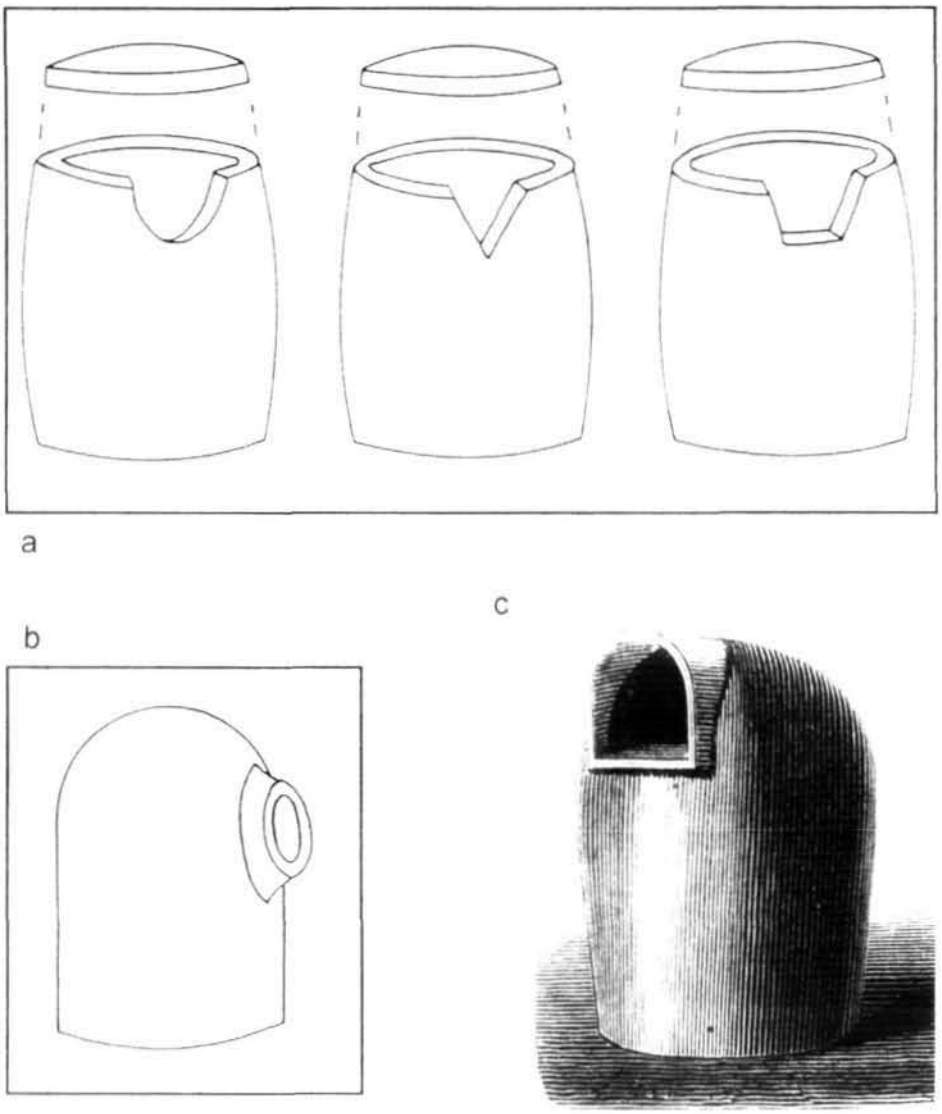
batch in closed crucibles, which became necessary to prevent contamination of the glass by the fumes and smoke from the coal. By the end of the 17th century the well-known glasshouse cone had become established, the earliest known example being built in the small parish of Christ Church, Surrey, in 1688 (Bendrey 1996, 55). Its familiar shape recurs in illustrations throughout this volume beginning with the Frontispiece.

Recent research by Colin and Sue Brain suggests that, in addition to these major developments, there was some finer tuning of temperature control during the second half of the 17th century, coinciding with the introduction of lead into the glass batch. They show that a German alchemist, Johann Rudolf Glauber, published research into a modified system of furnace air vents in 1646, leading to the development of the 'Amsterdam' furnace, which enabled much greater control of the temperature[3]. It is not known, however, whether this was introduced to Scotland.

CRUCIBLES

Excavations of English transitional coal-fired furnaces are few, but provide valuable information. A report published in 1994 on the Haughton Green furnace near Manchester (illus 3 above), which operated between 1615 and 1653, provides interesting material relating, among other things, to crucible design, long the subject of debate (Vose 1994, 1-71). Antonio Neri, whose book *The Art of Glass* was published in 1611 and translated by Christopher Merrett in 1662,

3 *Pioneering Glass* on www.interalpha.et/customer/cbrain/piogm.htm



4
a) Possible design of closed crucibles, based on material found at Haughton Green (Vose 1994, 48); b) design of an 18th-century closed crucible, precursor of those in use for the last two centuries (*ibid.* 45); c) a 19th-century crucible taken from a contemporary print.

makes it clear that great care had to be taken with the fire, even when burning dry, hard, wood, because smoke 'always hurteth, and endamageth it, [the metal] especially in furnaces, where the vessels and pots stand open, and the glass will then receive imperfection, and notable foulness' (Neri, 1662, A4).

It is generally accepted that the change to coal-burning furnaces would not have been possible without the concurrent development of closed crucibles to protect the metal from the far more noxious and unavoidable coal smoke, but no illustrations or descriptions of the early 17th-century design appear to be known

(Vose 1994, 47). Using excavated crucible shards from Haughton Green, D and FE Ashurst have postulated the theory that a V- or U-shaped section was cut from the lip of the pot, which was then covered with a flat lid, which remained *in situ* in the furnace, the liquid glass being removed, and the pot recharged, through the aperture in the side (*ibid*, 45-8), (illus 4a). This design is simpler, and would require much less sophisticated potting, than the domed pot with an integral, protected, gathering hole, which had evolved by the early 18th century (illus 4b), was modified in the 19th (illus 4c) and a version of which is still in use today.

The importance of the pots used to contain the molten glass is constantly emphasised by glass historians. Apsley Pellatt (1791-1863), owner of the Falcon Glass Works in Southwark, delivered a series of lectures to the Royal Institution on 'The Manufacture of Flint Glass, and the Curiosities of Glass-making', subsequently incorporating the text into a book, published in 1849. He began the section headed 'Glass-house pots': 'the most important department of Glass-making is the manufacture of the melting-pots' (Pellatt 1849, 50), a statement amplified by Charles Hajdamach, writing in the 1990s, who states that 'the success of the glasshouse depended entirely on the pot-maker's ability to build pots which would withstand many weeks or months of constant high temperatures and re-filling with the raw materials' (Hadjamach 1991, 22). If there were any imperfections in a pot, it would crack in the heat, resulting not only in loss of the batch, but potential damage to the furnace as well. If the clay contained too great a proportion of impurities, such as iron, it could leach out and damage the metal.

In order to ensure long-lasting pots, the clay had to be able to withstand the very high temperature of the furnace, and the corrosive effect of the molten metal. Christopher Merrett wrote that the crystal pots were made of clay from Purbeck in the Isle of Wight, 'the very same which makes Tobacco pipes', while those for the green glass furnaces were of Nonsuch clay, mixed with other clay from Worcestershire (Merett 1662, 243). It is interesting that the traveller John Ray, writing of his journey along the east coast of the Forth between the Bass Rock and Leith in 1661, described seeing glasses being made, and added 'The crucibles which contained the melted glass, they told us, were made of tobacco-pipe clay' (Ray 1760, 194).

Apsley Pellatt, in the first half of the 19th century, used the best Stourbridge clay, combined with about one-fifth of ground-up broken pots (known as *grog*) which 'not only assists to dry the pots more regularly, but it renders the whole body more porous, and less likely to split by sudden heat' (Pellatt 1849, 50). However, analysis of crucible shards from a glasshouse at Kimmeridge, Dorset, which operated from 1618-23, shows that they were ungrogged (Crossley 1987, 371). Pellat comments that the fire-clay used 'is usually found in iron districts', although it could not be iron-rich. The clay had to be meticulously prepared and – certainly in Pellatt's time – was kneaded with the mens' feet until of the right consistency. It was then built up by hand, using small rolls of clay, and taking

great care to exclude all air from the fabric otherwise it would expand in the heat and shatter.

Changing or 'setting' a new pot was a major operation, described by Haudiequer de Blancourt (1699, 23) as 'the worst and roughest Work in this art'. The new pot had to be heated gradually to 'white heat' (Pellatt 1849, 53-4) and the section of furnace wall round the working hole removed before the work could begin – the furnace fire being maintained during the whole process. Pellatt describes how the men levered up the old pot with a sharpened iron bar to detach it from the siege of the furnace. Having removed it, either whole or in pieces, 'they rush forward in face of the fiery furnace . . . and aim a blow at such of the irregular rocky incrustations of clay as adhere to the siege'. When the siege was cleared, the new pot had to be put in place 'through the flames, and that very speedily' (De Blancourt 1699, 23), using 'Iron Hooks and Forks'. De Blancourt goes on to describe the protective clothing worn by the men at the end of the 17th century:

> But before they enter on this rough Work, those who do it Cloath themselves with a Garment made of skins in shape of a Pantaloon, which they make as wet as possible, and which Covers them all over except the Eyes, and for them you make use of Glass to see to guide yourself: and without this sort of Clothing which Guards them from the force of the Fire it would be almost impossible to manage this Change of the Pots[4] (*ibid.* 24).

The furnace wall then had to be repaired before the new pot could be charged. No wonder Pellatt, writing 150 years later (1849, 54), described the process as 'a hot and fatiguing operation' which could take up to four hours, and which could result in accidents, illness, 'great excitement, energetic exertion, and exposure to the flame of the open furnace'. Pellatt expected a good pot to last three months.

The pots varied in size and were generally considerably smaller in the 17th century. Merrett gave the dimensions of a pot large enough to hold three or four hundredweight (cwt) of metal as 20 inches (0.5m) broad at the top and much narrower at the bottom, and 2 feet (0.6m) deep. The wall was one inch (25mm) thick at the top, two (50mm) at the bottom (Merett 1662, 243). The dimension of crucibles from the first half of the 17th century excavated at Houghton Green vary considerably, the base diameter of green glass crucibles ranging from 8 to 20 inches (0.2-0.5m) (Vose 1995, 43). By Pellatt's time the crucibles measured 'three feet (0.91m) external diameter, and three feet high, to the filling part, and weigh about ten hundred weight [508 kg]' (Pellatt 1849, 51), although those for coloured glass were smaller. One of Pellatt's large pots held 18 cwt of metal. While the covered pot was essential for the production of fine, clear, glass, another 17th-century invention, an entirely new type of bottle, utilised the discolouration caused by the furnace fumes, and was made in open crucibles.

4 Two entries in a list of expenditure at Morison's Haven glassworks in 1698 are payments to glassmakers for 'cloaths' costing a total of £77 13s 0d Scots (NAS RD/1441/1437). No other comparable reference has been found, suggesting that the purchase may perhaps have been some form of protective clothing.

This was the much thicker, heavier, and more robust, dark bottle, which transformed the storage of alcoholic beverages, and was precursor of the wine and beer bottles in use today.

THE PRODUCTS

BOTTLES

In 1661, John Colnett, descended from an old family of Flemish glass-makers, was granted letters patent by Charles II, for the making of glass bottles in standard sizes, claiming that he had invented the process. Within a year, however, his patent was opposed by four other bottle-makers, who claimed that Sir Kenelm Digby had actually invented the new type of bottle some 30 years before, and had employed them, and Colnett, to make bottles for him (Charleston 1984, 94; Godfrey 1975, 228-9). Their objection was upheld and the patent quashed. The starting date for the new 'English bottle' has, therefore, been assumed to be the 1630s, although the earliest dated examples are from the 1650s.

5
An English wine bottle of olive-green glass, with a circular seal inscribed 'Nich Cornock 1726'. The gradual transition from the onion- to the cylindrical-shaped bottle was just beginning around this period, but this bottle shows little sign of the changes to come. (*Reproduced by courtesy of the Trustees of the National Museums of Scotland.*)

As well as being much sturdier, the English bottle was distinguished by the 'kick' in the base, where the pontil rod (the metal rod which held the molten glass) had been attached (see illus 7). When broken off, the pontil mark was rough, but if pushed up into the base, the rough area was removed from contact with the surface on which the bottle might stand, and its stability was enhanced. The bottles also had a long narrow neck, with a ridge below the rim for tying down the cork. From the mid-17th century it became possible to order bottles bearing a seal relating to the individual concerned (illus 5 and 11), hence the often quoted diary entry by Samuel Pepys about going to the Mitre Tavern to see some of 'my new bottles, made with my crest upon them, filled with wine, about five or six dozen' (Dumbrell 1992, 25).

Based on numerous extant sealed and dated examples, chronologies of bottle shapes have been produced, providing a guide to the dates of unsealed examples

6
A transitional mallet cylindrical bottle of greenish glass, found in the garden of Saltcoats Castle, Ayrshire. Versions of this shape were produced from about 1725 until nearly the end of the 18th century, gradually becoming taller and narrower in the body, with a shorter neck. Note the high 'kick-up' in the base, visible through the rather pale glass. (*Reproduced by Courtesy of the Trustees of the National Museums of Scotland.*)

(see Dumbrell 1992; Hume 1991) (illus 5; 6 and 54 below). However, the shapes inevitably varied, since they were free-blown, and customers clearly had a choice of design – a suggested list of bottles to be made at Port Seton in *c*1730 mentions both 'round bottles' and 'long necks'[5]. Sizes too, were approximate. An agreement of 1709, at Morison's Haven, lists four-pint, chopin, mutchkin, and half-mutchkin bottles, which were to be 'sorted in three sorts viz. the larger measure, the exact measure and short measure' to be delivered separately[6].

The colour of the 'English bottle' varied between dark green and almost black, which, in the case of bottles for the storage of beverages, was considered an advantage. The higher temperatures created by using open pots in a wind furnace meant that it was possible to melt a batch containing more silica and less potash, thus creating the stronger glass of which the bottles were made. They were a very successful export, to the extent that the French tried hard to imitate them throughout the 18th century (Charleston 1984, 96).

WINDOW GLASS

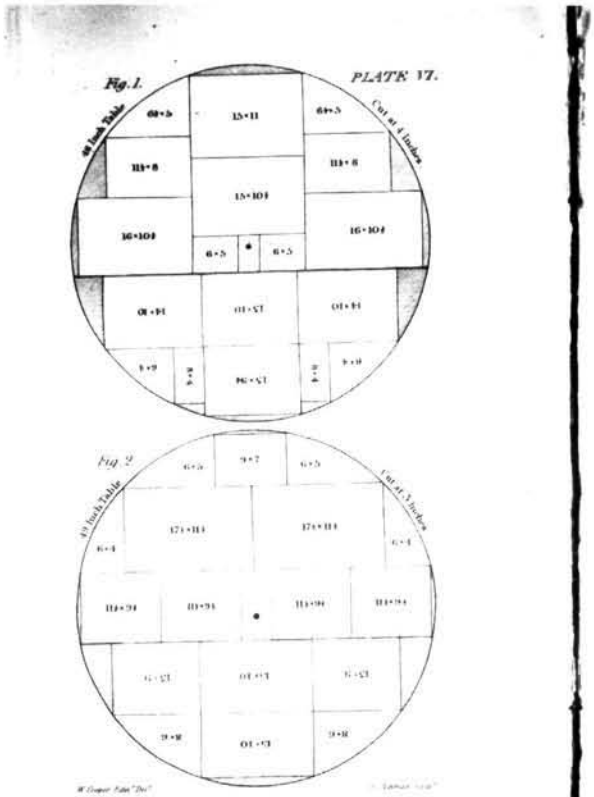
In the 17th century, two types of window-glass were produced: crown glass, which originated in Normandy, and broad glass, from Lorraine, both made by ancient techniques which had been perfected during the 14th century and re-introduced into England in the 16th (Godfrey 1975, 19–20).

Crown glass (illus 7) was produced by blowing and marvering (rolling on a flat surface, of polished iron or marble) a large gather of glass to create a sphere, to which a pontil rod was attached opposite the blowing iron, which was then broken off. The 'piece' was reheated, partially opened, and then twirled rapidly on the pontil rod until, through the effect of centrifugal force, it opened out (or 'flashed') into a flat, circular plate, known as a table. Its size depended on the amount of

5 NAS GD345/765/9.

6 NAS GD1/576/15.

7
The manufacture of crown window glass, showing the various stages in the process. The central 'bull's eye' can clearly be seen in the window illustrated in colour illus 6 (*Reproduced by permission of Pilkington plc.*)



CROWN-GLASS CUTTING. 47

48 Inch Table, PLATE VI, Fig. 1.

Large Half.

		Ft.	In.	Ft.	In.
2 panes	16 ×10½	2	48		
1 .	15 ×11	1	21		
1 .	15 ×10½	1	13		
2 .	11½×8	1	40		
2 .	6½×5	0	65		
2 .	6 ×5	0	60		
				6	107

Small Half.

		Ft.	In.		
2 panes	14×10	1	136		
1 .	13×10	0	130		
1 .	13× 9½	0	123½		
2 .	8× 4	0	64		
2 .	6× 4	0	48		
				4	69

Saleable glass cut from a 48 inch table. . . Ft. 11 In. 28

49 Inch Table, PLATE VI, Fig. 2.

Large Half.

		Ft.	In.	Ft.	In.
2 panes	17½×11½	2	115		
4 .	11½× 9½	3	6		
1 .	9 × 7	0	63		
2 .	6 × 5	0	60		
2 .	6 × 4	0	48		
				7	4

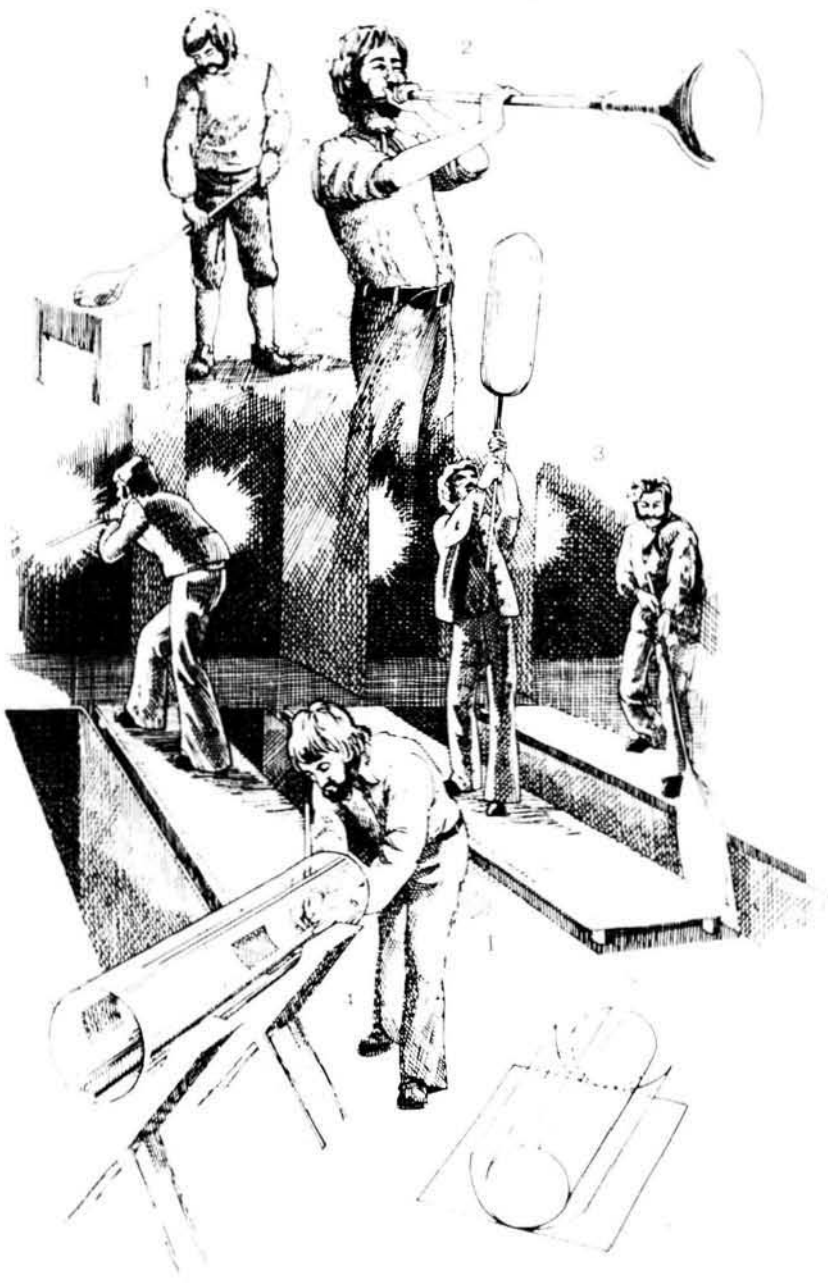
Small Half.

2 panes	15×10	2	12		
2 .	13× 9	1	90		
2 .	8× 6	0	96		
				4	54

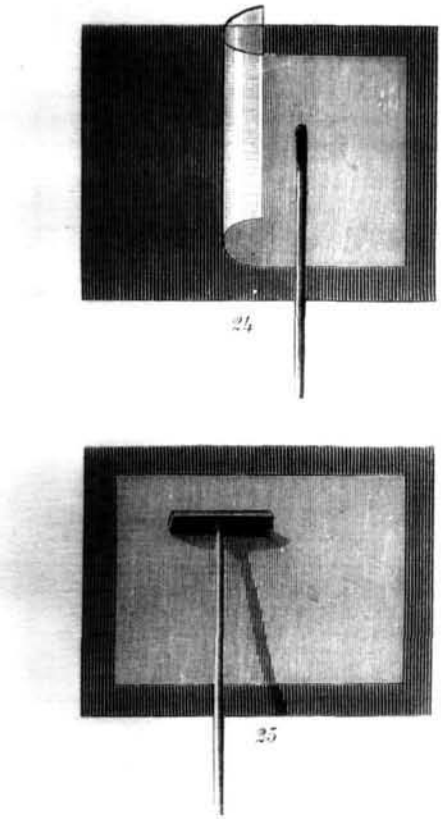
Saleable glass cut from a 49 inch table. . . Ft. 11 In. 59

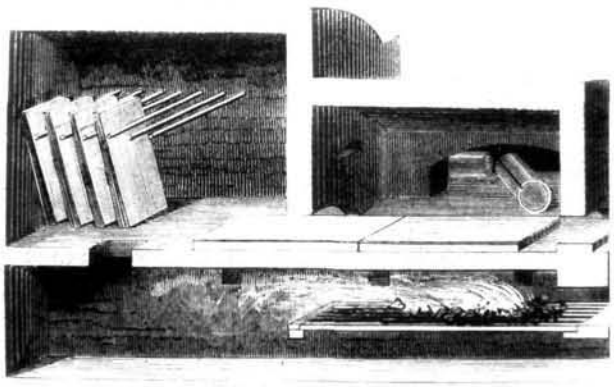
8
Diagram showing the most economical method of cutting crown glass. The 'tables' of glass shown here are 48 and 49 inches in diameter, the cutting plan for different sized tables varied acordingly. The shaded areas represent the glass that would have been sold back to the glasshouse as cullet (Cooper 1835, 46-7). (*Reproduced by permission of the Trustees of the National Library of Scotland.*)

glass metal in the gather. In his book *The Crown Glass Cutter and Glazier's Manual*, published in Edinburgh, William Cooper suggested (1835, 27) three gathers in total, amounting to nine or ten pounds [4-4.5kg] in weight; this amount of molten glass could not be obtained from the pot all at once. The circular 'table' was then cut into panes, the most economical method being meticulously described by Cooper (illus 8). The advantage of this system was that the glass did not come into contact with any surface during production, and therefore retained its brilliance. On the other hand, it was less economical because of the centre 'bull's eye' and the waste from cutting. This was, however, sold back to the glasshouses as cullet. Although it was always possible to incorporate the bull's eye into a window, it was normally discarded and recycled, as Cooper showed. Modern moulded copies reflect a romanticised view of the bull's eye in old windows, which, in small panes, would actually have greatly distorted the view through the glass. An unusual example of a table of crown glass used in a window can be seen illustrated in the colour section (col illus 6). During the 17th and 18th centuries, window-panes were, of course, much smaller.



9
The manufacture of broad glass, showing clearly the size of the gather. Some early illustrations show the glassblower standing on a raised surface, rather than next to a pit. (*Reproduced by permission of Pilkington plc.*)





10
Various stages in the process of making broad glass, taken from a late 18th-/early 19th-century print: top: the cylinder being flattened out; centre: the final flattening with the aid of a soft-wood tool; bottom: the oven in which the glass was heated and flattened, with the annealing oven or 'lehr' to the left.

The Lorrainers' method for the production of broad glass (illus 9) was to blow a large cylinder, or 'muff', of glass, again using a multiple gather. The usual gather at one of the few surviving broad glass producers at Saint-Just-Saint-Rambert weighs 15-18 pounds[7], but it is likely to have been less in the 17th century. The blower, standing on a raised surface, would employ a combination of blowing, turning and swinging the glass to create a large cylinder, the ends of which were then cut off. It was slit along the side, reheated, and flattened to form a roughly rectangular sheet of glass (illus 10). Although the shape of the finished glass was more economical, the surface was marred by contact with the surface on which it was flattened. Broad glass was the most common variety found in Britain in the 17th century (Louw 1991, 48), but as cheapness became less crucial and quality more important, crown glass became increasingly popular during the 18th century (Barker 1977, 25), and continued to be made well into the 19th, the last furnace being shut down in 1872 (*ibid*, 126).

PLATE-GLASS

Mirror glass was not made in England until the 1620s, and was not attempted in Scotland until the end of the century. Until then finished mirrors were imported into Scotland from northern Europe, but from the 1690s some plate-glass appears to have been produced locally, while rough plate-glass was also imported and finished. Plate-glass, from which mirrors were made, was considerably thicker than that required for windows, to allow for the grinding and polishing needed to produce a flawless surface. The same glass was used to provide windows for coaches and sedan chairs, since it had to be strong enough to withstand the stresses inherent in such vehicles.

In the 17th century there were two ways in which plate-glass was produced: the

[7] Author's observation, Verrerie de Saint-Just, 1995.

broad-glass method described above, which continued to be used in England until the 1770s (Wills 1965, 55); and casting, a system developed in France in 1688, but not used successfully in England until 1773 (*ibid*). In the latter method the molten glass was poured onto a sand-covered metal plate with raised edges and was pressed flat with an iron bar. In both methods the quality of the ingredients had to be high, in order to avoid impurities, which could not be disguised.

Transforming the rough plates of glass into mirrors was the task of specialist craftsmen. Their job was onerous and unhealthy, using abrasives of varying courseness to first grind and then polish the glass, the time-consuming and labour-intensive work being described in detail by Geoffrey Wills. The glass finally had to be silvered, a process explained in 1757 by 'A Glass-House Clerk' in *The Plate-Glass Book*:

> The Plate being polished, a thin blotting Paper is spread on a Table, and sprinkled with fine Chalk; and this done, over the Paper is laid a thin *Lamina*, or Leaf of *Foil*, on which is poured *Quicksilver*, which is to be equally distributed over the Leaf, with a Hare's Foot, or Cotton. Over the Leaf is laid a clean Paper, and over that the Glass Plate – With the *left* Hand the Glass-plate is pressed down, and with the *Right* the Paper is gently drawn out; which done, the Plate is covered with a thicker Paper, and loaded with greater Weight, that the superfluous Quicksilver may be drawn out, and the *Foil* adhere more closely to the Glass. When it is dried, the Weight is removed, and the Looking-glass is complete (A Glass-house Clerk, 1757, xxii)[8].

It was then ready for the frame-maker.

The quality of the glass, the number of processes through which it had to go, and the considerable risk of breakage, inevitably meant that the price of mirror glass was high, particularly for large plates. *The Plate-Glass Book* consists largely of tables which show that the selling price for finished looking-glass, including duty, in 1757, was 5s 5d (sterling) for a plate measuring 10 x 12 inches (0.25 x 0.30m); £9 19s 0d (sterling) for one of 30 x 40 inches (0.76 x 1.02m); and £81 17s 0d (sterling) for the largest size listed, measuring 42½ x 60 inches (1.08 x 1.52m).

SPECIALISED PRODUCTS

Lenses, scientific instruments and other specialised types of glass were, of course, used in Scotland but there is no evidence that the glass components were made there during the period under discussion. William Morison's patent to make glass in 1698 did include watch glasses, which were cut and ground from the same flat sheets of high quality glass as mirrors, but he does not appear to have succeeded in producing them, at least to an acceptable standard (see Chapter 9 below). James Short (1710-1768), a famous Scottish instrument maker who began

8 Fleming (1938, 106), claims that William Morison invented a similar process, but there is absolutely no evidence to support this assertion in Woodcroft (1969) or elsewhere.

working in Edinburgh in 1732, although he moved to London in 1738, rapidly moved away from using glass mirrors in his telescopes, as he found 'speculum metal' more effective (Clarke *et al* 1989, 2). His brother, Thomas, was an instrument maker in Edinburgh and Leith from about 1737, but any glass he and others required was almost certainly imported and, since highly specialised production techniques were involved, they will not be examined here.

SAND-GLASSES

There is, however, evidence that hour-glasses were made at Leith in the late 1670s or early 1680s (see Chapter 6 below). These devices, more accurately known as sand-glasses, were widely used to denote the passage of a fixed period of time. Although this was usually an hour, it could be adjusted – log-glasses used on ships were, for example, set to measure from 14-28 minutes (Newman 1977, 271). They were made from two blown-glass vials connected through a small neck (illus 17 below), set vertically into a wooden frame (col illus 7). According to Newman's *An Illustrated Dictionary of Glass*, the two vials initially had a small metal diaphragm containing a tiny hole set between them, and were joined together by an applied glass thread. In the 18th century, they were joined together by a 'sealed-in metal bead', and only later were they made in one piece with a small passage for the sand to pass through. Godfrey's description of hour-glass producton in the 17th century differs somewhat from Newman's, however. She writes that the vials were made by 'filling [the vials] with sand and then joining the narrow necks over a flame, a process known today as lamp-working. The process required no great skill . . .' (Godfrey 1975, 233). It is clear from both descriptions, however, that the vials were provided by the glasshouses for specialist hour-glass makers. Before the 17th century, sand-glasses were imported into both England and Scotland from Germany, the Low Countries and Venice, but they were subsequently produced by Sir Robert Mansell.

In conclusion, it should be born in mind that, despite the changes to furnace technology and the ingredients used in the batch, which have been described above, the glass blower of 1750 would have used the same tools, employed the same techniques, and worked the same hours, as his predecessor in 1610. And his successors would continue to do so, until the introduction of pressed glass in the 1830s.

2

THE COMMERCIAL BACKGROUND IN SCOTLAND

At the beginning of the 17th century, the commerce of Scotland was largely based on the products of long-established indigenous trades, sold within the country under the rules of the burghs; on imported manufactured goods, sold by merchants who traded overseas, especially with the Low Countries, the Baltic and France; and on the export of raw materials, such as hides, wool and coal. Raw materials, particularly iron and deals, were also imported in considerable quantities. Most of the inhabitants lived at subsistence level, the bulk of the population being in the Highlands. However, for a small but growing number of men in the central belt, especially Edinburgh, overseas trade was leading to increased prosperity, with its concomitant demand for non-essential goods, such as glass, and the services of professionals, such as lawyers.

The range of imported goods available, theoretically at least, is illustrated in 'The Book of the Rates of Customs and Valuation of Merchandises in Scotland A.D. 1612' (*Ledger of Andrew Halyburton*, 288), which includes (as well as furniture, carpets, dolls, hats, silk, oranges and numerous other items) beads of crystal, glass flagons, burning glasses, looking-glasses, hour-glasses, glass vials and 'vantoses' [cupping glasses], water glasses, wine, beer, and 'Venice' drinking-glasses, and seven types of window glass. The disparity between the number of potential imports and exports is graphically illustrated by the fact that the list of the former occupied some 48 printed pages, the latter only five (*RPC*, 9, pp lxix; lxx). Clearly, since the raw materials exported were insufficient to pay for the goods imported, there was a constant drain on the country's finances, a situation which exercised the minds of those in power throughout the 17th century. This chapter will attempt to examine the steps taken to correct that balance, with special reference to the glass industry, and to explore the business practices which developed during the century.

MEASURES TO ENCOURAGE MANUFACTORIES

In the introduction to his seminal book, *The Constitution and Finance of English, Scottish and Irish Joint Stock Companies to 1720*, WR Scott described (1911, 123) the two dominant economic policies of the reigns of James VI and Charles I; these were: to encourage home fishing; and to attempt to establish Scottish manufactures. The latter aim, which continued to be dominant throughout the 17th century, was of particular importance in combating the drain on currency

described above. Encouragement was given in the form of patents of monopoly and, especially in the latter half of the century, supportive legislation granting valuable privileges, exemption from taxes and – crucially – protection from imports. These inducements featured prominently in the history of the Scottish glass industry.

Scott mentions several grants of monopoly given to Scots favoured by James VI, including Nathaniel Udward and Patrick Mauld for soap and Sir George Hay[1] for the manufacture of glass, but he goes on to say that 'none of these industries was successful' (WR Scott 1911, 124). In the case of Sir George Hay's glass manufacture, at least, Scott was mistaken: Hay not only succeeded, but he succeeded handsomely, and his family benefited from the proceeds of the glass patent for nearly 70 years, as will be shown in Chapter 4. Although Hay's venture was not typical, because of the political situation peculiar to the glass monopoly, it can be shown that the manufacture of glass in Scotland continued from the granting of his patent in 1610, through to 1750, the end of the period under discussion, almost without a break. Whether this success was directly related to the fiscal policies is for others to judge.

In order to encourage the establishment of new manufactories and to nurture their development assistance was offered piecemeal to the different manufactures, until home production was, in theory at least, completely protected by an 'Act for encouraging trade and manufactures' in 1681 (*APS* 8, 384), which consolidated much of the earlier legislation and, in particular, a similar act of 1661 (*APS* 7, 262).

As well as confirming the same rights to foreigners who brought in new skills and capital as those possessed by native Scots, the Act also exempted imported raw materials from duty for 19 years; confirmed that no soldiers should be quartered, nor levies imposed, at a manufactory; and exempted employees from military service for 7 years. It also forbade the importation of many luxury items such as fabrics, shoes and carpets. In order to benefit from these considerable privileges, the status of a manufacture had to be granted by Parliament. Without such measures, particularly protection from imported goods, many early industries would, no doubt, have struggled even more than they did. However, Smout (1963c, 456 n3) has pointed out that, certainly as far as foreign textiles were concerned, weak administration in Scotland failed to prevent imports, despite the legislation, and similar enforcement problems were experienced by glassmakers. However, the Scottish glass industry would certainly have been even more vulnerable to the products of Newcastle without some attempt at protection.

Under James VI, Sir George Hay obtained both a ban on imports and permission to export to England, but that extent of royal patronage was unique to him. Later, in 1664, frantic appeals by Robert Pape to take stern measures to stop bottles

1 Scott mistakenly calls him 'Sir John'.

being brought in were heeded by the Scottish Privy Council, but apparently to little effect. In the end, however, an assured market was the only key to survival and the early Scottish glass industry survived because of the population's penchant for wine, and the volume of the trade with France, which created a steady demand for the 'English' bottle, and for which Scottish manufacturers retained their monopoly until the Union of 1707. By then, despite the opening up of the market with England and being drawn into the war with France, the Scottish trade was strong enough to support three glassworks, two on the east, one on the west coast, at least until the end of the 1720s. That is not, of course, to say that there were not severe peaks and troughs in their fortunes, before and after the Union.

THE IMPORTATION OF FOREIGN EXPERTISE

Measures designed to encourage the establishment of manufactories tended to be legislated for in an *ad hoc* manner, implemented throughout the century, as the need arose, and often in response to individual requests. James VI clearly wanted to encourage 'the practice of tradis not formarlie knowne' (Donaldson 1965, 244) for which not only were monopolies deemed necessary, but the acquisition of foreign expertise was recognised as essential. Flemish and English weavers, dyers, spinners and waulkers came to Edinburgh to improve the all-important cloth industry in the early years of the 17th century (*ibid*); English iron smelters worked for Sir George Hay on Loch Maree from *c*1612 to 1626; and a small colony of Italian Catholic glassmakers lived and worked in Morison's Haven in the 1620s, until about 1646. Smout emphasises (1961, 249) the dependence of the newly established Scottish sugar-houses on the expertise and equipment of Dutch and German sugar makers.

When William Scott was granted permission to set up a manufactory of 'Coaches, Chariots, Sedans Coach harnish and Glasses . . .' in 1693, he committed himself to import skilled workmen 'until these of this nation be capable and instructed in the said Trade' (*APS* 9, 321). Without the positive enrolment of English and European experts throughout the century, there would have been no Scottish glass industry. Nor would soap-boiling, sugar-refining or papermaking have been possible.

So how were these foreign experts found? In the case of the glass industry, at least, it was by active recruitment, usually in London. Venetian glass maker John Maria del Aqua was recruited in 1617 by a London goldsmith, who appears to have acted for the proprietors of two glasshouses in Scotland. Other Venetians were, no doubt, persuaded to go to Scotland by Hay's English friends and backers, much to the annoyance of Sir Robert Mansell, who had brought them to England in the first place, at some considerable cost. The proprietors of the Glasgow sugar-houses recruited men from the Low Countries, sometimes using the good offices of Andrew Russell, Scottish factor in Rotterdam, to recruit skilled workmen for them. The cost of their travel and other expenses also provoked comment (Smout 1961, 249).

On occasion the only means of acquiring English manpower was to involve English partners. In 1628, after the expiry of Sir George Hay's lease of the Loch Maree woodland (see Chapter 4 below and colour illus 10), Colin, Earl of Seaforth, greatly expanded the ironworks there in order to exploit the patent granted to his partners James Galloway and Nathanial Udwart of Leith for 'the sole makeing and casting of Iron Ordynance shott and other Engynes of warre within the kingdom of Scotland'[2]. The initial capital of 46,665 merks Scots came from Sir George Hay, John, Lord Hay of Yester and the patentees themselves[3]. Seaforth was, however, unable to obtain experienced workmen and had to take into partnership four Englishmen who undertook to provide a suitable workforce, without which the large Scottish investment would have been doomed to failure[4]. The 'good skillfull and expert able workmen' the English partners contracted to send from London were 'a founder, a montoer a [h]oweller, a bower and a cutter', who were to set up a trial furnace. Others were to be employed later as required. Among the conditions imposed under the contract was agreement that should the venture fail, the partners would pay the cost of travel to the workers' homes and compensation for working time lost.

One of the inducements to foreigners was the offer of naturalization, confirmed in an Act of 1641 and again in 1661, and it seems likely that at least one Italian family took advantage of this. It will be shown in Chapter 5 that Cornelius Visitella, a glassmaker, stayed with Sir James Hope of Craighall in 1647 and gave him an estimate of the costs of setting up a glassworks at 'the Pans'. He had remained in the area with his servitor, after the departure of other Italians from the first glassworks at Morison's Haven. In 1662 a Jacob Visitella, probably Cornelius' son, was making glass at Westpans, under licence to Charles Hay, and a further Jacob was working at Morison's Haven in 1707. He was almost certainly the third generation of the family, since glassmaking was an arduous occupation, and a working life of over 45 years seems rather long[5].

Lists of all the men known to have worked in the glasshouses in Scotland appear in the text; most of the names are English, and only minor change is evident through time. The first names listed, however, are Italian – men known to have been recruited either from Murano or from Antwerp, whose skills were needed by Sir Robert Mansell in his English glasshouses and who, despite their protestations, were probably bribed to go to Scotland. Later in the 17th century, expert glassmakers from well-known Italian and French families were contracted by Scottish entrepreneurs to run the glassworks in the Citadel at Leith, and at Morison's Haven, although most of the workforce was English, recruited in

2 NLS Ch. 10799. Articles of agreement, 26 June 1628. My thanks to Fiona Watson for drawing these papers to my attention.

3 NLS Ms. 14476/19, 1627.

4 NLS Ch. 10799.

5 Italian physician Bernadino Ramazzini's treatise on occupational diseases (1713) included those of glass- and mirror-makers. He wrote that glassmakers retired from their work at the age of 40, since 'no one could endure for long the strain of such work as these men have to do, nor could it be kept up except by robust men in the prime of life' (*De Morbis Artificum* trans Wilmer Cave 1964, 63).

London or Newcastle. The glass industry was unlike others, however, in that the teams of workmen were often itinerant – they moved to where the work was, commanded high wages, and guarded their secrets. Contracts of employment signed by Edward Dagnia and Daniel Tittery in 1663 and 1698 were quite specific in their requirements, but these did *not* include teaching local men their skills. In terms of employment, therefore, certainly in the 17th century, glassmaking was of limited consequence, although unskilled labourers and some semi-skilled local men were employed. More importantly, it did not increase the national skills-base until well into the 18th century.

SIZE OF THE WORKFORCE AND PRODUCTION LEVELS

In terms of numbers, the total workforce employed in the glasshouses was very small, although their volume of production was considerable. Evidence from Leith and Morison's Haven (see Chapters 5 and 6 below) shows that in the mid-17th century two skilled glassmakers with their servitors expected to produce between 1,200 and 1,800 wine or beer glasses a week, the variation depending probably on the complexity of the designs. Visitella also expected one workman and his servitor to make 60 dozen mortar glasses (small drinking-glasses) a week (see Chapter 6 below). Only four men (the founder and three labourers) were said to be needed to support two gaffers (master glassblowers) and their servitors in 1647, making a total workforce of eight, although more may have been employed once the business was up and running. A glasshouse was expected to be operational for only 20-40 weeks a year (Godfrey 1975, 186-7), so the potential production would have been between 24,000 and 72,000 wine, beer or mortar glasses annually.

Since Visitella had worked for Sir Philibert Vernatti at Morison's Haven, it seems reasonable to use his figures retrospectively to calculate the possible number of employees there in the 1630s. If it is assumed that the eleven Italian glassmakers at Morison's Haven in 1635 comprised five teams and a *conciator* (or founder, the supervisor of the mixing and melting of the batch); they would have needed at least ten labourers and perhaps others to deal with the large quantity of raw materials and finished products, a total workforce of between 20 and 30. Their productivity is more difficult to estimate, since they probably made more intricate glasses than the simple blow-moulded designs described by Visitella. These would have taken longer to create, thus reducing the output considerably. However, it can be said that the *potential* volume of basic wine or beer glasses, using Visitella's figures, would have been between 120,000 and 360,000 a year. Working from that premise, Godfrey's figures of 142,500 ordinary and 890 dozen crystal glasses exported to London in 1621 imply a workforce of at least 30 in Scotland in the early 1620s. When the low level of Scottish demand for drinking-glass is taken into account, as witnessed by the inventories and accounts described in Chapter 3, it is easy to see why protection from imports and access to an export market were considered essential.

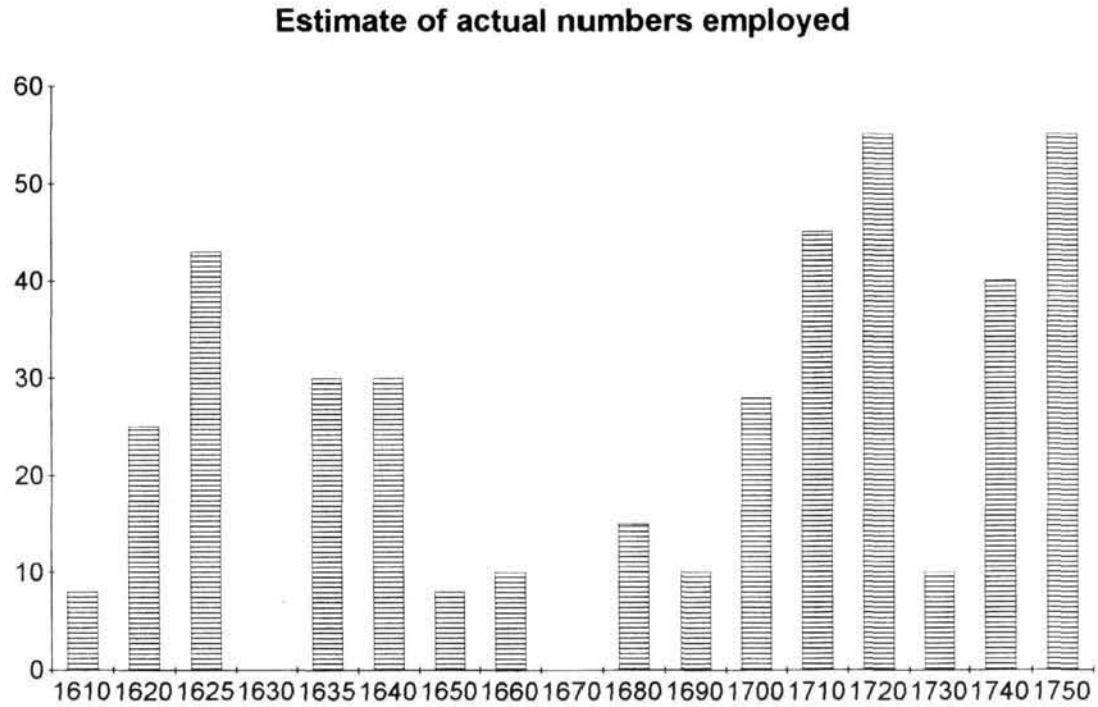


Table 2
A chart showing the estimated number of workmen employed in the Scottish glass industry between 1610 and 1750. The figures can only be taken as a very rough guide and are averaged over each decade, so the peaks do not coincide with individual years.

The expected level of bottle production at a four-pot furnace at the end of the 17th and into the first half of the 18th century was 2,880 chopin bottles weekly, produced by a workforce of eight plus the chief workmen, probably two in number (see Chapter 7 below). At Morison's Haven in 1711 the workforce was thirteen strong: the three glassmakers, making mostly bottles, required a support team of ten, comprising two boys, two furnace men, two 'ashburners', a caulkerman, a packer, a 'caneman' and a 'spare man' (see Chapter 9 below), implying a potential production of 4,320 bottles weekly (86,400-172,800 annually). At Port Seton the workforce seems likely to have numbered between 25 and 45 for a brief period around 1730, when an ambitious range of sophisticated vessel glasses and window glass was being produced[6]. As well as the manual workers, each glasshouse employed at least one glasshouse clerk, with a variety of duties including procurement of materials, payment of wages, keeping the accounts, hiring workmen, and generally ensuring the smooth running of the establishment.

A very approximate estimate of the size of the workforce operating in Scottish glasshouses over the period 1610-1758 is given in Table 2. To put the figures in perspective, Smout, discussing the early Scottish sugar-houses (1961, 248), estimated that it is unlikely that those in Glasgow sugar-houses employed 'more than a dozen men each, even with distilleries added'. Four such concerns were set

6 The difficulty of interpreting terminology also hampers accurate estimates, eg does the term 'glassworkman' refer to a gaffer or another member of the team?

up between 1667 and 1701, although there were periods when only one was operating. It seems reasonable, therefore, to estimate that the total workforce in the sugar and rum industry ranged from less than twelve when the Wester Sugar House operated as the sole sugar-boiling company from 1667 to 1669, to 48 in the early 18th century, when four sugar-boiling and rum-distilling houses were operating, three in Glasgow and one in Leith.

THE EFFECTS OF THE LOW LEVEL OF DEMAND

WR Scott (1911, 126) describes the greatest difficulties faced by three early woollen mills as 'the necessity for importing skilled workmen, the hindrances to the disposing of the goods . . . and the want of sufficient capital'. The wool manufacturers had the trade restrictions of the burghs to contend with, but, in all other respects, the same problems were experienced by the glass manufacturers. Once the seeking out and procurement of foreign workers was accomplished, disposing of the goods they made was probably the biggest problem. Although it expanded considerably during the 17th century, the Scottish market remained relatively small. A complaint which occurs again and again in appeals to the legislature for help, is that the market could not absorb the volume of glass produced. The problem is neatly summarised by an entry in Sir James Hope of Craighall's diary of August 1647, following discussions about establishing a glasshouse: 'the great impediment would be no vent [sale] for the glasses' (Balfour Paul (ed) 1919, 127).

It is clear from the inventories and accounts examined in Chapter 3 that demand for drinking-glasses was restricted to those with considerable disposable income, and that only bottles were found in large numbers in the houses of the upper and middling classes. All glass was expensive: in 1647, Visitella priced wine glasses at 2s (sterling) a dozen and beer glasses at 2s 6d (sterling) (Balfour Paul (ed) 1919, 140), both prices presumably at the furnace door. In 1689 a chopin bottle cost 3d (sterling) (Dunbar 1886, 128).

Window glass was also a luxury affordable only by the wealthy. Although demand had increased at the end of the 17th century, it was difficult throughout the period for the Scottish glasshouses to compete with the quality of the long-established foreign window-glassmakers and those of Newcastle.

WAGES AND COMPETITION

The expedient of reducing production was not possible for the glass industry; once the fire was lit, it had to be maintained as long as possible, being worked round the clock in six-hour shifts. Wages were high, and if the fire was out, 'dead', or 'play' wages, of half the usual rate, had to be paid, otherwise the men would pack up and move elsewhere. In 1647 a skilled drinking-glass maker earned £2 5s 0d (sterling) a week, while his servitor received 15s (Balfour Paul (ed)

1919, 140). Wages for the bottle-makers at Morison's Haven in 1711 ranged from £1 to 4s (sterling) a week[7]. It is more difficult to estimate the earnings of bottlemakers since they were paid by piece-work. In 1689 the pot-maker, founder and clerk at Leith each received 10s (sterling) and a labourer 4s (sterling) weekly. The wages of skilled men appear to be astronomical in relation to other Scottish workers, but a direct comparison is impossible, bearing in mind that the full wage was paid only when the furnace was in operation, which could be for just 20 weeks of the year. In addition to high wages, contracts with master glassblowers often included free lodgings and fuel, while other crucial employees were also sometimes offered accommodation.

Wage rates appear to have declined between those recorded in 1620, when John Maria del Aqua was paid 34s (sterling) a week and his servitor 18s (sterling), and the rates in 1711 of £1 and 10s (sterling) listed above. There are probably two reasons for the difference. Firstly, it is not possible to compare the rate commanded by an immigrant Venetian wine-glass maker with that of a British bottle-blower; and secondly, it seems likely that the general downward trend reflected the presence of an increasing pool of trained English glassmakers available to the industry – although skilled men were still much in demand.

In his study of the Scottish salt industry, Whatley estimates (1987a, 123) that a master salter at Wemyss and Methil in the second half of the 17th century earned about £14 (sterling) a year. However there were wide variations in earnings over time and in different areas, and (like the glassworks) the saltpans were often not in operation so wages stopped, although some financial compensation was often paid. As clerk to the Leith glassworks at the beginning of the 18th century, Alexander Ainslie was paid £40 (sterling) a year, but he was also a shareholder and probably had more than the usual responsibilities. In 1724 the annual salary proposed for a treasurer and book-keeper to the Rope and Sailduck Manufactory at Leith was £25 (sterling)[8] probably a more usual rate.

Payment of 6s Scots a day 'was a fairly standard daily rate of pay for salters engaged on casual work for much of the eighteenth century' (Whatley 1987a, 121). If a six-day week is assumed, their equivalent of 3s (sterling) a week can be compared to the 4s earned by the glasshouse labourer. There are, however, too many variables to enable any safe comparisons to be drawn.

A team of glassworkers produced a roughly predictable number of items per shift and, in order to be economically viable, these had to be sold at a rate competitive with Newcastle, London or Danzig. Not only had the glasses to be sold, but they had to be sold quickly enough to maintain the constant cash-flow essential to buy the fuel for the furnace, replenish the stocks of raw materials and pay the wages.

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[7] NAS GD 1/576/15.

[8] NAS RH15/93/13/2. Proposal to partners for appointment of treasurer and book keeper to the company.

11
A group of bottle seals found in Scotland, including two dated examples from 1709 and 1751. One (MEN 39) carries the arms of the Duke of Hamilton, while two from the late 17th century show the winged heart and coronet of the Marquess of Queensbury's crest. Although it is impossible to be certain, it is likely that at least some of the bottles were made in Scottish glasshouses. (*Reproduced by courtesy of the Trustees of the National Museums of Scotland.*)

The reality of the particular problems of glass production is born out by the evidence presented to a committee of the English Parliament in 1696. Although likely to be exaggerated, in order to support their contention that the English glass industry was being decimated by the imposition of a new duty, the petitioner representing the London bottlemakers explained that:

> the Glass Manufactory cannot be managed as other Trades may, to make their Goods as Customers may have Occasion for them by reason the Charges of putting in and out their Fires being 50 or 60 L. they must, when they begin to work, continue till they have made a great Quantity; in a great Part of which, they generally lose 10 or 12 L. per cent by the Breaking and Flying thereof in the Warehouses; and by some Sorts of Glass, which will grow out of Fashion, they lose often 20 or 30 L. per cent; and often lose 30 or 40 L. a Week, by Pots breaking and Loss of Metal (*J House Commons*, ix, 708).

While changes in fashion were, perhaps, less likely to have been such a problem in Scotland, breakage of the glass and the pots was a universal anxiety within the industry, and one with no obvious parallels elsewhere.

Crucially, especially after 1707, Scottish glass had to be competitive. In a telling report to Treasurer Godolphin, after the Treaty of Union, the Customs Commissioners in North Britain wrote of Scottish manufacturers being 'obliged to give over their works' because of the war with Holland, and continued: 'others of

course must desist when goods of the like fabric may be brought [imported] better & on easier terms from South Britain than those [these] parts can afford' (*Cal Treas Bks*, 22, 122). If they had not been producing wares of adequate quality, and at the right price, including sealed bottles to individual order (illus 11), the glasshouses of Leith, Morison's Haven and Glasgow, would have been quickly swamped by the products of Newcastle and Bristol after the Union.

COSTS AND SOURCES OF CAPITAL

The third problem listed by Scott which faced the early woollen mills (1911, 126) was shortage of capital. Finding men willing and able to provide the initial funding for an enterprise was difficult enough, even more of a problem was persuading them to produce extra investment to maintain production, once the business had started. By the mid-18th century, the range of men investing in industrial enterprises had expanded greatly, the number of co-partners in the larger, more capital intensive industries had increased, and the problem appears to have been largely resolved.

The cost of setting up individual glassworks varied considerably but the sums were always substantial, ranging from £4,000 (sterling) in 1635[9] to £1,600 (£20,000 Scots) in 1678[10]. Most figure given in extant documents are presented for legal or political reasons, however, so they may not be entirely reliable. The amount subscribed by the co-partners in the Port Seton glassworks in 1728 was £3,000 (sterling), but the building was later described as unfinished (see Chapter 11 below), so there may have been insufficient cash to do the job properly. In 1748 the co-partners bought their own bottleworks at Glasgow for £3,000 (sterling)[11], but that does not indicate the amount of the initial investment. Smout also found estimating the amount of capital investment in the sugar-houses a problem (1961, 248), but shows that they were valued at between a claimed £10,000 and £2,500 (sterling) in the late 17th century.

Expenditure (apart from legal costs and purchase or lease of the land) began with the recruitment of key staff, who had to be paid their travelling costs and any financial inducements to go to Scotland, as well as 'dead' wages until the glasshouse was operational. Then came building costs for furnaces and other essential structures, the procurement of raw materials and the preparation of crucibles, which could not be hurried. Non-productive on-going costs included ground rent and, until at least 1678, payments to the Hay family for patent rights.

The non-productive gestation period could be quite lengthy. When Robert Pape set up the Citadel glassworks in 1663, for example, five months elapsed between his acquisition of the patent rights and the first advertisement for his glass. The failure rate was also high. In the early 1640s, John Jossie was said to have lost

9 NAS GD406/M1.28/17.
10 NLS Dep175 Box 41, bundle 115.
11 ML, B10.15.6077.

£20,000 Scots (£1,600 (sterling)) setting up a glassworks at Westpans (Balfour Paul (ed) 1919, 141), although the costing for a projected glasshouse on the same site, including raw materials, in 1647, was the much more modest sum of £200 (sterling) (£2,400 Scots). At Leith, three ventures failed before the glassworks there was successful, one of which was also said to have cost £20,000 Scots. It must, however, be assumed that there were high hopes of eventual profitability, or entrepreneurs would not have been forthcoming.

ENGLISH CAPITAL

English capital played some part in funding Scottish glasshouses throughout most of the period under discussion, but became increasingly peripheral. Clearly there were English speculators from 1610 onwards, who were willing to invest in Scottish enterprises, and some manufactories would not have got off the ground without their capital or other assistance. The source of the funds used by Sir George Hay to embark upon his industrial career in 1610 is unknown, but it is certain that the other early glasshouses set up under his licence were funded from England, for reasons which were political as much as commercial.

After the mid-17th century, English capital was of less importance to the glass industry. Although Sir James Standsfield of Newmilns came from Yorkshire, he had lived in Scotland for 28 years before investing in the North Leith glassworks in 1678. Only Scottish funds were involved in establishing the Morison's Haven glassworks in 1698, each of the co-partners being committed to invest £50 (sterling)[12]. An alternative method of raising funds was employed by the Scots White Paper Manufacture in 1694, when 50 men subscribed for shares of £3 (sterling) each, their individual holdings varying from 20 to four. Later, some English capital from the York Buildings Company was invested – and lost – in the glassworks at Morison's Haven and Port Seton, largely thanks to dubious English speculators like Robert Hackett and the Pecks manipulating affairs for their own ends.

INVESTMENT BY THE SCOTTISH ARISTOCRACY, MERCHANTS AND CRAFTSMEN

During the 17th century there was considerable interest among Scottish landowners in industrial investment, and sometimes in direct involvement with management. In 1678, for example, Sir James Standsfield's partners were three members of prominent Scottish families. James St Clair of Roslin was actively involved with the company's management, as was Sir Robert Gordon of Gordonstoun after 1680. In 1688, George Mackenzie, Viscount Tarbat, who was very prominent in political circles and is known to have supported a variety of local enterprises including the Scots White Paper Manufacture, entered into partnership with two merchants, a druggist and a glassmaker at North Leith. He

12 NAS CS21/447.

12
Portrait of Sir Hew Dalrymple, Lord Drummore, who was an active partner of the Port Seton glassworks; by Alan Ramsay, 1754. (*Scottish National Portrait Gallery.*)

remained a shareholder in that glassworks for over 20 years, through three different partnership agreements. By the end of the 17th century, however, he was the only investor of rank there. In the 18th century, Lord Drummore (illus 12) keenly supported the establishment of the Port Seton glassworks, while Sir Archibald Grant of Monymusk (illus 13) owned shares as part of his high-risk portfolio.

It is tempting to speculate whether certain industrial ventures held more social cachet than others. For example, the list of 21 shareholders in the Gunpowder Company at Cannonmills in 1703 included six knights, a lord and the Earl Leven and his father, but named only six merchants[13]. The social composition of those owning shares in the white paper manufactory in 1694 was also biased towards those of rank, the 50 shareholders including Earl Tweeddale, Viscount Tarbat, Lord Yester, three knights, eleven men described as 'gentleman' and nine lawyers, while only ten were listed as merchants. In contrast, all 23 shareholders at Newmilns cloth manufactory in 1682 were merchants. By the mid-18th century, however, although some landed money was still being invested, Scottish venture capital came largely from men involved in a trade, commerce or the professions, usually the law. The number of lawyers prepared to speculate in manufactories did not rival that of the merchants, but they were represented in many co-partnerships, and were probably the next most numerous group. Investment in the glass industry shows, as might be expected, a clear trend towards the almost total domination of mercantile funds by the 1750s.

Although merchants were increasingly providing the investment capital for new ventures, some craftsmen also owned accumulated wealth with which they were prepared to take risks. In 1698, for example, the capital for the Morison's Haven glassworks came from three landowners, a glassmaker and a range of local tradesmen, including a vintner, glazier, wright, slater and tailor; no merchant was listed. The tailor George Livingstone is also known to have promised no less than £400 (sterling) to the Darien scheme (Dingwall 1994, 130). Glazier David Burton's ability to provide capital for both the Morison's Haven and Wemyss glassworks, and fellow glazier Thomas Waugh's expensive carved tombstone of 1705 (illus 14; col illus 5), imply that both men had access to considerable disposable income.

13 NAS GD421/5/372. It should be noted, however, that not all professions are given.

Investment in a glass manufactory was obviously attractive to those whose business involved the purchase of glass, providing an economically advantageous symbiotic relationship between investment and consumption, which ensured both a market for the glass, and a steady supply for the shareholder's trade, with the prospect of a profit on both counts. Glaziers, apothecaries and those in the wine trade were dependent on glass products and as such were obvious potential investors: by 1746, for example, five of the nineteen shareholders in the North Leith glasshouse were wine coopers and the pattern was repeated in 1756. The purchase of bottles exclusively from the glasshouse was part of their contract and obviously made sound economic sense. Similarly, in the 1730s, architect William Adam bought window glass from Port Seton glassworks, in which he had shares and to which he sold his coal.

13
Sir Archibald Grant of Monymusk from a portrait by John Smibert, 1727. (*Drawing by Alexandra Shepherd.*)

PATTERNS OF INVESTMENT

The glass industry is a particularly clear example of consumer investment in a co-partnership, but it is not difficult to find others. When cobalt ore was discovered at Alva in the late 1750s, a company was set up to exploit it and any other metals or minerals found there. The co-partners were landowner, Charles Areskine of Alva, his son James and a cousin; two Scottish merchants; an Edinburgh merchant acting for a London firm; two lawyers; the cashier of the Royal Bank of Scotland; a merchant from Hull with inside knowledge of the cobalt trade with Saxony; and Nicholas Crisp a jeweller/porcelain manufacturer/chemist in London[14]. The most actively involved shareholders were the Hull merchant and Nicholas Crisp, both of whom had a vested interest in cobalt ore and its derivatives, which were normally available only from Saxony. Crisp was not only heavily involved in smelting and testing the ore at his works in London, but in arranging trials of the zaffre (an oxide of cobalt) at English potteries. The annual cost of cobalt imports was said to be about £200,000 (sterling) at that time[15], a considerable drain on the national economy. It was also an expensive commodity for a porcelain manufacturer. Sadly, the Alva enterprise failed to produce adequate supplies of what was apparently an excellent cobalt, and the company folded in 1770 (Turnbull 1997).

As well as holding shares in a number of enterprises, ranging from the importation of commodities to new industries, a more coherent pattern of investment

14 NLS MS 5099, ff 49-50. Erskine Murray papers. 'Copy Article of Agreement of the Copartnery . . .', 30 Sept 1765.

15 NLS Ms 5098, f 63. Andrew Crosbie, London, 19 April, 1759.

14
A glazier's memorial: the headstone of Thomas Waugh, glazier, dated 1705, in Tranent churchyard, East Lothian. The detail of the design includes a lozenge of window glass, and a blowing iron with a gather of glass. Tranent is close to Morison's Haven, site of William Morison's glasshouse, which was operating in 1705.

also emerges at the end of the 17th century. James Balfour, merchant of Leith, for example, invested in a soapworks, gunpowder and alum manufactories, and a glassworks, all of which required the importation of potash. He also owned a share in imported tobacco, a shipyard and timber, and was a founder of the Company of Scotland Trading to Africa (see Chapter 6). A similar pattern can be seen in the portfolios of other investors, early examples of the trend highlighted in a list of the business interests of tobacco merchants in the second half of the 18th century (Devine 1975, appendix 177–84).

In his analysis of the contribution of merchants to the establishment of new industries in the 17th century, Tom Devine (1995) identified the origins of capital invested in 49 from a total of 52 Scottish ventures. He showed that in 34 cases all the capital came from merchants and concluded that the industrial expansion of the second half of the 18th century, to which merchant capital provided a major contribution, was based on the 'significant, though much more modest origins, in earlier times' (*ibid.* 32).

BUSINESS PRACTICES

Entrepreneurship involved not only investment of capital, but changes in approach to commercial transactions. In the first 40 years of the 17th century, as JJ Brown has shown (1986, 175), merchants in Edinburgh began to develop business practices which had become the established norm by the end of the century. Among others, Brown lists: 'involvement in partnerships; . . . the development of a credit structure, involving transferable and heritable bonds, bills of exchange and an awareness of the international money-market; . . . and the channelling of surplus capital into industrial and manufacturing enterprises'. The partnerships referred to by Brown were usually informal and often concerned shared ownership of ships or cargoes, but he makes the point that such joint capital investments were the precursors of the joint stock companies, the establishment of which was enabled by an Act of 1641 (WR Scott 1911, 127). Unfortunately, by 1640 the economic prosperity enjoyed by the merchant elite had come to an end. Whyte describes the next fifteen years as a 'period of disaster for the Scottish economy' (Whyte 1995, 281), and this period of upheaval halted any incremental progress in the development of the business practices begun

earlier. The foundations had been laid, however, and were built on in the later 17th century, to be further developed in the 18th.

JOINT STOCK COMPANIES

The precise legal rights and obligations of the early Scottish co-partnerships do not seem to be entirely clear. RH Campbell, writing on the law and the joint-stock company in Scotland (1967, 136-51), concentrates on the post-Union period. However, he makes it apparent that from the beginning Scottish law was more liberal than English, in that joint-stock companies, even if not legally incorporated, were assumed to be liable for debts only to the extent of the individual's share holding. He writes that the Scottish law of partnership 'provided for the three major advantages of incorporation: transferable shares, the right to sue and limited liability' (*ibid*, 143). This position changed as the English system came to dominate, and the question is a complex one, which appears to have been the subject of much discussion and disagreement through to the 19th century. However, Campbell is clear that, during the 17th and early 18th centuries, Bell's interpretation that: 'the very meaning of confining the trade to a joint-stock being that each shall be liable for what he subscribes and no further' held sway (*ibid*, 144).

The early co-partnership agreements, often entered in the Register of Deeds of the Court of Session, tend to be short and limited in scope, concentrating on the rules of the company, rather than wider issues. The contract of co-partnery of the North Leith glassworks of 9 August 1688, for example, sets out rules relating to meetings, accounts, requests for further advances of cash and penalties for non-compliance. The only clause concerned with non-business matters states that each investor's interest in the stock 'in loss and gaine' should go to to his heirs and specifically to 'the eldest without division'[16]. It is in sharp contrast to the much more sophisticated and comprehensive co-partnership agreement establishing another company on the same site in 1746, which extended to eight pages, each one signed by all 15 partners, and which, as well as the rules for running the business, stated in much greater detail what should be done in event of the death of a partner, and the ways to protect both the company's interests and those of the deceased[17]. Neither agreement, however, dealt with the issue of corporate liability.

The transfer of shares certainly appears to have taken place freely within the 17th-century co-partnerships: in 1699, for example, an eighth share in the North Leith glassworks was transferred from Robert Gordon of Gordonstoun to James Balfour, merchant in Edinburgh[18]. In 1686, when attempting to clear the enormous debt left by his father, James St Clair of Roslin transferred to Alexander Hamilton 'all right title or interest' that his deceased father 'had or could pretend as one of the partiners of the Glasswork in Leith in and to the said Glasseworke

16 NAS GD305/1/164/46.
17 NAS RD14/87/1747.
18 NAS RD12/41/955.

And to the Glasse houses window glasses botles wyne glasses tewells and materialls belonging thereto'[19].

CREDIT

There was, of course, no formal banking system in Scotland until the foundation of the Bank of Scotland in 1695, two years after the Bank of England, its remit being to employ capital 'in the trade of lending and borrowing money upon interest and in no other' (Hamilton 1963, 294). The maximum interest to be charged on loans was 6%, the legal maximum at that time (Saville 1996, 17). It was not until 1729 that the less conservative Royal Bank of Scotland established a cash credit system, a major break-through, about which McNeil and Lillie (1949, 192) wrote: 'The commercial prosperity of Scotland, particularly during the 18th and early years of the 19th centuries, is in a large measure due to the introduction . . . of the bond of credit, popularly known as the cash credit bond'.

In the absence of an institutional system, however, it is clear from testaments of the Scottish merchants who were investing in local industries and from the huge number of personal and heritable bonds noted in the Register of Deeds, that in the 17th century personal money lending was universal. 'Ockery', the charging of more than 10% interest was illegal, however. From the highest in the land, to people of small means, money was borrowed for varying periods of time. After her husband, glassmaker Edward Dagnia, died, for example, Joanna Coo borrowed £28 from James Cranstoun, merchant, on 18 October 1665, to be repaid before 2 February 1666, with a penalty of 10 merks for late repayment. The rate of interest was not specified[20]. At the other end of the scale, personal and heritable bonds for considerable sums were commonplace.

BILLS OF EXCHANGE

The origin of bills of exchange is obscure, but they were certainly in use in Scotland well before 1681, since an act passed that year provided for 'summary diligence upon foreign bills' (McNeil & Lillie 1949, 192), and this was extended in 1696 to inland bills. This remedy, available only in Scotland, enabled payment of a debt to be enforced on pain of legal proceedings or sequestration (*ibid*, 220). As trade prospered, the use of such instruments gradually increased so that eventually they became a major component of commercial credit and currency (*ibid*, 192). By the 1720s the bill of exchange 'had begun to serve the purpose of a cash medium, circulating for much longer periods than before and used to cover very small sums and transactions' (Devine 1995, 22).

[19] NAS RD12/26/624.

[20] NAS RD14/6/245.

ARBITRATION

One apparently quite common practice, designed to avoid recourse to the law in order to resolve conflicts, was the use of arbitrators. In 1663, for example, when Robert Pape and glassmaker Edward Dagnia were in dispute, each man chose someone knowledgeable to act on his behalf. The arbitrators were former bailies of Edinburgh, with relevant experience, and their decisions were registered with the Court of Session[21]. In 1695, articles of regulation concerning arbitration were imposed by the Scottish Parliament, to stop 'groundless and expensive pleas and processes in time coming' (McNeil & Lillie 1949, 404), so clearly the system was not without its problems. Nevertheless, it was accepted as useful; in 1746, article 13 of the co-partnership agreement of the North Leith glassworks reads:

> That all Disputes that may arise touching the meaning of the above mentioned Articles or any other Dispute or Controversy that may arise amongst the Sharers and Adventurers in this present Manufactory shall be Determined by two Arbiters one to be Chosen by each of the Contending Parties or by ane Oversman to be Chosen by the said Arbiters in Case of Varriance whose Decision the whole Parties hereto oblidge themselves to stand to abide by and fullfill[22].

DEVELOPMENTS IN GLASGOW

Although Edinburgh was still much the largest taxpayer of all the burghs, by 1670 Glasgow had risen to second place, and by 1705 was paying 20% of the total, compared with Edinburgh's 35% and Aberdeen's 5% (Smout 1968, 53). Glasgow's population is more difficult to estimate, but the place is described as 'a highly successful burgh which had developed in wealth and population at a greater rate than any other community in seventeenth-century Scotland' (*ibid*, 55). Smout lists the new industries established there after 1660: three sugar refineries, a soap works, rope works, glass manufactory, hardware works, paper mill, and more, almost all set up and financed by merchants, 'the source of practically everything that is notable and enterprising in this notable and enterprising town' (*ibid*, 57). James Montgomerie, founder with two other merchants of the glassworks there in 1700, had, like his counterparts on the east coast, a finger in several pies, not all of them in Glasgow. He was also a partner in the gunpowder company at Canonmills, near Edinburgh; he owned ten shares in the Scots White Paper Manufacture; and was later a co-partner in the South Sugar House at Glasgow, as well as being involved with the Wester Sugar House (see Chapter 11).

Smout's study is particularly interesting in his examination of the mechanics of becoming a merchant in Glasgow, all of whom were burgesses. Once a burgess, a Glasgow trader could deal locally in low-value wares, but it was also possible to sell linen cloth in England, and to trade with Ireland, thus enabling 'an

21 NAS RD14/4/1237.

22 NAS RD14/87/1747.

enterprising man of small capital to pull himself up by his own bootstrings' and accumulate enough money to apply for full commercial privileges, and to become a guild brother. Once achieved, the status of guild brother conferred the right to sell all the many goods imported from the Low Countries, the Baltic and France.

In his analysis of the activities of the enterprising citizens of Glasgow, and the emergence of a tight-knit community of families who achieved great wealth and prominence, Smout concludes (1968, 68) that it 'facilitated the formation and operation of merchant partnerships and joint-stock organisations, which are at this period often very informal simply because it is possible to do things within the kinship group without elaborate legal formality', although this very closeness did possibly stifle some risk taking. Smout puts forward the hypothesis that, because historically there was an easy relationship between the merchants and craftsmen of Glasgow, unlike that of other Scottish burghs, and because social mobility was easier, there were greater opportunities for men of vision to achieve economic success. He concludes that it may have been the unique social structure of Glasgow which enabled her 'to grasp the opening opportunities of a new economic world represented by the international commercial expansion of the seventeenth century' (*ibid*, 70). It is an obvious extension of that conclusion to assume that the merchants of Glasgow were well prepared for the challenges of post-Union commerce, the ramifications of which will be discussed in later chapters.

Events leading to the Treaty of Union are well known, and still the subject of much debate. There is no doubt, however, that after 1707, the markets for industrial production changed, both through exposure to competitive products from England and through increased opportunities for export, created by access to the Americas in particular, a market previously limited by the English Navigation Acts. On the west coast, the first seeds of trade with the West Indies had been planted much earlier. Whyte has shown (1995, 282) that 'in 1668 a company of 107 merchants was formed to trade with America', despite the Navigation Act, and that in 1686 more than 40 trading voyages went there. During the latter half of the 18th century there was an enormous surge in exports to North America, which will be discussed elsewhere.

Recent reassessments of the commercial activities of merchants and others and the business methods they used during the pre-Union period, have confirmed that the industrial expansion of the later 18th century was built on a well-established foundation, much of which evolved during the 17th and early 18th centuries. The glass industry probably required more start-up capital than most, and had particular funding problems, not least because of the demands of its idiosyncratic technology and wage structure. It nevertheless exemplifies the willingness of men with venture capital, particularly merchants, to invest in a potentially lucrative business despite the hazards.

3

PATTERNS OF CONSUMPTION

THE OWNERSHIP AND DISTRIBUTION OF GLASS

In view of the marketing problems discussed in the last chapter, it would be helpful to examine briefly the ownership of different types of glass in Scotland, particularly during the 17th century. It is, however, difficult to make a realistic assessment of the quantity of glass in the home, since documentary material is limited and what survives provides only fragmentary evidence, predominantly of the purchases of the wealthy. Inventories and household receipts can only offer the occasional snapshot, showing the possessions or purchases of individual households at a particular moment in time, although it is possible to draw some more general conclusions, particularly from the study of testaments.

As we have already seen, glass was a luxury item, and its ownership presupposed having disposable income over and above that required for the necessities of life. Gibson and Smout (1995, 340) have shown that it was not until the end of the 18th century that working people in Scotland were able to buy such luxuries as tea, sugar and imported fabrics, and that, in the 17th century, wages were often barely at subsistence level, while many were paid, at least partly, in kind. It is, therefore, safe to say that the poorest sections of the community owned no glass at all. On the other hand, it is possible to demonstrate that in the early part of the century, the obviously wealthy probably possessed glass in their windows, some bottles, and perhaps a few drinking-glasses, while by 1700 they were likely to own a considerable number of bottles, rather more drinking-glasses and several mirrors.

It is also difficult to assess the volume of consumption of the middling classes – the merchants and those in the burgeoning professions. JJ Brown, in his thesis examining the Scottish merchant elite, points out (1986, 144) that they were involved in considerable and successful commercial activity up to the 1640s. 'The consequent growth in disposable income led, for example, to greatly increased wine consumption within Edinburgh, while imports, of luxury goods as well as necessities, reached 'unprecedented levels' in the 1630s (*ibid*, 110). Gibson and Smout (1995, 9) point to the increasing indebtedness of the Scottish aristocracy to Edinburgh merchants, debts which 'grew steeply in the period 1600-1630', concluding that, for the first time, the merchants were sufficiently affluent to accommodate them. It would seem reasonable to assume, therefore, that those merchants, and the lawyers, who were becoming increasingly affluent as their

influence grew (Lynch 1991, 254), living as they did in the capital, were probably also consumers of glass to some extent.

In the less fashionable areas, however, glass ownership appears to have been minimal among all levels of society. Winifred Coutts in her analysis of the testaments in Dumfries between 1600 and 1665, shows that household glass was virtually non-existent among all classes there. One man, minister Simon Johnston, who 'ran the best equipped establishment' (Coutts 1982, 57) owned a mirror valued at six shillings, and one woman may have been owed some glasses. And that was all.

The port books, too, are spasmodic and can only provide evidence of which goods entered a particular port in a particular year; they cannot be used as indicators of consumption. 'The Book of the Rates of Customs and Valuation of Merchandises in Scotland A.D. 1612' (*Ledger of Andrew Halyburton*), lists a range of glass items and their estimated value, on which an import tax of 5% was to be levied. It cannot, however, be assumed that all these items were regularly imported since the list was designed to be a catch-all, to make sure that nothing was allowed in without payment, the funds being much needed by the exchequer (*RPC*, 9, 288).

DRINKING-GLASSES

Social historians emphasise the scarcity of drinking-glasses, even in the 18th century. Plant, for example, writes (1952, 44) that 'drinking glasses were scarce and (as in England) a single glass might go round the whole company'. Adam Petrie in his *Rules of Good Deportment*, first published in Edinburgh in 1720, admonished his readers to:

> be sure to wipe your mouth before you drink, and when you drink hold in your Breath till you have done. I have seen some colour the Glass with their Breath, which is certainly very loathsome to the Company to think they must drink out of the same Glass (Petrie 1720, 86).

Petrie was, however, talking about the custom of giving toasts, not a shortage of glasses. The number of drinking-glasses in a household was indeed very limited, but it is likely that the custom of sharing a single glass was in fact a social convention rather than an economic necessity, at least by the 18th century. The Scottish way of proposing toasts was graphically described by the French traveller, geologist Faujus de Saint Fond, when writing of the four o'clock dinner he ate at the house of a minor laird, Mclean of Torloisk, on Mull in 1784. The meal was substantial and the house well appointed. After listing ten courses, all served by the hostess, de Saint Fond continues:

> There is no delay in drinking the first toast; it is again the mistress who is charged with this ceremony. A large glass filled with port-wine is presented to her; she drinks the first to the health of all the company, and passes the glass

> to one of the persons who sit next to her; and thus from one to another the glass makes the round of the table. The side-board is furnished with three large glasses, one for beer, another for wine, and the third for water, when any one asks for it unmixed, which is not often. These glasses are common to all at table; they are never rinsed, but merely wiped with a fine linen cloth.

He goes on to say that:

> The cloth is removed after the dessert, and a table of well polished mahogany appears in all its lustre. It is soon covered with fine decanters of English glass, filled with port, sherry, or Maderia, and with large bowls of punch. Small glasses are then distributed in profusion to every one (de Saint Fond 1907, 71-2).

Although writing much later than the period under discussion, de Saint Fond's description raises the question of whether the sharing of a vessel was also customary in the 17th century, (in a manner somewhat reminiscent of communion) or whether, in fact, the social custom actually derived from the shortage of drinking vessels.

De Saint Fond was describing a genteel occasion, in mixed society. A rather rowdier occasion described by the Earl of London in 1700, confirms the sharing of one glass[1], and might provide one explanation for the number of bottles regarded as a necessity by the end of the 17th century (or indeed the shortage of drinking-glasses):

> Galloway brought some botles of very good wine so that we drunk our friends health and tosted ourselves prittie handsome. Your honors health was not forgot all the famous tosts were drunk and because we had but one glass wee broke our botles in honor of them as they were emptied[2].

The available evidence does indicate that the ownership of drinking-glasses throughout the 17th century was generally extremely limited, with the exception of the very highest echelons of society. During preparations for the coronation of Charles I in 1633 a list was prepared of the glasses at Holyroodhouse. It included a dozen 'big beare glasses with long stalkes in bell fashion', 104 'big beare glasses with short stalkes of sundrie fashiones', a further 24 beer glasses with covers, 123 wine glasses 'of sundrie sortis', six broken glasses and twelve water glasses, a grand total of 247[3]. This was not sufficient for the festivities, however, and 10 dozen 'glassis of the best fashione' and 20 dozen bottles were listed among various goods to be brought from England[4].

At the end of the century, and again at the top of the social scale, the Duke and Duchess of Hamilton gave a series of banquets at Holyroodhouse, when the duke

1 He may, of course, have meant one glass each.

2 NAS GD124/15/215. Earl of London at Castle Kennedy, to Earl of Mar, 19 Sept 1700.

3 NAS E.34/52/13. Note of glasses in Holyruidhaus, 8 March 1633.

4 NAS E.34/52/15. Exchequer records.

was the King's Commissioner to Parliament in 1693 (Marshall 1973, 102). In addition to those she already owned, the duchess bought 'four dozen new ale glasses, three and a half dozen wine glasses, three dozen sack glasses and two and a half dozen coarse glasses.' But the Hamiltons were at the far end of the social continuum, and their consumption cannot be regarded as representative, even of their own social milieu. The numbers of glasses bought were usually much smaller: on 4 December 1686 the Earl of Tweeddale was, for example, invoiced for '6 bear glasses at £3 0[s] 0[d], 3 ditto at £1 10[s], 6 Sacke at £2 8s'[5].

The inventories of the less wealthy support the view that the ownership of drinking-glasses was small. An inventory of movable goods belonging to the late Sir Lauchlin McIntoshe of Torcastle, at the time of his death in 1622, includes silver and brass, in addition to tin stoups and iron pots, but no glass or pottery items[6]. Fifty-five years later a similar inventory of the household utensils of Sir William of Braco, dated 5th September 1677, includes a quantity of linen, some silver, and quart, pint, chopin and mutchkin bottles of glass, but, again, no drinking-glasses[7]. The logic of such priorities is unarguable – money spent on silver, brass, household linen and fine fabrics provided durable luxuries. While window glass provided obvious advantages, and bottles were a practical necessity, drinking-glasses were fragile and their role could be performed by vessels of other materials.

Rosalind Marshall is emphatic (1970, 282) that the customs records prove a greater ownership of drinking-glasses than social historians acknowledge, and shows that in November 1682, a ship docking at Blackness harbour carried 850 Flanders drinking-glasses, 710 coarse glasses and 200 glasses of other kinds. The cargo of a single ship, cannot, however, be taken as typical. Even in the early 18th century there is little expectation of drinking-glass ownership. Rosalind Mitchison (1978, 64) describes the inventory of a relatively prosperous tenant farmer in East Lothian in 1708, who owned 21 pewter plates, two ashets, four dozen trenchers and a dozen wooden trenchers, and who '*even* had some drinking glasses' [this author's italics].

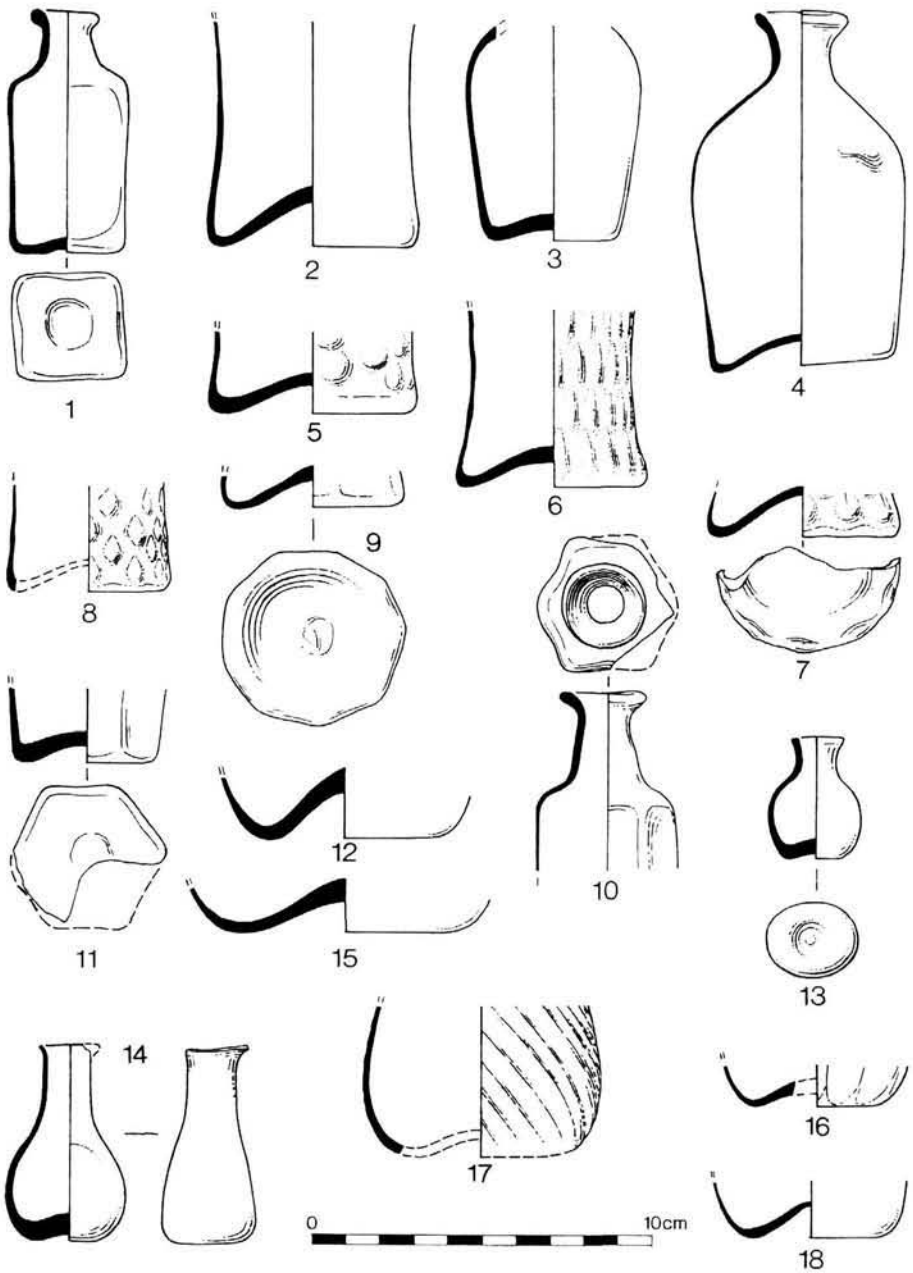
CONTAINERS: BOTTLES, VIALS AND FLASKS

A more likely glass product to appear in 17th-century homes was the bottle, vial or container of some sort. Evidence from excavations of contemporary glass-houses, and from household accounts in archives, shows that a considerable proportion of the vessel glass used by families was connected with apothecaries' products. At Kimmeridge, Dorset, where a furnace operated between 1618 and 1623, 44.3% of the vessel-equivalent shards were estimated to belong to storage

5 NLS Ms 14636 f 47, Acct 4 Dec 1686.

6 NAS GD176 402/14, 'Inventory of such moveable goods and gear belonging to the late Sir Lauchlin McIntoshe of Torcastle at the tyme of his death, 1622'.

7 NAS GD 190/3/175/12, Inventory of household utensils and plenishings of deceased Sir William of Braco, 5 Sept 1677.



15
Profiles and details of green vessel glass found at Haughton Green, near Manchester, including small bottles, typical of those used for medicines. The surface patterns created by blow-moulding can clearly be seen on some of the shards (from Vose 1994, 25).

vessels, either bottles, flasks or vials (Crossley 1987, 356). In a more recently published excavation of a glasshouse at Haughton Green near Manchester, operational from 1615-1653 (Vose 1994), it is estimated that 58.5% of the total vessel-equivalents in green glass were bottles, flasks or vials; however, it was impossible to distinguish between the bases of more or less straight-sided bottles and drinking vessels, which constituted the largest group (41.98 vessel equivalents), so the figure is not reliable in terms of separating them (illus 15 and see illus 27 & 55 below). Of the total, 4% constituted urinals, used by physicians from medieval times as a diagnostic tool (Godfrey 1975, 14). Drinking vessels accounted for 36.95% of the total, most of them beakers, 17% being plain, by far the largest proportion. There are too many statistical difficulties in quantifying the products of these glasshouses to draw any firm conclusions, but the analyses can reasonably be taken as some indication that a considerable proportion of the market demand was for containers. For some purposes, glass was the most suitable material, in preference to pottery or metal – especially when the contents were acids and chemicals. Glass also, of course, allows the volume of the contents to be easily measured and examined when, for example, analysing urine.

Suppliers of drinking-glasses were usually those whose main business was in a connected, but different, trade. An account in May 1648 includes ham, ginger, two beer glasses at 12s and '3 wyne glasses . . . £1 7s 0d'[8]. Specialist retailers did not appear until the latter half of the 18th century, and it remained common, particularly outside the main centres of population, for ceramics and glass to be part of the stock of grocers and other dealers well into the 19th century (Turnbull 1992). A rare example of the stock of a 17th-century shop is contained in the list of goods bought by Mrs Porteous of Newbattle for her shop in 1671[9]. The list includes 5 urinal glasses at 5s each; a looking glass at 9s; 3 'dantsick glasses' at 8s each; 2 sand glasses at 5s each; 29 '?ools and kings glasses at 3s the piece' and 3 gitder? glasses at 6s 8d each. The rest of her stock included brushes, a globe, tobacco, pans, nails, lame (earthenware) and 'washing rubers'.

MEDICINAL AND PERFUME CONTAINERS

It is evident from surviving accounts that apothecaries supplied many of their wares in bottles or glasses (illus 16), which they listed in their charges. Accounts for the Laird of Innerpeffer, for example, include in 1640 'a bottle of the purging dyet drinke, and hott oyles and Unc[tions] in a glass'[10]. Bills covering June 1652 to June 1655 list: 'halfe ane Muchkin of Rosewater in a glas . . . 10s; four unces of pectorall syrups in a glas . . . £1 2s; four unces of Oyle of Lillies in a glas . . . 17s 6d; four unces of Stomach oyles in a glas . . . £1'[11]. Many items were supplied by apothecaries in a glass, or 'in a pig' (pottery container), and 'there was clearly a fair turnover of glassware as well as drugs', although some of the containers may have been re-used (Dingwall 1995, 204-5). Apothecaries held stocks of glass and

8 NLS Ms.16852 f 190.
9 NAS GD297/114. Prices in Scots money.
10 NLS Ms 16852 f 110.
11 NLS Ms 16853 f 142. The currency is not specified but appears to be Scots.

16
Typical apothecary bottle shapes, 1660-1730. Many medicines were supplied in small bottles, which were often re-used (after IN Hume *A Guide to the Artefacts of Colonial America*, 1991, 73).

earthenware containers, both for the storage of their own materials and in which to supply their customers (*ibid*, 198). Similar accounts can be found in the 18th century. A surgeon's bill in 1713 includes 'an ounce and half Syrup white poppies a glass; Plantain water a mutchkin, a bottle; Balsam of Peru a drachm, a glass; a vomit a glass'[12].

Perfumers, too, used glass containers and they also sold drinking-glasses. A bill in the Yester Papers dated 1692-3, from John Crichton, perfumer, lists a pair of large water bottles at 8s, two oil and vinegar glasses at 2s 4d, a dozen large wine glasses costing 8s and half a pound of hair powder[13]. Another from the same man includes four beer glasses for 4s, four wineglasses for 2s and two 'sillebub' glasses for 2s, as well as perfume and a bottle of orange flower water[14].

BOTTLES

The bottles used by the 17th-century pharmacists were in a long tradition of glass bottle-making, light, thinly blown, pale in colour, and usually small in size (Godfrey 1975, 223-9). They were often mould-blown with square or hexagonal bases, and were sometimes patterned with vertical ribbing (Charleston 1984, 91). Larger ones were frequently cased in wicker or leather, and could be used as decanters for serving wine (col illus 12), which was bought and stored in wooden casks, until the new 'English bottle' came into use.

12 NLS Ms 16854 f 93. It should be noted that the term 'a glass' clearly refers to a bottle, probably a small one usually known as a vial or phial.

13 NLS Ms 14636 f 14.

14 NLS Ms 14636 f 4.

Accounts for wine bottles in Scottish papers are available towards the end of the 17th century, when the Leith Glassworks was supplying the local market, but they are not easy to find for earlier dates. A slightly later, but interesting, Scottish household inventory, 'The Inventor of plenishing in Thunderton's lodging in Duffus, Moray, May 25, 1708', was transcribed and printed by E Dunbar Dunbar in 1865. It shows the variety of glass objects in an early 18th-century laird's household of fairly modest size. These included looking glasses in the 'Strypt Room' (two), the Green Room, the 'Moyhair Room' (two), 'my Lady's Room' and the laird's closet. In another closet were 17 drinking-glasses, a glass tumbler and two decanters, oil and vinegar cruets and a urinal glass. But most striking is the 'Account of Bottles in the Salt Cellar' on 1st June 1708, each of them valued at one penny:

Of sack, five dozen and one	5	1
Of brandie, three dozen and three	3	3
Of vinegar and aquavitie, seven		7
Of strong ale, four dozen and four	4	4
Of other ale, nine dozen	9	0
In the ale cellar, fifteen dozen and ten	15	10
In the hamper, five dozen empty	5	0
In the wine cellar, nine with Inglish ale		9
White wine, ten		10
Of brandy, three		3
With brandy and surop, two		2
With claret, fifteen	1	3
With mum, fifteen	1	3
Throw the house, nineteen	1	7
There is in all, forty nine dozen and two	49	2
And of mutchken bottles, twenty five	2	1

(ED Dunbar 1865, 205-13).

17 (opposite) A drawing of hour-glass vials from a 'Price List of 18th-century Norwegian Glass'. The three sizes are described as: No. 891, minute glasses; No. 892, ½-hour glasses; No. 895, 4-hour glasses; demonstrating the wide range of sizes, and hence time-periods, available. The Scottish examples are likely to have been similar. (*Reproduced by permission of Kunstindustrimuseet I, Oslo*).

As well as showing the range and volume of alcohol stored in the lodging, the list contains 590 bottles, a quantity contrasting significantly with the number of drinking-glasses the household possessed. These relative proportions are born out by another very detailed inventory of a highland gentleman of 1731. He owned 520 bottles, six salts, 'twentie drinking Glasses big and little valued att Twentie four pound', one 'hanging Mirrour', one 'Table Mirrour' and one 'standing Mirrour'[15].

HOUR-GLASSES

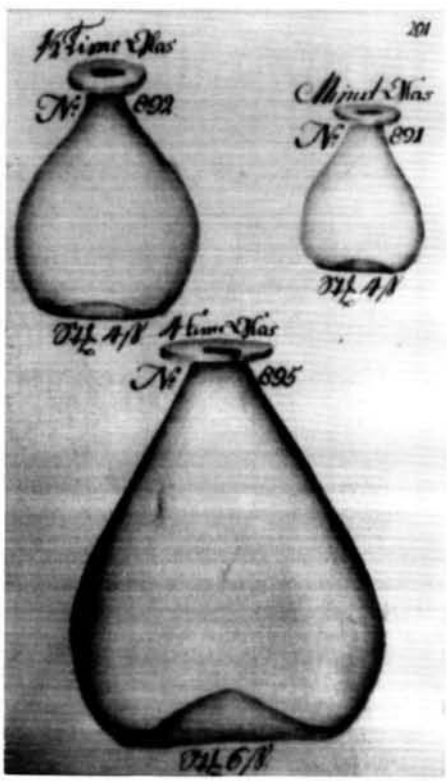
Hour-glasses are one of the items which appeared on the list of imports in 1612, but were being made in Scotland by 1682 (illus 17; col illus 7). They were used in churches and in the glasshouses themselves (Merrett 1662, 249), being a relatively inexpensive means of measuring the passage of time.

15 Testament of Alexandar Robertson of Faskally (Leneman 1986, 71).

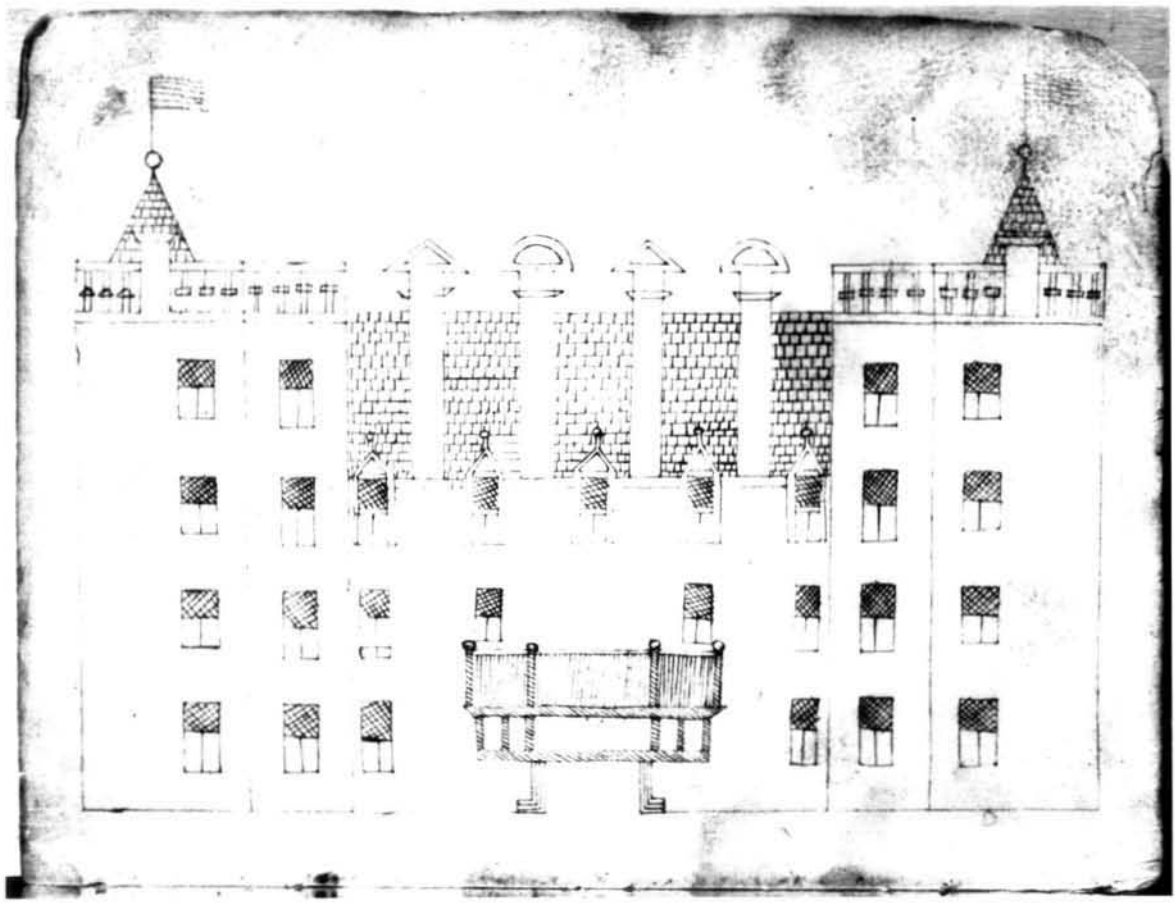
MIRRORS

The presence of several mirrors in the two inventories quoted above indicates the significant change in their availability which occurred from the last quarter of the 17th century. In the early years of the century, looking-glasses were small, scarce and expensive, and many were made of speculum, a highly polished alloy often called steel, rather than glass. They would usually be in the form of a hand-held looking-glass, rather than the later wall-mounted or standing variety, mentioned above. All the plates used for mirrors were imported, those of crystal being valued at roughly twice those of speculum. The customs list of 1612 includes small, medium and large sizes in both materials, those 'of steill small the dozen' costing £4, while the crystal equivalent was listed at £8. The large crystal plates were relatively cheaper though, the steel ones costing £8 the dozen, while crystal cost £12 (*Ledger of Andrew Haliburton*, 309).

Geoffrey Wills, in his book *English Looking-glasses*, describes (1965, 16) some exceptional examples in the houses of the very wealthy in the 16th century, but the starting date for his history is 1670 since 'it is not until the later 17th century that glass became common enough in large sizes for its popularity to be assured as a wall decoration.' After about 1690, looking-glasses, consisting of three separate sections, began to be placed over the fireplace and pier-glasses were positioned between the windows of fashionable houses. By 1700, mirrors were an expected part of the furnishings for the wealthy. Lady Margaret Hope spent £3,152 16s (presumably Scots) on 'plenishings' (furnishings) for her son's house at Nithrey in 1695, of which £146 13s 6d was for mirrors. Her account lists 'two big looking glasses and 4 little ones, £84 13[s] 06[d]; frames to those glasses and a table and stands £60; to the man that came out with the frames of the glasses £2'[16]. At the lower end of the market were simply framed wall mirrors and those on stands, designed to be placed on a table.



[16] Hopetoun House Mss, bundle 2786, 'The account of the household plenishing bought by my Lady Margaret Hope for her sons use for the house of Nithrey 1695'.



18
A drawing by carpenter, Isaac Miller, c1677, probably of the north front of Hamilton Palace, showing the usual design of windows in Scotland in the 17th century. The upper panes were fixed in place, only the shutters could be opened. (LA 412, RCAHMS. *Crown Copyright: Royal Commision on the Ancient and Historical Monuments of Scotland.*)

WINDOWS

The best documented area of glass consumption in 17th-century Scotland is that of window glass (illus 18 and col illus 8 & 9), particularly in the archives of the wealthy landowners, which record the building of fine new houses and repairs to older ones, including the work of the glaziers.

Early travellers in Scotland gave eyewitness accounts of the absence of glass in town houses. Brereton, describing Edinburgh's High Street in 1636, commented on 'the want of fair glass windows, whereof few or none are to be discerned towards the street' (Brown, PH 1891, 139). Travellers also recorded the change which took place during the century. Thomas Morer, discussing the same city in 1689, wrote:

> Their old houses are cased with boards, and have oval windows (without casements of glass), which they open or shut as it stands with their conveniency. Their new houses are made of stone, with good windows modishly framed and glazed (Morer 1689, 279).

There are also comments on the fashion for partial glazing:

> In the best Scottish houses, even the king's palaces, the windows are not glazed throughout, but the upper part only, the lower have two wooden shuts or folds to open at pleasure, and admit the fresh air' (*ibid*, 231) (col illus 9).

The glazed sections were fixed, the lozenges (diamond-shaped pieces of glass) held by lead strips and mounted in an iron frame. A painting by Roderick Chalmers depicting the Edinburgh trades in 1720, clearly shows a window panel of this sort (col illus 8)[17]. Change in both the design and materials used for windows was, of course, gradual; while the very wealthy followed the latest English fashion, oiled paper was still sometimes used as an alternative to glass as late as 1732, as a letter in the Hamilton papers ordering three quires of paper to be oiled for use in windows demonstrates[18].

Burgh accounts record the cost of installing and maintaining the glass in their public buildings. The records for Ayr list regular payments to the glazier, including work on the kirk and the tolbooth, through the 16th and into the 17th century. In 1550-51, 22 feet of glass at 2s 8d per foot were installed in the tolbooth, and regular glazier's fees of £1 6s 8d are listed (*Ayr Accts 1534-1624*: all in Scots money). In 1615-16, George Liddel glazier was paid £2 4s to install seven-and-a-half feet of glass in the kirk, while his fee for maintaining the glass there was £4 (*ibid*, 112). It is, perhaps, some indication of the increasing use of glass during the 17th century that Edinburgh appointed James Towris to be the first 'Touns master glassinwright' in 1646, to join the town mason, wright and plumber, who were already *in situ* (*Edin Recs 1642-1655*, 105).

The *Accounts of the Masters of Works*, published up to 1649, provide a useful insight into the window glass used in the royal palaces, and its price. They also make it clear that, wherever possible, old glass was re-used. The account of glasswork at the Abbey of Holyroodhouse in 1611 lists:

> Item in the fore wark above the yet two wondokes taken downe and mended with ane leven (sic) feit of new glas and throttene of auld glas sett into new leid, at fourtie penneis the feit of new and twentie penneis the auld, is lviii s vii d [£2 18s 7d Scots] (*Accts of Master of Works*, 1, 338).

The accounts also show that glass was used in humble rooms, such as the pantry and 'my lords kitching', as well as the grander apartments like the queen's hall and the king's chamber (*ibid*, 340).

Window glass was normally charged by the square foot, although there is one entry in 1611 for 'xxviii lossones [28 lozenges] at xiid [12 pence] the pece' (*ibid* 331). The definition of the foot appears to have been open to personal interpretation and considerable abuse, however. The matter was brought up at

17 Chimney piece of the Joint Incorporation of Wrights and Masons of Edinburgh.

18 NRA(S) 332, Hamilton muniments series 3, C3 1969.

the General Convention of Royal Burghs at Linlithgow on 7 July 1624, when it was decided to fix a standard foot measure at the following general convention (*Recs Convention Roy Burghs* 6, 160). This was duly done on 5 July 1625 at Glasgow (*ibid*, 186). All burghs were ordered to publicise the new standard, which the magistrates were to enforce as they thought fit. On 3rd March 1626, Edinburgh glasswrights 'Andro Clerk, Clement Toures, Johne Fokkert, Thomas Bennett, Gawin Chirrielaw and Williame Rodger' appeared together before the burgh council with their measures, which clearly did not comply with the new regulation, because the council:

> ordanit [them] to be brokin and intimat to theme the act of borrowis maid at Glasgow in Julij last anent the measure of the worke whiche thai ordanit to be of the lenth of ane full quarter of ane elne[19] and ordanit theme to conforme themselffis (*Edin Recs 1604-1626*, 300).

In 1611 the price charged for a foot of new glass was 3s 6d; by 1617, however, glasswright George Storie was charging 4s a foot at Edinburgh Castle. By 1628, the cost had risen to 5s, a price also paid in 1649 (*Accts of Master of Works* 2, 431). It is likely that some of the 25% rise between 1617 and 1628 was accounted for by the prohibition of imported glass in 1621 and perhaps the imposition of the standardised foot mentioned above. There is no indication of the source of most of the glass used, although, in 1633, 19 'cradles', or cases, of French glass were transported to Holyrood (*ibid*, 313). French glass appears to have been particularly desirable.

When commissioners were appointed to examine the production of glass in England and Scotland in the 1620s, it was the supply and quality of window glass which concerned them most. There was controversy about the thickness, and therefore strength, of the glass, especially that from Scotland, and the frequent repairs listed in accounts bear witness to its fragility (Godfrey 1975, 206). It appears to have been common practice in Scotland for wealthy landowners to arrange a contract with a local glazier to maintain their windows on a regular basis. In 1647, for example, a contract was agreed between the Earl of Lauderdale and James and John Waugh, glaziers, for the upkeep of windows at Lethington, Thirlestane and Brunstane[20]. The cost of window repairs and replacement could be considerable as the Saltoun papers show, £474 16s being spent for that purpose between 1647 and 1650[21].

In the 1660s sash windows were first used in England, a fashion quickly emulated by wealthy Scots (Marshall, RK 1973, 194). The Duke of Lauderdale paid John Wauch, a glazier in Tranent, to provide the glass for his sash windows in the 1670s (Dunbar, JG 1975, 202-30). In the 1690s, London glaziers were engaged to install sash windows in Hamilton Palace (Marshall RK 1973, 203). By 1719

19 A Scottish ell = 37 English inches, which would make the required foot = 9¼ inches, which is difficult to reconcile with the usual 12 inches.

20 NRA(S) Survey 832, 11, Lauderdale papers.

21 NLS Ms 16854 148, Accounts, presumably in Scots currency.

The EDINBURGH STAGE-COACH, for the better Accommodation of Paſſengers, is now alter'd to a new genteel Two end Glaſs Machine hung on Steel Springs, exceeding light and eaſy, to go in ten Days in Summer and twelve in Winter, to ſet out the firſt Tueſday in March, and continue it from Hoſea Eaſtgate's, the Coach and Horſes in Dean-Street, Soho, London, and from John Somervell's in the Canongate, Edinburgh, every other Tueſday, and meet at Burrow-Bridge on Saturday Night, and ſet out from thence on Monday Morning, and get to London and Edinburgh on Friday. In the Winter to ſet out from London and Edinburgh every other Tueſday Morning, and to get to Burrow Bridge on Saturday Night; and to ſet out from thence on Monday Morning and get to London and Edinburgh on Saturday Night. Paſſengers to pay as uſual. Performed, if GOD permits, by your dutiful Servant, HOSEA EASTGATE.

19
Advertisement for the Edinburgh stage coach, *Caledonian Mercury*, 26 August 1756. Coach windows were made of expensive plate glass, and were clearly a desirable feature. (*Reproduced by permission of the Trustees of the National Library of Scotland.*)

they were already much more common, although still a sufficiently notable feature to merit special mention. An advertisement for a dwelling in the *Edinburgh Evening Courant* on 5 February 1719 emphasises the 'handsome Dinning-Room sixteen Foot and a half square with four large Sash-Windows'. Such amenities were by no means universally available, however. In 1708 a correspondent writing to someone in England from Drumlanrig, said:

> Davies does not like the Scotch houses, the only windows are those to let out the smoke; the fire is made in the middle of the house, and they sit round it, and talk, but cannot see each other for the smoke[22].

Crown glass was used for the important windows in most large houses[23], although plate glass, like that in mirrors, was also occasionally employed, despite being

22 HMC Report V(i), 347. Letter dated 29 April 1708. The letter appears to describe a traditional Scottish blackhouse, where the peat smoke filtered out through the thatched roof.

23 In 1664, the Duke of Hamilton ordered 'Normandy' [crown] glass for Hamilton Palace (Marshall RK 1973, 194).

extremely expensive. Even well into the 18th century, however, window glass was obviously still prone to faults, as some letters of 1733 illustrate. When Lord Oxford ordered crown glass from Newcastle through an Edinburgh merchant, his requirements were clear: he wanted it to be of good quality, the panes cut at Newcastle (which was not the normal practice), and he wanted it quickly – his workmen were waiting. He wrote:

> All I desired . . . was to get it of the Crown Glass and right chosen, no Greenishness nor Blisters in it, and no ways cassen [broken], and in case you could get no Glazier to buy the Remains so as to make [?each] peen when cut, come to Seven pence, to let me know presently[24].

Plate glass was not a luxury, but a necessity, in coach windows, being thicker and stronger than ordinary window glass, and more able to withstand the stresses of use on rough roads. This, too, was expensive and even the Duke of Hamilton economised by re-using the glass from an older coach in a new one he had built (Marshall RK 1973, 155) (illus 19).

A POSSIBLE SIDELINE: BEADS

It is significant that a local man, John Montgomerie, who was working with a group of Italian glassmakers (discussed below in Chapter 5), described his occupation in 1636 as 'beidmaker'. Beadmaking was a specialised trade, practised by the Venetians. Isaac Bungar, in a petition to the House of Commons opposing Mansell's patent in 1621, stated that bugles (see below) had never been made in England[25], a view supported by Godfrey (1975, 225), but not by all authorities (eg Newman 1987, 52). Beads were a popular luxury item, usually imported from Venice. Crystal beads, valued at £24 the thousand, and beads 'of glas and wode' at 10s the gross [12 doz], are included in the 'Book of the Rates of Customs and Valuation of Merchandises in Scotland A.D 1612' (*Ledger of Andrew Halyburton*, 289). It is quite possible that, if the Scottish workforce were relatively stable, some beadmaking could have provided a profitable sideline to drinking-glass production. Not all beads were brightly coloured; Godfrey (1975, 32n.) describes bugles as 'tube-shaped beads made of glass, usually black, used to ornament apparel'. It seems reasonable to assume that the description of his trade was given by Montgomerie himself, in which case it is unlikely that he would have invented the term 'beidmaker', even if he had wished to imply a status greater than he really had. This brief entry is, therefore, an important indicator of a previously unrecorded aspect of Scottish glass production at that time.

[24] NAS RH15/54/5, Lord Oxford at Cranston to Edward Burd, merchant in Edinburgh, 5 March 1733.

[25] Alford papers, Harl 6847, ff.269v-270, in *Commons Debates 1621*, 7, 540-1. Coloured glass was produced at Haughton Green (Vose 1994, 20).

Ownership of most types of glass increased steadily through the 18th century, as might be expected. The range of wares available also expanded greatly to meet the demands of an increasingly sophisticated and diverse market, although glass remained a luxury item. Edinburgh's New Town bears testimony to the huge areas of window glass in use by the 1770s, while a price list published by the Leith glassworks in 1797 contained no less than 156 items, ranging from bird fountains to eye glasses, and from salts to fly traps[26]. Glass products had progressed from a small number of objects owned by very few Scots, to a wide range of items, forming an integral part of the conspicuous consumption of the upwardly mobile in Scottish society.

26 Kirkcaldy Public Library, Item no 47/11, 'Prices of Flint Glass, manufactured by the Edinburgh Glass-house Company'.

4

THE FOUNDATION OF THE SCOTTISH GLASS INDUSTRY

THE HAY PATENT

The establishment of a glass industry in Scotland owes much to the turbulent politics of the English industry during the period in which Sir Robert Mansell (d 1652) was trying to consolidate his monopoly. This, in turn, was directly related to the change from wood-burning to coal-burning furnaces. The history of this period is well documented by Eleanor Godfrey in her book *The Development of English Glassmaking 1560-1640* (1975) so, following a very brief summary, only those aspects which affect Scotland will be discussed here.

BACKGROUND TO THE ENGLISH GLASS INDUSTRY

The controversial question of the proliferation of patents of monopoly during the second half of the 16th and the first half of the 17th centuries has been discussed at some length by economic historians (eg Price 1906; Lipson 1931). The glass industry is usually one of those cited as an example, generally unfavourably, although Godfrey is less condemnatory. Whatever the rights and wrongs, much time, effort and money was put into the establishment of coal-burning furnaces and control of the market by Mansell and into schemes to oppose him by exponents of wood-burning glasshouses and a more open market.

Until the early 17th century, the English glass industry was divided into two separate strands: the forest glass furnaces, scattered over the wooded areas of southern England, particularly the Weald, making window and green glass (see Kenyon 1967), and a London-based crystal glassworks, making fine vessel glass in the Venetian style.

ENGLISH PATENTS

The first English glass patent, dated 8 September 1567, had been granted to Jean Carré, a Calvinist from Antwerp, and Anthony Becku, a merchant, giving them the exclusive right to make window glass, both broad and crown, for 21 years[1]. Carré employed many Huguenot glassworkers over the ensuing years, including

[1] Patent Rolls, 17 Eliz, pt 13, mm. 3-4 15 Dec 1574, *in* Hartshorne 1987, 393.

Pierre and Jean de Bongard (Peter and John Bungar), brothers from a prominent Normandy family making crown glass. By October 1568, Carré had established three furnaces, including, in addition to those making green glass, the crystal glassworks in London (Godfrey 1975, 22). He died in 1572 and the patent lapsed through non-compliance. The continued flight of religious refugees from Northern Europe ensured that more green-glasshouses were established and operated in southern England.

Meanwhile, at the time of Carré's death, his crystal glassworks, at the Crutched Friars in London, was managed by a protestant Muranese glassmaker, Giacomo Verzelini, who had spent many years in Antwerp. He applied for and, despite local opposition, obtained a patent on 15 December 1574, granting sole rights to make and sell Venetian-style glass, and prohibiting imports, for 21 years (Charleston 1984, 54). In 1575, Verzelini's glassworks was destroyed by fire, but he rebuilt it and continued, with the help of his sons, to operate with considerable success.

Three years before the expiry of Verzelini's patent and despite his lack of connection with – or knowledge of – the glass industry, Sir Jerome Bowes, a courtier and soldier, was granted a similar patent on 1 February 1592[2], to run for a period of 12 years from the expiry of Verzelini's patent in December 1595. It was renewed in 1606 for a further period of 21 years (Godfrey 1975, 43). Bowes was not personally concerned with the glass production, which was in the hands of his assignees William Turner and William Robson (*ibid*, 41). Robson became the sole operator of the glass monopoly from 1605 and a period of extensive litigation to protect his rights culminated in his total control of the crystal glass industry as 'the first English-born glass monopolist' by 1612 (*ibid*, 47).

Meanwhile the forest glassmakers had been experiencing difficulties in obtaining sufficient supplies of wood near sites suitable for their trade and close to river transport. They were, of course, in competition with the iron smelters who consumed huge quantities of charcoal, in a time of increasing concern for the depletion of forests. As a result, there was migration to the more wooded areas of Gloucestershire, Lancashire and Cheshire, and a marked increase in the cost of fuel. Despite the shortage of wood for fuel being particularly prevalent in the Weald, members of all the immigrant glassmaking families remained in that area, supplying the London market, including Flemish vessel-glass makers and window-glass makers from Normandy and Lorraine (*ibid*, 54). In 1589 George Longe, glassmaker, in a petition to Lord Burghley, claimed that there were 14 or 15 glasshouses in England[3].

In the early years of the 17th century, a window-glass maker, Isaac Bungar (Bongar, Bungard), son of Peter, the immigrant from Normandy mentioned above, attempted to gain control of the market through commercial, rather than

2 Patent Rolls, 34 Eliz, pt 15, mm. 62-4, *in* Godfrey 1975, 40.

3 Lansdowne MS No 59, Art 75 & 72, *in* Kenyon 1967, 143.

legal means. He had, in 1596, entered into a contract with a London goldsmith called Thomas Lawrence, who also acted as a wholesaler in glass (Godfrey 1975, 55). Lawrence appeared to be controlling the supply of Weald glass in order to maintain prices, a technique subsequently emulated by Bungar. In conjunction with a London dealer, Lionel Bennett, and helped by the close family ties he had with other window-glass makers who co-operated with him, Bungar managed to acquire a monopoly of the London market, to the great consternation of the glaziers[4]. Isaac Bungar was himself the largest window-glass producer in the Weald, owning two furnaces and with interests in others (*ibid*, 56). He had been born in England, so could own land, and he acquired considerable areas of woodland (Kenyon 1967, 133), thus ensuring supplies and protecting the glass-makers from local opposition.

THE CHANGE FROM WOOD TO COAL-FIRED FURNACES

By 1610, however, the need to explore the use of an abundant and less environmentally sensitive fuel – coal – was apparent to those concerned with English industrial expansion, not least in the glass trade. There was widespread interest in developing new technologies including furnace design, and success in developing a coal-fired glass furnace led to one of the most significant events in British glass history: the change of fuel from wood to coal. Sir Robert Mansell was closely involved with this transition, while Isaac Bungar and others, not surprisingly, implacably opposed it, to the eventual benefit of the Scottish glass industry.

The first patent for the sole right to erect coal-burning furnaces for the production of a wide range of industrial products, from brewing to brick-making, as well as refining and melting glass, copper and other metals, was granted on 28 July 1610 to Sir William Slingsby and others, for 21 years[5]. However their ideas were more advanced than their technological expertise, and within a year another patent was issued, also for 21 years, but for glassmaking only. The patentees included Thomas Percival, credited with the invention of the new technology, courtiers Sir Edward Zouch and Bevis Thelwell, and the King's Glazier Thomas Mefflyn[6].

The patent was vigorously opposed, both by the owners of woodland and the independent glassmakers. However, since the patentees were requesting not a monopoly but sole rights to the process, and wood-burning furnaces were expected to continue in operation, the opposition was defeated. Experiments with coal were soon successful. Simon Sturtevant, who also obtained a short-lived

4 PRO SP, 14/120, no 89, Glaziers' Petition, 15 April 1621, *in* Godfrey 1975, 111. Note: the numbering of state papers in the PRO used by Godfrey in her history of English glassmaking (1975) has since been changed, when they were copied onto microfilm. Documents examined by the author have been given their new number, denoted eg /46, the rest have been left as designated in Godfrey, eg No 46, and her page reference is given in brackets. The original PRO number quoted by Godfrey is that handwritten on the manuscripts.

5 Patent Rolls, 8 Jac I, pt 12, m.20, *in* Godfrey 1975, 59.

6 Patent Rolls, 9 Jac I, pt 29, m. 19, 25 March 1611, *in* Godfrey 1975, 6.

patent for coal-fired furnaces in February 1611, wrote in 1612: 'very lately by a wind-furnace, greene glass for windows, is made as well by pit-coale at Winchester House in Southwarke as is done in other places with much waste and consuming of infinite stores of billetts and other wood-fuell' (Sturtevant 1612, 8). This was over a year after the grant of the first patent to make glass in Scotland.

After considerable litigation and dispute before the Privy Council, a new 21-year patent was granted to Zouch's company on 4 March 1614, extending their rights to cover every type of glass. All other glass patents were revoked, and the use of wood-burning furnaces was forbidden, in addition to which the importation of foreign glass was prohibited (Godfrey 1975, 68). Thus, for the first time, an all-embracing glass monopoly was established. It was further strengthened by a third patent granted on 19 January 1615, on the same terms but including five new patentees, one of whom was Sir Robert Mansell. During 1615 Mansell bought out all eight of his partners and embarked on the long and contentious road to complete domination of the English glass industry. Also in 1615, on 23 May, a royal proclamation was issued forbidding anyone in England and Wales to 'melt, make, or cause to be melted or made, any kind, forme or fashion of Glass or Glasses whatsoever, with Timber, or wood, or any Fewell made of Timber or wood'[7].

Mansell concentrated most of his limited resources on the production of window glass, which was made in separate furnaces from vessel glass (Godfrey 1975, 91), but there was a heavy demand for both products and during the years 1615-25 he encountered numerous difficulties in maintaining control over supplies. He had firstly to set up sufficient glassworks, which he did largely by sub-leasing to established glassmakers. He also had to prevent the importation of glass, except under licence. Most of the glasshouse owners, more or less willingly, co-operated with Mansell, but others, notably Sir William Clavell of Kimmeridge, Dorset, and Isaac Bungar, who has already been mentioned, caused him great difficulties, culminating in three different disputes heard before the Privy Council in 1619, one of which involved Scotland.

EVENTS IN SCOTLAND

Despite the Union of the Crowns in 1603, Scotland was, of course, a separate state with, from 1610, its own monopoly of glass production in the hands of Sir George Hay. Since there appears to be no evidence to the contrary, it is probably safe to assume that Hay's earliest glassworks was sustained by the Scottish market. It is unlikely that output was large, although there was considerable demand for window glass for important buildings. However, once the number of

7 State Papers, Domestic, Jas I (Royal Proclamations, No 42, 23rd May 1615), *in* Hartshorne 1897, 413.

glassworks began to expand, a larger market was required to absorb their output, as a much-quoted petition to James VI from the Scottish Privy Council makes explicit. Dated at Holyroodhouse, 22 July 1619, the petition, made at the behest of Sir George Hay, stated that 'he has now found be prooffe and experience, that all the countrie's dispatche of his glasse in ane haill yeir will not upholde the glasse workis the space of ane month'[8].

Hay's petition asked that importation of Scottish glass into England should not be prohibited in the same way as all other foreign glass under Mansell's patent, but that the principle that 'the native commoditeis of aither kingdome sould be free to be sauld in the other' should apply, as was envisaged for a short period after 1603, when there had been a virtually free trade (Lythe & Butt 1976, 82). Hay pointed out that Scottish coal, exports of which had previously been forbidden, 'is daylie now transported to England for making of glasse . . . without the quhilck no glasse can be maid thair' and suggested that either importation of Scottish glass should also be permitted, or the coal imports should be stopped. The threat to Mansell was quite specific, since, as Hay implied, his glass production would be stopped if Scottish coal were unobtainable, as no other coal was considered at that time to be suitable to make crystal (Godfrey 1975, 98).

The events leading up to this petition and its outcome will be discussed later in this chapter, but the wider significance of the possible importation of Scottish glass is relevant to the expansion of the industry in Scotland. Sir George Hay the patentee was co-undertaker of a Scottish glassworks with James Ord, who, after some difficulties, had obtained backing from England (Godfrey 1975, 97). If Hay and Ord could obtain permission to export glass to England, Mansell's monopoly would be threatened by the products of the Scottish glasshouses. Ord's English backers were the main opponents to Mansell's monopoly: Sir William Clavell and Isaac Bungar, together with John Worrell, a drinking-glass maker who had trained under Robson (*ibid*, 116), and Dines, a glazier[9].

It seems highly doubtful that English glassmakers would have had any interest in Scottish enterprises *per se* – there is no logicial reason for them to have concerned themselves with or invested in such a distant area with only a small level of demand – but as a means of undermining Mansell, they were obviously a more attractive proposition. As subsequent events proved, the Scottish glasshouses became a source of constant anxiety to Mansell, both through their exports and by enticing away the Italian glassmakers in his workforce.

There is no evidence that glass was produced in Scotland before 1610[10], and there appear to be no field- or place-names which might act as an indicator of

8 NLS Adv Ms 33.1.1 vol 9 (13). Petition from Privy Council of Scotland to James VI, 22 July 1619.

9 PRO SP. 16/521/206.

10 There is, of course, ample evidence that glass was used in the windows of medieval ecclesiastical buildings, but the source is unknown. Vaughan (1992, 4) suggests that a 1571 reference to the birth of John Ricowe, glassmaker, in Scotland implies glassmaking there in the 16th century.

earlier glassmaking[11]. In England, many early sites have been traced through such names when all other signs have disappeared (Kenyon 1967, 20). Lythe claims that there 'are slender references to the production of fairly sophisticated glassware at Falkland as early as 1506-7' (Lythe 1963, 41), but his source, in the *Accounts of the Lord High Treasurer*, is only one of many references to glass purchased for repairs to Falkland Palace and other royal buildings, and cannot be taken as evidence of local manufacture.

Despite numerous references to the substantial use of window glass in important – especially royal – buildings[12], the source of the glass usually remains unspecified and it was almost certainly imported. 'The Book of the Rates of Customs and Valuation of Merchandises in Scotland A.D.1612' (*Ledger of Andrew Haliburton*, 288) lists no less than five foreign sources of window glass: Burgundy, white and coloured; Normandy, white and coloured; 'Renish'; 'Danskene' (Danzig) and English.

SIR GEORGE HAY AND HIS PATENT

The entrepreneur credited with the introduction of the first industrially produced glass in Scotland is Sir George Hay of Netherliff (1572-1634) (col illus 1). Hay was granted a 'Commission and licence [to] mak yrne and glass' within the kingdom of Scotland for 31 years, at Whitehall on 24th December 1610 (*APS* 4, 515). The original document has not been found, but it was confirmed by an Act of Parliament in Scotland in October 1612 (*ibid*). An indenture dated 18 June 1627, which will be discussed below, provides one significant detail from the lost patent; stating that Hay's glass could be made using either 'wood or coles'[13]. However, the first documentary evidence that Hay was actually producing glass does not occur until 1617, leading to the suggestion that 'Hay had no particular plans for exploiting his patent' (Godfrey 1975, 97). Such vagueness of purpose, however, does not accord with Hay's very purposeful career.

George Hay was the second son of Sir Peter Hay of Megginch. He attended the Catholic Scots College at Pont-à-Mousson, France, from where he returned to England in about 1596 (*Scots Peerage* 5, 220). He was introduced at court by his cousin Sir James Hay of Kingask, later first Earl of Carlisle, and 'by a long way the most influential Scotsman at the Court of James I'[14], where he was appointed one of the gentlemen of the bedchamber. By 1610 he had been granted charters for the ecclesiastical lands of Erroll; the lands of Netherliff from the forfeited estates of the Earl of Gowrie; and, with Lord Balmerino and Sir James Spens of Wormistoun, the forfeited lands and barony of Glenelg and others on Lewis, the Castle of Stornaway and some areas of Skye (*Scots Peerage* 5, 221). He continued

11 Dr Ian Fraser, School of Scottish Studies, Edinburgh University, pers comm.

12 *Accounts of the Masters of Works*, i; household accounts in family papers.

13 NAS GD 103/2/127.

14 Mr John Ferris, editor of *History of Parliament 1604-29*, pers comm.

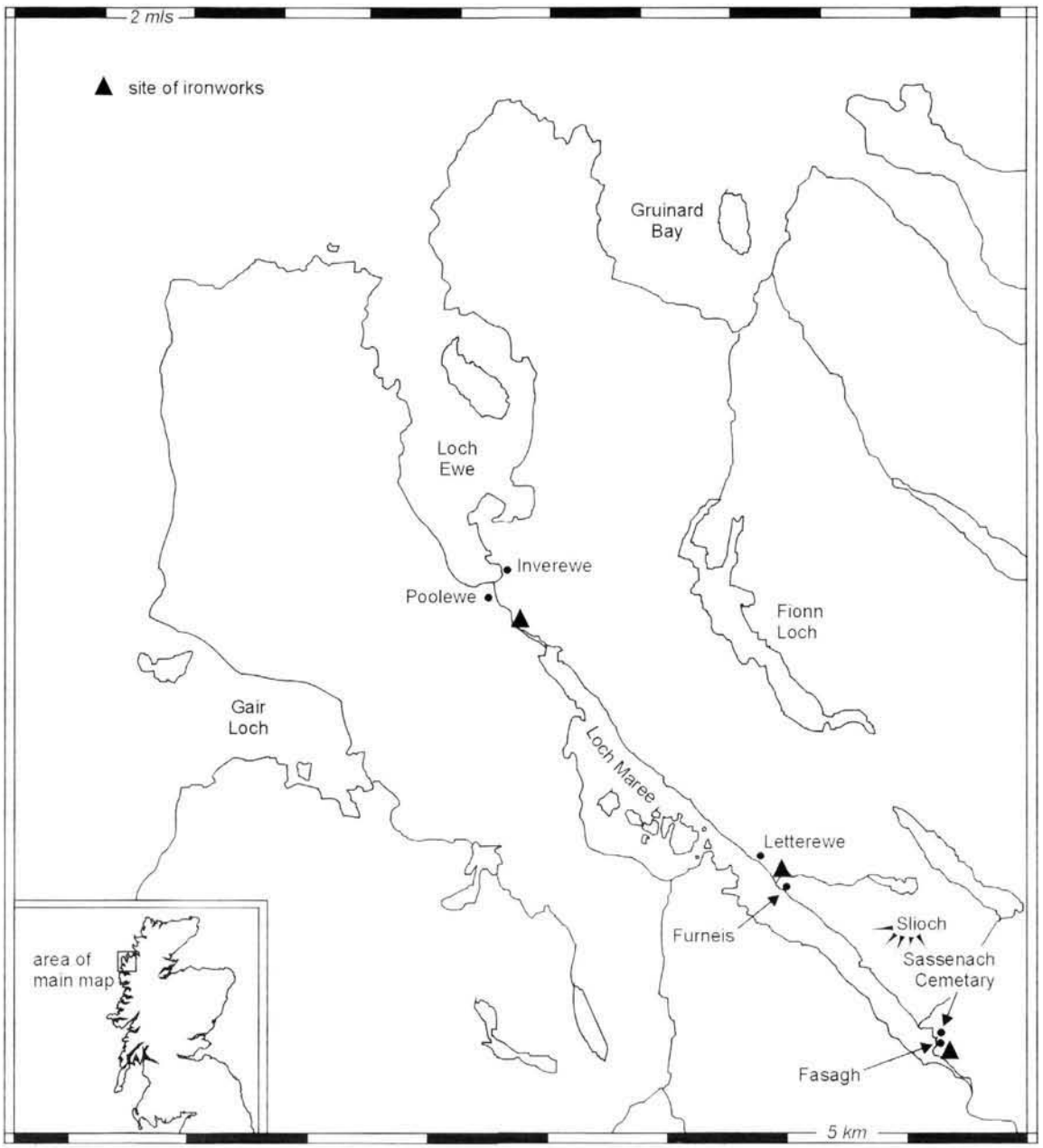
to amass land throughout his career, his considerable holdings in Perth being erected into the barony of Kinfauns in 1620. In 1625 the tacks of the earldom of Orkney and Shetland were transferred to him and in 1632 he was granted the Earl of Gowrie's house in Perth (*ibid*, 222). By the time of his death, he owned land from Orkney and Shetland to East Lothian. The Register of Sasines lists 27 transactions to the benefit of George Hay between 1618 and 1630[15].

Hay's corresponding political career was no less impressive. In 1605 he became one of the 'Fife Adventurers' appointed to settle Lewis and establish plantations there, although this venture was to prove unsuccessful. On 28 May 1616, he was admitted a member of the Scottish Privy Council and was appointed Lord Clerk Register of Scotland, and later that year was made one of the commissioners for the king's rents. By 1619 he was a member of the prince's council and was appointed a member of the special cabinet within it, and in July 1622 he succeeded the Earl of Dunfermline as Lord High Chancellor and Keeper of the Great Seal. When James VI died in 1625, Hay attended the funeral and was appointed a member of the Scottish Privy Council of Charles I. In 1627 he was created a peer with the title of Viscount Dupplin and Lord Hay of Kinfauns, and in 1629 he secured for himself and his son, the Master of Dupplin, the office of Collector General of Taxes. The peak of his career came a year before his death when, on the 25 May 1633, George Hay was created Earl of Kinnoull, Viscount Dupplin, and Lord Hay of Kinfauns.

THE CASE FOR GLASS PRODUCTION IN WESTER ROSS

Like other men of enterprise and ambition in the early years of the 17th century, George Hay did not ignore the possibilities and challenges of innovatory industrial investment. Hay's application for a patent to make iron and glass followed his acquisition, confirmed in July 1610, of the lease of the woods of Letterewe on Loch Maree in Wester Ross (Lindsay 1974, 50). The owner, Kenneth Mackenzie, Lord Kintail, exchanged his rights to the woods, together with a cash payment, for the Fife Adventurers' lands in Lewis (Dixon 1886, 77). Old bloomery iron furnaces are known to have been in the area and it is thought that Hay may have observed one of these in operation while en route for Lewis, the port of embarkation at that time being Poolewe (Lewis 1984, 436). Despite the very difficult terrain, the route travelled to Lewis appears to have been along the north side of Loch Maree. Haldane, in *Three Centuries of Scottish Posts* (1971, 178), describes runners carrying the mail 'along the north shore of Loch Maree to Achnasheen' in the 1820s.

[15] NAS, index to General Register of Sasines, Vols 1-14.



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Map of Loch Maree, showing sites of the iron furnaces. Note the sassenach's graveyard at the east end of the lake, near Fasagh. The river between Loch Ewe and Loch Maree is not navigable. (*Map by Jan Dunbar, Aberdeen City Council Archaeology Unit; based on the Ordnance Survey map © Crown copyright*).

HAY'S IRONWORKS

Hay appears to have wasted little time in setting up his ironworks, the first in Scotland to use the blast furnace (Shaw 1984, 87), which was certainly operational by March 1612 (*RPC*, 9, 351). It is possible, however, that the works were built earlier than this, since the appointment of the minister of Gairloch parish, Farquahar MacRae (described below) was said to be in 1608.

There are three sites on or near Loch Maree which are possibly connected with George Hay: Red Smiddy near Poolewe, Letterewe and Fasagh, at the head of the loch (illus 20). Limited archeological excavations at Red Smiddy, on the east bank of the River Ewe, in 1980, revealed that it had been a blast furnace, and demonstrated the presence of non-local ores (Lewis 1984, 440-43). The local bog ore, while suitable for bloomery furnaces, did not produce good quality iron, so despite the distance, expense and hazards involved, Hay shipped in iron ore extracted from 'the schoir and coast syde of Fyff besyde Dysart, and utheris pairtis thairabout, far within the flood and sea mark' (*RPC* 10, 160). Clayband ore found on the Red Smiddy site was consistent with this imported material, which in 1620 Hay was still having shipped from Saint Monans (*RPC* 12, 187). The success of Hay's enterprise is indicated by the fact that on 1 June 1621, he obtained permission to transport iron throughout the country and to sell it at any burgh, in contradiction to the law at the time (*APS* 6, 686). On 3 February 1617, the *Accounts of the Masters of Works* (65) lists 'Item to Sir George Hay for 1194 stane 4 lib wecht of Scottis irone at ii merk stane [1194 stone, 4lb weight of Scottish iron at 2 merks per stone]', costing the considerable sum of £1,592 6s 8d (Scots).

The Fasagh site was explored by chemist W Iveson Macadam in the 1880s, when he described it (1886, 105) as covering acres of ground and containing three furnaces. Archaeologist John Lewis, following a brief visit in 1982, concluded that it had been a bloomery and that there was no evidence of a connection with the other two furnaces (Lewis 1984, 444). More recent work, however, suggests that Fasagh was in fact 'a complex industrial processing site' containing two sophisticated anvils (Photos-Jones *et al* 1998, 31).

Documentary evidence suggests that the most likely site for George Hay's main ironworks was Letterewe, described by Macadam as lying on the north bank of the Furnace Burn, which flows into Loch Maree about a mile south of Letterewe House (Macadam 1886, 105). The secondary material is speculative, but biographical information written by the grandson of the minister of the Gairloch Parish in Hay's time is relevant. John Macrae, who died in 1704, wrote about his grandfather Farquhar Macrae (1580-1662):

> [he] was pitched upon by the bishop and clergy of Ross as the properest man to be minister of Gairloch that he might serve the colony of English which Sir George Hay of Airdry . . . kept at Letterewe, making iron and casting canon.

> Mr. Farquhar having entered there did not only please the country people but also the strangers, especially George Hay[16].

THE FIRST GLASSHOUSE IN SCOTLAND

In contrast to the documentary sources which securely place Hay's ironworks at Loch Maree, there is no concrete evidence for the site of his first venture into glassmaking. However, in view of its significance, not just as the first glasshouse in Scotland, but more importantly as the foundation for the subsequent development of the industry under Hay's patent, it seems reasonable to present such material as there is. The hypothosis will be put forward that Hay's first glasshouse was wood-fired and operated alongside his ironworks at Loch Maree. The evidence to date is only circumstantial, but will be explored in some detail in order to support the argument for what might appear to be an unlikely location, and will be examined in conjunction with material concerning the ironworks.

In order to set up such a large and innovative ironworks, Hay had to bring in 'ane great number of strengers weill experimentid and skillfull' in the art of 'the making and fyning of irone . . . efter ane moir easie forme and maner nor heirtofoir hes bein maid' (*RPC* 14, 567). J Shaw suggests (1984, 88) that the experts employed by Hay were English, probably from the Furness district of what is now Cumbria. A family with the English surname Cross, whose antecedents are said to have been ironworkers, is still resident in Kinlochewe[17]. It should, however, be born in mind that the term 'English' could apply to any non-Gaelic speaking stranger. Shaw points out that 'at the time when Sir George Hay was setting up his Loch Maree iron works, several Englishmen, skilled in ironworking, were in Scotland at the request of King James' (*ibid*) and assumes that Hay would have had easy access to them.

The problems of establishing a foreign workforce within the local community led Hay to apply to the Scottish Privy Council for special protective measures. He asked for and obtained, on 11 March 1612, a commission of justiciary 'over tha haill personis interteyned be him under wages, pay, and allowance' at the works (*RPC* 9, 351). The workforce included 'a grite nomber of strangeris', as well as local workmen, employed in 'the arte and practize of making of irne, and *sindrie utheris* not heirtofoir knawne' [this author's italics]. This gave Hay authority equivalent to the Court of Justiciary, enabling him to deal summarily with the workforce, to the extent of being able to impose a sentence of execution. At the same time, permission was granted by the Privy Council for the foreign workmen and their servants to 'beir, weir and use haglibuts and pistolats' 'because the pairts and boundis quhair thir strangers ar set awork ar in the Hielands, swa that they wilbe daylie subject to the injurie and malice of the disordinat persouns nixt adjacent to them' (*RPC* 14, 567).

16 NLS Ms 2133, Gregory's collections, 181-97.

17 Local resident, pers comm, June 1996.

It seems reasonable to assume that Hay's purpose in going to such trouble was his wish to exploit the woodland to best advantage during the term of his lease, and he was clearly prepared to invest heavily in manpower and materials in order to do so. To manufacture iron he required foreign personnel and expertise; transport to bring in good iron ore, tools and other essentials and to ship out the finished product; and readily accessible fuel – the reason for using such a remote site. To manufacture glass he also needed foreign personnel and expertise (although probably in smaller numbers: three or four men would have been sufficient); transport to bring in clay for crucibles, tools and other essentials and to ship out the finished product; and readily accessible fuel – precisely the same requirements.

The technique for producing iron in a blast furnace was already well known in 1610, but in the glass industry furnace technology was a major focus of experimentation and change during the early years of the 17th century. The first viable English patent for making glass with sea or pit-coal was not granted until 25 March 1611 (Godfrey 1975, 60), *after* Hay had obtained his patent, so when he applied for it, his intention must have been to burn wood, as it specifically allowed. It has already been noted above that when the royal proclamation was issued by James VI in London, on 23 May 1615, forbidding the use of wood in glass furnaces, that prohibition was limited to England and Wales[18], so Hay could have continued legally to use a wood-fired furnace throughout his tenure. And he had wood available at Loch Maree (col illus 10).

Until 1617 there is no further mention of glass in the Scottish state papers, but on 21 May that year Hay complained to the Scottish Privy Council that his glass monopoly had been breached. In his complaint he made the interesting statement that following the grant of his licence in 1610, he had erected 'works for the making of iron', and 'hes brocht the same to some reasounable perfectioun, [so] that glass are daylie wrocht and maid thairintill' (*RPC* 11, 138). It seems reasonable to interpret what appears to be an unequivocal statement made by Hay to mean that his ironworks and glassworks were at the same place – and, since there is firm evidence that his ironworks was at Loch Maree, it would seem logical to assume that the glassworks was there too.

THE NATURE OF HAY'S EARLY GLASS PRODUCTION

The type of glass made by Hay during the first few years of his patent is not specified. It seems most likely, however, that he would have made window glass, for which there was a steady, if small, demand. The raw materials required to make window glass would have been available in the vicinity of Loch Maree. There is sand on the south shore of Loch Ewe, near one of the sources of bog iron ore, and there also appear to be deposits inland from the northern shore of the loch (this author's own observations, June 1996). Although the available sand

[18] State Papers Domestic, Jas I Royal Proclamations, No 42, *in* Hartshorne 1897, 413.

does contain impurities, it would have been perfectly possible to make window glass from it[19]. In his history of the major glass firm Pilkingtons, Barker (1978, 7-8) points out that 'the early glass-makers were not very particular about the quality of their product . . . They could therefore use any sand, no matter how discoloured it made the glass. Provided they could find deposits of sand in sufficient quantity, close to their source of fuel, they seem to have been quite satisfied.' Baker also suggests that 'it paid the glassmaker to build his furnace where fuel was cheap and then to transport to it the smaller weights of sand, alkali, clay and other materials he required' (*ibid*, 1). Alkali, the other essential ingredient, was traditionally provided by the ash resulting from the burning of wood as fuel, but could also have been made from locally available bracken or kelp, and is not, therefore, likely to have been a problem. Clay suitable for making the crucibles was essential, but was in plentiful supply in Fife (Stephen 1975, 161) from where it could be shipped with the clayband ore for the ironworks.

Until the local industry was established, all glass had to be transported to Scotland by sea, much of the window glass coming from Danzig via the Baltic and the North Sea to Leith. Shipping out glass made at Loch Maree would have been no different, and vessels are known to have transported iron ore from Fife to the harbour at Loch Ewe, and the finished iron to the burghs for sale. Indeed, in 1619, a petition from the Scottish Privy Council refers to Hay 'expecting that the despatch of the iron and glass within and without the country' would compensate for the great expense of setting up the works[20].

The Letterewe site was examined by archaeologists from Glasgow University (GUARD) in 1998, their primary focus being the ironworks and the collection of slag and other materials for analysis. They were aware of the possibility of a glass furnace on the site but no evidence of glass production was found, although that does not, of course, preclude the possibility that a furnace existed (E Photos-Jones pers comm).

Hay appears to have been involved with the works at Loch Maree until the mid 1620s, although he probably moved to Edinburgh in about 1616[21]. By 1628 Colin McKenzie, son of Kenneth and created Earl of Seaforth in 1624, had resumed control of the woods there and was planning, with the help of English experts and the active support of the Crown, to cast ordnance. A legal agreement refers to rights under his former contract with 'the Right Honourable Viscount Duplin the now Lord Chancellor of Scotland'[22], who had helped to negotiate the deal[23]. Hay's nephews, John and George, sons of his younger brother Peter Hay of Rattray, afterwards Kirkland of Megginch (*Scots Peerage*, 5, 229), appear to have remained at Loch Maree, supervising the works. John died before 1629 and

19 British Geological Survey, pers comm, 1996.
20 NLS Adv Ms 33.1.1 (13).
21 Lindsay 1977, 51; NLS Ms 2130 Law Tracts miscellaneous.
22 NLS CH. 10779. Thanks to Dr Fiona Watson for bringing this to my attention.
23 Letter from Earl of Seaforth to the Lord Chancellor, 4 July ?1624 *in Letters and State Papers of James VI* (Abbotsford Club, 1836), 365.

a gravestone bearing an inscription '* *R LYIS IOHNE HAY SON * * HAY OF KIRKLAND WHO DIED AT LOCH * * * * * * * * *' (Dixon 1886, 82) is still visible in Gairloch churchyard. His younger brother, George, is mentioned in a letter about problems at the ironworks, sent to Sir George Hay by the Earl of Seaforth, in July ?1624[24].

Although it is currently impossible to prove that Sir George Hay's first glassworks was established at Loch Maree, there appears to be no reason why it should not have been – and several reasons why it should.

OTHER AREAS OF HAY'S OPERATIONS

DUNFERMLINE

It is possible that George Hay also had an interest in an 'iron mill', which was established near to Dunfermline on the Fife coast, by the early 1630s. There is documentary evidence for a considerable volume of production there in 1635-40. Indeed Sir Robert Sibbald (1641-1722), whose history of the area was first published in 1710, claims that it was built by Hay (Sibbald 1710, 299). This site would, on the face of it, seem a more likely one for a glassworks, but the dates when it was known to be functioning are too late, and J Shaw considers that it was 'almost certainly a forge' (1984, 89). Hay specifically told the Scottish Privy Council that he was making glass daily at his *ironworks* by the much earlier date of 1617. This, with the other points already made, make the Dunfermline site unlikely.

WEMYSS

The location usually given for Hay's glassworks, in both general and glass histories, is Wemyss on the Fife coast[25], the source often being Arnold Fleming's book *Scottish and Jacobite Glass*, published in Glasgow in 1938. This work unfortunately contains many inaccurate statements such as: 'The earliest record that we have of a glasswork is in the year 1610 when Sir George Hay of Nethercliff established a glasswork in Wemyss, near Kirkcaldy, for which he obtained a monopoly for forty-one (sic) years' (Fleming 1938, 95); this appears to conflate two separate documents: Hay's patent of 1610, discussed above, and the report of the Scottish glass commission in 1621, discussed below. The commission's report is the only contemporary document which has come to light mentioning a glassworks site, so it is not perhaps surprising that the two documents were viewed in conjunction. It is certainly likely that Hay either had an interest in the glassworks at Wemyss, or that the owner was his assignee, since his patent of monopoly was extant in 1621, and he had acted forcefully to protect it

[24] *ibid.*

[25] Lythe & Butt 1975, 44; Hartshorne 1897, 193; Woodward 1984, 1; Phillips 1987, 132.

in 1617 (*RPC* 11, 138). There is, however, no basis for the claim that 'Sir George Hay . . . got a licence to set up a glassworks at Wemyss' (Lythe & Butt 1975, 44).

THE GLASS CAVE AT WEMYSS

The name of Wemyss is derived from the Gaelic word for cave, *weem*, indicating the presence of a considerable number of caves along that stretch of the Fife coast (Chambers & Chambers 1832, 1001). One of these, roughly half way between East and West Wemyss was described in the first *Statistical Account* as being 'about 200 ft. in length, 100 in breadth, and 30 in height' (Sinclair 1791-9, 10, 805). A typical description of its history was printed in 1905: 'It was called the Glass Cave, because in 1610 Sir George Hay . . . established a manufactory for glass in the pre-historic dwelling, and in 1698, David, third Earl of Wemyss, followed the example' (Cunningham, 1905, 198). *The Statistical Account* further extends the alleged period of use by saying that it 'was fitted up about 60 years ago [ie the 1730s] by a tacksman for a glasswork; but soon after the work commenced, the man became bankrupt, and the buildings were allowed to go to ruins' (Sinclair 1791-9, 10, 805). Unfortunately the cave partially collapsed in 1902 and was subsequently filled in with mine waste.

The best available description of the cave is contained in an unpublished essay by Jessie Patrick Findlay, daughter of John Patrick, a local photographer, written in 1924 (Findlay 1924, 4). She visited the cave frequently as a child before the collapse, describing it as 'a lofty and open vault'. While voicing reservations about some of the claims made, she was convinced that glass had been made there, adding that 'many still living remember having seen a large circular aperture in the roof, designed to permit the smoke and fumes to escape' (illus 21).

Fraser refers to a mention of the 'Glesse Cove' in about 1648, in the Wemyss family papers (1885, 1, xxxviii), but it has not unfortunately been possible to verify this. Although it cannot be proved that the cave was used in the early 17th century, a copy of a tack written in 1711 confirms that 'the great Cove situated near the Shoar in the Lordship and Barronie of Weemyss lying midleway between the touns of Easter and Wester Weemyss' contained a glass furnace at that date[26]. It is not unreasonable to assume, therefore, that this was indeed the site of the earlier furnace.

Although there is no reason to believe that Hay's own (probably wood-burning), glassworks had any connection with Wemyss, the two petitions of the Scottish Privy Council of 22 July and 19 October 1619[27], referred to above, suggest that he was by then actively involved with more than one site, as well as reinforcing the earlier association between the production of iron and glass. The first petition stated that 'the clerk of youre majestie's Register [George Hay]' had brought to

[26] NAS GD1/576/15.

[27] NLS Adv Ms 33.1.1, vol 9, f 13; f 23, Petition of James Ord to James VI, Edinburgh, 19 Oct. 1619.

21
Photograph of the 'Fallen Glass Cave', taken by John Patrick and labelled 'Collapsed May 17th-18th 1902'. Some idea of its huge size can be seen from the two figures on the beach. The chimney of the Michael Colliery (now demolished) can be seen behind the ridge. (RCAHMS B35173. *Crown Copyright: Royal Commission on the Ancient and Historical Monuments of Scotland.*)

good perfection 'the making of irone and glasse within this kingdome, and has sett up workes in sundrie pairtis to that effect.'

Hay's precise relationship with the other owners of glassworks during his monopoly is unclear, although there is evidence of his direct involvement with one of them, James Ord. Whatever his role, he wished to maintain his rights and his patent was renewed by Charles I in 1634, some seven years before it was due to expire, eleven months before Hay's death, and seven years after it had been taken over by Sir Robert Mansell, who paid handsomely for the privilege (see below). Charles I wrote from Whitehall on 8 January 1634:

> Being willing to renew to . . . the Erle of Kynneull the patent of Glasswork within that kingdome, conditionall that a work be sett up to that purpois within the same, and kept goeing for the publict good. . . . to continew after the expiration of the former [patent] the lyk number of yeres, with speciall provision for setting up and mantaneing the said work dureing the continuance of the said patent. . . . (*Reg Roy Lett* 1615-35, 711).

George Hay appears to have been a pioneer industrialist in his own right, but the motivation for the next group of entrepreneurs who involved themselves in the incipient Scottish glass industry, is less clear cut. For some, at least, the desire to break Sir Robert Mansell's English monopoly appears to have been a crucial factor.

HAY'S COMPETITORS AND COLLABORATORS

WILLIAM CRAWFORD OF CAMLARG

Hay's appeal to the Scottish Privy Council in 1617 to protect his monopoly (*RPC* 11, 138) was directed against William Crawford of Camlarg who, assisted by Sir John Kennedy of [blank] and Josias Kirten, 'has brocht within this cuntrey Egmondysham and Samuell Chasse Englishmen', who without any legal warrant, had 'erectit buildit and set up works at [blank] for making of glass'. Unfortunately, it has proved impossible to discover anything about William Crawford, Sir John Kennedy or Josias Kirten. The original manuscript of the petition[28] contains blank spaces at critical points, including the place and date of the establishment of the glassworks. Crawford and Kennedy are common Scottish names, Camlarg is a tiny hamlet in Ayrshire.

Agmondesham Pickayes was a London goldsmith whose precise role at Crawford's works is difficult to ascertain, since he was also involved in another glassmaking venture in Scotland[29]. It seems likely that he acted as a recruiting agent in London, providing experienced workers for employers in Scotland and that Samuel Chasse (Chaisse) was a glassmaker. William Crawford, Agmondesham Pickayes and Samuel Chasse were summoned to appear before the Privy Council in Edinburgh on 21 May 1617, to answer the charge that at their glassworks they had already made or at least intended to make glass 'and to out and sell the same . . . to the harm hurt and prejudice' of Sir George Hay. Since they did not appear and Hay did, the defendants were ordered to cease making and selling glass within any part of the kingdom for the duration of Hay's patent.

Crawford does not appear to have complied with the order, however, because a Venetian glassmaker, John Maria del Aqua, declared in a deposition to the English Privy Council, on 20 January 1620, that he had worked for Mr Crawford for six weeks, before leaving him 'for want of materials and wages'[30]. It is significant that del Aqua was a vessel-glass maker, who had been brought from Venice via Amsterdam to work for Sir Robert Mansell in England. Thorpe (1949, 121) describes him as belonging 'to one of the best-known dynasties at Murano'. It seems likely that Crawford's original works were making window glass in direct competition with Sir George Hay, hence his prompt opposition. It is possible that when he employed del Aqua, Crawford was attempting to change his production to vessel glass, which would not have threatened Hay's market at that time.

By June 1619 Crawford does appear to have abandoned the glassmaking enterprise, but not without compensation for his efforts. A patent signed at

[28] NAS PC.2/5 (60, 61). Privy council records. 'The Clerk of Register qua Wm Crawford of Camlarg and others'.

[29] PRO SP.14/112/46. Statements of Ord, del Aqua, Pickayes, 20 Jan 1620.

[30] *ibid.*

Holyroodhouse on 1 June 1619 says that the king granted them the sole right to find, remove and sell the clay in England for 21 years:

> understanding that William Crawfurd of Camlarg in attempting to erect and mainteine glaswarkis within this realme of Scotland hath beine at greate charges and expensis, . . . and that the said William Crawfurd and William Hay, sone to William Hay of Mayne, have discovered by thair paines and trauellis . . . that thair is greit quantitie of clay in divers pairtis of this kingdome quhilk being transportit into his Majesteis realme of England is als goode and sufficient for making of pottis for glaswarkis, tabacco pypis, etc.,

They had to ask the landowner's permission to search for and remove the clay and to pay the king 4s Scots for each ton transported (*RPC* 11, 584). In 1627, William Hay alone applied to Charles I for a renewal of the patent for another period of 21 years, because he had experienced more difficulties and expenses in obtaining the clay than he had anticipated (*Reg Roy Lett 1615-35*, 166-7).

Crawford's patent is not without interest. Suitable clay with which to make crucibles for the glass furnaces was both essential and scarce. Although such clay was available in Stafford, Mansell had problems with deliberate contamination, and was forced, at great expense, to send for clay from France and Germany[31] until he eventually found a suitable vein in Northumberland. Crawford's knowledge of and access to good Scottish clay (if he had actually found some and was not merely hoping to do so) would have been very useful to future manufacturers there.

AGMONDESHAM PICKAYES AND WILLIAM WARD, LONDON GOLDSMITHS

Crawford's erstwhile partner, Agmondesham Pickayes (1588-1673), seems to have been involved with a fellow goldsmith William Ward, in the establishment of another Scottish glassworks. Pickayes came from a well-connected Sussex family (Thorndale 1995a, 129-37)[32], and was apprenticed first to Christopher Wace goldsmith in Cheapside, and then to William Ward, becoming a freeman in 1613[33]. Agmondesham's father, Drew Pickayes, was one of the gentleman founders of Jamestown, Virginia, where he died in 1608, having left his family in England. Interestingly, he had previously owned and managed an iron forge on his land at Brambletye Manor near East Grinstead, which was in the Weald, home of the English glass industry (Thorndale 1995a, 131). Agmondesham also had an interest in furnaces. The *Calendar of State Papers* records that on 18 September 1627, a petition was made to the king by Thomas Middleton, gentleman, and Agmondesham Pickayes, his Majesty's goldsmith, for a 21-year monopoly to make iron 'by using a fuel called peat' (*CSPD 1627-1628*, 347). His royal appointment was that of spangle-maker for the king's liveries for footmen,

[31] State Papers Domestic, Jas I, Vol 162, No 63, *in* Hartshorne 1897, 426-7.

[32] Thanks to David Beasley, librarian, Goldsmiths Hall, for drawing this to my attention.

[33] Goldsmiths Hall, Apprentice Book Vol 1.

guards and messengers, which he held for 50 years (Thorndale 1995b, 227). Pickayes inherited the lands and tenements of his maternal grandfather William Muschamp in 1606, although he did not obtain possession of them until 1620, so his situation was secure, despite the financial collapse of his father. During his long career he was also employed as servant to Edward, Lord Dudley, and Robert, Earl of Lindsey (HMC, Fifth Report, (1), 21), but there is no further evidence of involvement with glass-making. Sir Robert Mansell suffered considerably from the loss of his Italian workmen to Scotland from 1617 onwards and Agmondesham Pickayes was involved in the first of these defections.

William Ward, who was himself apprenticed to Wace in 1598[34], was the youngest of six sons of Edward Ward, 'a gentleman of good estate' of Bexley, Norfolk (Nichols 1870, 208)[35], and eventually took over the lease of Wace's shop, counting house, cellar and yard in Cheapside[36], William Ward acquired considerable wealth, becoming goldsmith and jeweller to Queen Henrietta Maria, wife of Charles I, was knighted, and gained the status of 'one of the most eminent bankers in London' (*ibid*, 208). It is interesting to note that after the death of Edinburgh goldsmith and jeweller George Heriot in 1625, William Ward bought a quantity of the jewels he had bequeathed for the foundation of a hospital, paying the impressive sum of £5,250 (sterling)[37]. Arrangements for the sale were made by John Hay (d.1654), commissioner for the burgh of Edinburgh, who, in 1623, had been appointed deputy to the Lord Clerk Register – Sir George Hay (Wood 1932, 38).

In 1628, William Ward arranged with Edward, Lord Dudley, (to whom Agmondesham Pickayes was servant), who owed him money, for the marriage of his only son Humble to Dudley's orphaned grand-daughter, his heiress (Nichols 1870, 208). Nothing in his highly successful history explains William Ward's interest in setting up a Scottish glasshouse, but it is quite possible that he was financing the enterprise for his un-named brother, who was in Scotland in 1617-18. He is certainly the only English person involved in the early Scottish glass industry known to have had considerable disposable capital.

In a dispute between Sir Robert Mansell and James Ord (see below), John Maria del Aqua, the Venetian glassmaker who worked for Crawford, claimed that 'Mr. Pickas' had approached him with an offer of work in Scotland. He said that he had been taken to see a Mr Ward, who gave him money for his journey, and he had travelled to Scotland with Mr Ward's brother, without taking leave of Sir Robert Mansell. He had then been employed by Mr Ward for some nine or ten weeks, when 'wanting both materialls to worke and money' he left[38]. Both Pickayes and William Ward denied the charge, stating that del Aqua had made the approach himself because he was dissatisfied with his work for Mansell. In his

34 *ibid.*

35 Thanks to John D Ward, for bringing this information to my attention.

36 Goldsmiths Hall, Minute Book.

37 NAS GD421/1/1/8.

38 PRO SP.14/112/46, 20 January 1620.

statement, Pickayes declared that William Ward's brother was in Scotland long before del Aqua approached them and that he wrote to Mr Ward to 'entertayne' the Venetian when he arrived there[39]. There is no further information about this enterprise. However, since del Aqua spoke of moving from Mr Ward's employment to that of Mr Crawford, and thence to Mr Ord, it seems reasonable to assume that there were no less than three glassworks, apart from that of Sir George Hay, operating, or at least attempting to operate, in Scotland within a short period in 1617-18.

EMANUEL MEETHER

The situation is further complicated by the single mention, in 1620, of yet another glassworks about which virtually nothing is known. On 16 November, the Scottish Privy Council appointed a committee consisting of 'the Lord Carnegye, the Clerk Register, the Lordis Innerteill and Curryhill, and Laird of Marchinstoun' to consult with the Master of Works, David Mitchell, burgess of Edinburgh 'and suche glassieris and otheris within the burgh of Edinburgh as they sall think meete, and to confer with Emanuell Meether anent his glasse workis'. The committee was asked to assess the quantity of glass already made, how it compared with foreign glass, how likely it was that the requirements of the country could be met and at what price, and to report back to the Council (*RPC* 12, 374). Unfortunately no further mention of Meether (Mather) has been traced. It is significant that George Hay, in his role of Clerk Register, was on the committee and that he does not appear to have taken action against Meether. One obvious explanation is that Meether was operating under licence, or was in some other way allied to Hay.

JAMES ORD, DEALER IN GLASS

The most significant of the new Scottish glassworks appears to have been that of James Ord, who is described in contemporary documents as an undertaker with Sir George Hay[40], and a long time dealer in glass. In the letters patent setting up a commission to look into disputes between English and Scottish glass patentees in 1620, he is described as 'James Orde gentleman assignee of the said Sir George Haye for the glass work in Scotland'[41]. He appears, therefore, to have been in partnership with Hay in setting up a new Scottish glassworks, thus broadening the scope of Hay's involvement to include vessel-glass, as well as being an assignee for Hay's monopoly rights, which included all types of glass.

A little information about Ord's glassworks is given in the depositions by Ord himself, and by John Maria del Aqua, before the English Privy Council on 20 January 1620[42]. The two men's versions of events in Scotland are contradictory in some areas, but both agree that del Aqua was under written contract to work for

[39] PRO SP.14/112/28. Statement by Agmondesham Pickayes.
[40] NLS Adv Ms 33.1.1 vol 9 (23).
[41] Smedmore MSS B 2/2. Appointment of Scottish glass commissionaers.
[42] PRO SP.14/112/46.

Ord. According to the Italian, he was about to leave Scotland after quitting Crawford, when he met a Mr ?Hislop, who asked him to work for himself and his partner Mr Ord, which he agreed to do. After its expiry, del Aqua stated that 'he addressed himself to the Lord Chancellor of Scotland and Sir George Hay the better to clear himself of the performance of the said contract and to be at his own disposing', after which he signed a new one-year contract. Ord also confirms the involvement, in their legal capacities, of the Lord Chancellor and Sir George Hay, Clerk Register, but in his version the new contract contained a special condition 'being that all questions and contraversies arising amongst us should be referred to [their] judgement and determination'. It would appear that Hay's dual role as legal arbitrator and Ord's partner might have involved a conflict of interest, but his glassmaking enterprise is not mentioned. Ord laid great emphasis on his wish that del Aqua and another glassmaker should return to Scotland 'so thay may receive a tryall of the breach of the said contract whether on their pairt or myne before the said Lords, to whose censure we have both submitted ourselves'.

The major divergence between the two statements concerns money. Del Aqua alleged that after he had signed the new contract to work for Ord for a year, he 'wrought only 5 weeks at the ffurnasse, and then left for want of materialls, Coles, and wages wherewith to keepe ffyer in the ffurnasse, he maintayned the ffyer five moneths and payd the workmen their wagies'[43]. He went on to say that he had spent £20 out of his own purse 'for setting up the glasshouse', and had received 'only 30 li 19s in money for which he had delivered 40 li worth of ware', as well as paying £16 for 1600 lb weight of soda. Del Aqua produced as his witnesses 'Robert Scott, a Scottishman, and Bernardo that wrought under Mr. Hoard in that glasswork'.

In his statement Ord dismissed the credibility of the witnesses, Bernard Tamerlayne because he was involved with del Aqua and therefore biased, and Scott because he knew nothing about it. It is clear from Ord's statement that del Aqua and Bernard Tamerlayne worked together, but that the former's wages were much the higher, suggesting that del Aqua was the more skilled. According to Ord, he paid del Aqua 34s (sterling) a week and Tamerlayne 18s (sterling), very high wages at that period. However, del Aqua claimed that he had been paid 38s a week by Sir Robert Mansell 'before his extraordinaries, which came some times to 20s and sometimes to 40s over and above his said wages'. Godfrey's history of glassmaking suggests (1975, 188) that 'extraordinaries' were payments for particularly difficult commissions. Such high wages are a clear indication of the demand for their expertise and the desire of employers to retain such glassblowers in their service. Del Aqua ended his statement by alleging that he had been out of work for nine months, without receiving any money, which Ord counteracted by insisting that much of the money he had paid del Aqua and Tamerlayne was in dead wages, over 14 or 15 months. There is no explanation, however, for the lack of production at the glassworks.

[43] sic – although these statements appear to be contradictory.

Table 3 Glassworkmen known to have operated in Scotland 1617-22 (locations unknown) with the dates of reference.

Names	*Date*
Samuel Chaisse	1617
John Maria del Aqua	1620
Bernard Tamerlayne	1620
Robert Scott	1620
Leonardo Michellini	1622

SUPPORT AND COMPETITION FROM ENGLAND

It has been suggested that Ord's cash flow problems were overcome by obtaining 'a considerable amount of new capital' from four English opponents of Sir Robert Mansell: Clavell, Worrell, Dines and Bungar (Godfrey 1975, 97). Godfrey appears to be convinced that the four men were partners in a Scottish glassworks (*ibid*, 99, 116, 117, 120), but the only evidence cited for this is a petition to the king by Mansell's wife, Elizabeth, presented in 1620 or 1621, during his absence on naval service[44]. Lady Mansell claimed that:

> Sir Wm. Clavill, Worrell a broker Dines a glazier and Bunger the sonne of an alien glassemaker (whoe hath in open audience vowed to spend 1000 li to ruine your petitioner's husband) joining with the Scottish pattentee, taking the advantage of your petitioner's husband's absence, thinking your petitioner a weake woman unable to followe the business and determininge the utter ruine of your petitioner and her husband have inticed 3 of her workmen for window glasse[45].

Lady Mansell went on to allege that the group had 'dissolved one of the works att Newcastle for window glasse' in the hope of creating a shortage, so that they could import glass from Scotland; that they had falsely claimed the right to import Scottish glass, which they could sell at cheaper rates; and that they had in fact 'brought glasse out of Scotland pretending to have your majestie's warrant for bringing of itt in, whereby your petitioner and her husband is not onlie disinabled to pay your majestie's rent but utterlie ruined'. Her petition and other state papers yet to be discussed, certainly confirm the close involvement of the English faction with Scottish glass producers, their stated aim being to destroy Mansell's monopoly. They do not, however, actually provide direct evidence of financial backing for Ord, although that seems probable. Sir William Clavell, however, seems unlikely to have been in a position to finance work in Scotland, since his estate was not large, and he had lost heavily over an alum project[46].

[44] Godfrey mistakenly lists the document as a statement of the Glaziers Company (*ibid*, 97 n.7). The petition is not dated, but Mansell sailed in October 1620 and was away for almost a year (*ibid*, 102).

[45] PRO SP16/521/206, 'Petition of lady Elizabeth Mannsell weife to Sir Robert Mannsell Knight'.

[46] Mr John Ferris, who catalogued the Smedmore manuscripts, pers comm 1996.

¶ By the King.

¶ A Proclamation restraining the Importation of any sort of Glasse from beyond Seas.

WHereas Wee are informed that great quantities of Glasse are by diuers secret and vnlawfull meanes Imported and brought into this Our Realme of England and Dominion of Wales, from forreine parts beyond the Seas, and are here vttered and solde, aswell in contempt of a Proclamation by Vs heretofore published, inhibiting the same, as to the great damnage of Our loving Subiects, the Patentees of the Glasse-works heere: who by their exceeding charge and great care hauing now brought the said workes to good perfection, Wee are in Iustice and Honour to prouide for their indempnitie in that kinde: And howsoeuer for the better encouragement of the sayd Patentees, wee formerly granted them power of Importation of Glasse from beyond Seas, yet Our royall meaning therein was, to continue that Licence no longer then the Glasse-works heere should be brought to perfection: And therefore to the end that no person whatsoeuer should hereafter hope for, or expect fauour or connyuence for importing of Glasse, Wee doe from henceforth inhibite and forbid the said Patentees, their Deputies and Assignes, to import, or cause to be imported into this Our realme and Dominion of Wales, any sort or kinde of Glasse whatsoeuer from any the parts beyond the Seas, other then such seuerall quantities of Glasse as certaine Lords Our Commissioners for the Glasse works heere, and in Scotland, shall giue their expresse warrant for in that behalfe, vpon paine of forfeiture of the same. Any Charter, Licence or Graunt by Vs heretofore made to the said Patentees or others to the contrary notwithstanding.

And further wee doe by these Presents straitly charge, prohibite and ordaine, That from and after the Date of this Our Proclamation, no person or persons whatsoeuer, shall at any time hereafter presume to import, conuey or bring, or cause to be imported, conueyed and brought into Our realme of England or Dominion of Wales, from any forreine part or parts beyond the Seas, or out of any other of Our Kingdomes or Dominions (except in such cases of necessitie as shall be allowed of by Our said Commissioners, and that to the Scottish Patentees onely) any manner, kinde, or fashion of Glasse or Glasses whatsoeuer, vpon paine of the forfeiture of all such Glasse as shall be so imported contrary to this Our royall Commandement, To be from time to time seised and taken in Our name, and one moyetie thereof to be to Our vse, and the other moyetie to him or them that shall discouer and seise the same, and vpon further paine of Our indignation and such other punishment as by Our Lawes or Prerogatiue royall may be inflicted vpon such offenders for their contempt in this behalfe: whom wee will shall be from time to time by Our said Commissioners for the said Glasse-works, conuented and called before them, and by them duely punished according to the merit of their offences.

And further vpon the like penalties, That no person or persons whatsoeuer that now vse, or hereafter shall vse the trade or occupation of retailing, selling or vttering or drinking Glasses, or other Glasses within any Our Dominions, shall at any time hereafter directly or indirectly, buy, bargaine, or contract for any kinde or fashion of Glasse or Glasses made beyond the Seas, or in any of Our Kingdomes and Dominions, other then in Our realme of England and Dominion of Wales (except in cases of necessitie to be allowed of, as aforesaid) to be imported, conueyed or brought into this Our Kingdome of England and Dominion of Wales. And that no Vintner, Victualler or Inholder, or other person whatsoeuer, shall buy, receiue or take any Glasse or Glasses whatsoeuer, but at the ordinary Shops or other lawfull places for sale thereof. And that no Master of any Ship or Vessell shall permit or suffer any forreine Glasse to be taken or brought aboard his Ship or Vessel, nor that any Partner or Sadler shall bring or conuey any such Glasse into this Realme or Dominion of Wales vnder any colour or pretence whatsoeuer, vnder the paines and penalties before mentioned.

And further Wee doe likewise straitly charge and inhibite by these Presents, That from henceforth no person or persons whatsoeuer (other then the said English Patentees, their Deputies or Assignes) shall melt or make, or cause to be melted or made, any kinde, forme or fashion of Glasse or Glasses, with any sort of fewell whatsoeuer, within this Our realme of England and Dominion of Wales, or any part thereof, vpon paine of forfeiture of such Glasse so made as aforesaid, and other punishment for their contempt in that behalfe. And that also from henceforth no person or persons whatsoeuer within Our said Kingdome and Dominion of Wales (other then the said English Patentees, their Deputies and Assignes) shall erect or build, or cause to be erected or built any Furnaces, Structures, Engines or Deuises, for the melting or making of any kinde or sort of Glasse or Glasses, with, or by the helpe or meanes of any fewell whatsoeuer. And that no person shall abett, aide or assist any such persons as shall vnlawfully erect, or attempt to erect any Furnace, Engine or Deuice for making of Glasse, either by demising or letting them any houses or ground for that vse or purpose or other wise howsoeuer, vpon paine of Our indignation, and such other punishment as by Our Lawes or Our Prerogatiue Royall, as aforesaid, may be inflicted vpon them. Any Charter, Licence, Power, Authoritie or Priuiledge to the contrary in any wise notwithstanding, and vpon further paine of hauing the said Furnaces so vnlawfully erected, demolished and pulled downe by the said English Patentees, their Deputies, Substitutes or Assignes, by warrant or warrants in that behalfe, to be to them

22
Proclamation preventing the importation of glass into England except in the case of shortage, in which case Scottish glass was exempted from the prohibition. 1620. (NAS RH14/1/7. *Reproduced with the permission of the Keeper of the Records of Scotland.*)

Mansell's monopoly rights to exclude all imported glass had already been challenged by Robson, who had established a furnace in Ireland for the production of window glass, considerable quantities of which had been exported to England (Godfrey 1975, 86). Initially Mansell did not object, but in 1616 he confiscated a consignment, was sued for its return, and countered with a successful lawsuit in the Court of Exchequer, which upheld his rights to prevent all importation of glass into England (*ibid*).

It is claimed (Godfrey 1975, 86) that, after the Scottish petitions in 1619, 'without permission, Crawford's factory at Wemyss began shipping window glass to London which Mansell's agents promptly confiscated', but no evidence is presented to support this assertion. However, a brief summary is extant of a hearing which took place before the king and the English Privy Council on 4 November 1619, at which arguments from both the English and Scottish glass manufacturers were presented[47]. It is clear that Scottish window glass *had* been shipped to England, since the summary states that 'The Scottish patentees have made by virtue of thair patent a quantity of glasse, and have sent it into England; The English patentee seise uppon the same, as not to be uttered in England, but confistable by virtue of his patent.' Failing any evidence to the contrary, it seems most likely that the glass complained of belonged to Hay and Ord.

The Scots claimed, correctly, that their patent predated the English one, but also that they were 'anterior in their making of glasse, and anterior in their rarity and perfection', both claims being highly dubious, in the light of the depositions discussed earlier. Mansell counter-claimed that 'the Scottish patentees have had their first workmen from the English workes, and therefor they of Scotland were not anteriour in their making of glasse'. The final sentence states simply that barilla was used in England, but not in Scotland, implying that no crystal was made there, although a large quantity of soda had, in fact, been purchased for Ord's glass-house, according to del Aqua. No conclusion is recorded but since other cases involving Mansell's patent were also matters for litigation at the time, the need for a comprehensive, enforceable, policy was evident. This was embodied in a proclamation of 25 February 1620, which banned all imports of glass unless express permission was granted by the 'Lords our Commissioners for the Glasse-workes heere, and in Scotland'[48] (illus 22).

[47] PRO Lansdowne, Ms 162, no 97 fol 65, 'The Glasse cause, before the King and the Lordes', 4 Nov 1619.

[48] NAS RH14/17 'A Proclamation restraining the Importation of any sort of Glasse from beyond Seas'. Godfrey says (1975, 98) that the proclamation was dated 25 January 1620.

THE CREATION OF THE GLASS COMMISSIONS

THE ENGLISH GLASS COMMISSION

James had already appointed the commission on 10 January 1620[49], naming as its members 'Lodovick Duke of Lennox, Lord Steward of our Household, James Lord Marquesse Hamilton, William Earl of Pembroke, Lord Chamberlaine of our Household, and Thomas Earl of Arundell'. They appear to have met previously to mediate between the English patentees and the assignee of the glassworks in Scotland and to have reconciled some differences between them, their stated task being to ensure that future disputes 'may be appeased and ended in honour equity and justice'[50]. Any two of the four commissioners could arbitrate, provided one was English, and the other Scottish, and they were able to call as witnesses, under oath, the patentees, their assignees, glaziers, others 'trading and traffiquing in glass' and anyone else they thought fit. The powers granted to the commission were considerable, enabling them to punish by imprisonment or other legal means, anyone breaching the patents or proclamations by importing foreign glass, illegally building furnaces, or buying illegally produced or imported glass.

As well as having a duty to enforce the terms of the patent, the glass commissioners could grant permission for the importation of glass, from Scotland only, if great scarcity could be proved. As a preliminary to attempting to establish such a scarcity, James Ord petitioned the king asking him to instruct the commissioners to order that sequestered glass should be 'putte in the keeping of neutrall persons til it sall be knowne whether the said Sir Robert and his partners doe sufficientlie serve your subjects with English glasse'[51]. Dines, the glazier, then petitioned that there was 'a want of glass'[52]. The commission embarked on a thorough investigation of the price, quality and supply of window glass from Mansell's furnaces (Godfrey 1975, 99). Conflicting evidence was presented by interested parties, but the commission concluded that there was, in fact, no shortage of good, reasonably priced glass and the prohibition of Scottish imports should remain (*ibid*, 100).

The closure of the English market focused the attention of Scottish glassmakers on local matters. The reason for the appointment of the committee to investigate Meether's glass production in November 1620 is unclear, but it appears that the Privy Council of Scotland was anxious to improve the standard of glass made there, so that foreign imports could be prohibited, to the benefit of the national economy (see below). Meanwhile Ord was still actively campaigning on behalf of his enterprise. A letter to the Council from James VI, dated 1 January 1621, refers to a letter addressed to them by Ord about the glassworks, 'whereby we perceave care in that perticular as importing a generall benefite, besydes a credite to that

[49] Smedmore Mss B 2/2.

[50] *ibid.*

[51] PRO SP14/113/95. The original of this petition is labelled '25 Feb 1620', however the petition itself is undated, and it is possible that the indexer confused the date of the petition with that of the proclamation above.

[52] SP. 14/120 no 89, nd, *in* Godfrey 1975, 99.

whole kingdome'. James continued 'For our pairte, we sall give such order in that mater concerning the glassworkis as sall schortlie procure a free commerce', an interesting statement of his intentions. He also refers for their consideration an application by Ord 'for the sole burning and prepareing of kelp in that ouer kingdome' (*APC* 12, 771-2).

THE SCOTTISH GLASS COMMISSION

On 21 February 1621, the Scottish Privy Council members also appointed a glass commission comprising Lord Carnegie, *Sir George Hay* [this author's italics], Sir Andrew Hamilton of Ridhouse, Sir Archibald Napier of Merchiston and James Murray, Master of Works, with 'suche marcheantis and glassieris in Edinburgh as [thay pleis call unto] thame' to examine the quality of the Scottish glass, to decide whether it was sufficient to supply the needs of the country at 'als chaip and reasounable pryceis as the glasse is boght in Danskeene [Danzig], and to sett doun the pryceis of the said glasse, with the measouris of the cradillis and caissis thairof'. The commission was charged to check that the glassworks held a year's stock, and that 'suche burrowis and portis of this kingdome quhairunto foreyne glass wer formarlie boght frome foreyne pairtis salbe abundantlie furnist with Scottis glasse and als chaip'. They were to report in writing, so that the Council could decide whether it was expedient to ban foreign imports (*RPC* 12, 428).

FIRST REPORT OF THE COMMISSION

The formal appointment of the commission may simply have been official confirmation of a pre-existing committee, but it seems more likely that the date given in the *Register of the Privy Council* is incorrect, because their report was apparently produced on 25 February 1621, in the impossibly short time of four days. The text actually says that the commission had met 'upoun the [blank] day of Marche instant', so there is certainly some confusion of dates. It is more likely to have been produced on, or just before, 20 March (see below). The report is lengthy and important, so will be dealt with in some detail.

The commission had examined examples of 'the braid glasse maid within this kingdome at the Weymis'[53]. They found that each cradle, or case, contained fifteen 'wispis' (bundles), and that each wisp held three tables of glass (the term 'table' usually indicating a sheet of crown glass). The dimensions of the sheets of glass are given. At the widest point they measured 'ane elne wanting half ane naill', narrowing to 'half ane elne wanting half a naill'[54]. The Scottish cradles contained only three quarters as much as a 'kist' (container) of glass from Danzig, but the commission found it 'fullie als goode as the Dantskine glasse', although they wanted it to be made thicker and stronger.

[53] Although the term 'broad glass' usually refers to window-glass made by the cylinder method, it was also used, at that period, to mean window glass in general.

[54] A 'nail' – the measure of the middle finger from the knuckle to the tip (Grant & Murison 1965, 6, 382).

Significantly, however, the commission did not restrict its deliberations to window-glass. They also examined 'sindrie sortis of glasse, for drinking and otheris useis, of different shaipis, gritnes, and goodenes', thus confirming that Hay and his assignee(s) were also making drinking and vessel glass. The glasses produced do not appear to have been of a high standard, since the commission decreed that:

> becaus thay could not certanelie afferme that thay wer als goode as the Inglishe glasse of these kyndis, their opinioun wes that some Inglis glasse, to witt, tua of everie soirt as thay ar ordinarlie sauld at Lundone, salbe boght thair and send home to be keept as patternis for the Scottis glasse, and for trying the sufficiencie of the same in all tyme heirefter.

The patterns were to be kept in Edinburgh Castle. The commission also considered it important that window-glass should be available in half cases, for ease of transportation.

The Scottish Privy Council accepted the recommendations and ordered a missive to be sent to Sir George Bruce requesting him to buy two 'of everie soirt of drinking glassis and glassis for otheris useis', to be sent to Edinburgh, together with a list of prices. The Privy Council then set out their aim that Scotland should be self-sufficient in glass production which 'wilbe ane occasioun of retentioun within the cuntrey of ane grite deale of money yearlie exportit for that caus'. They gave notice that foreign imports of all types of glass would be banned from the following August, the decision to be proclaimed and published wherever necessary. All imports after that date would be liable to confiscation. At the same time, they set out the conditions to be met by 'the patentees of making of glasse, thair assignayis, associatis, and otheris haveing the charge of thir glasse workis'. These were that they should always have a year's supply of glass in hand to prevent any shortages; that the quality of the window-glass should be as high as that from Danzig, and should be sold at £12 per cradle; and that all other types of glass should be as good as that made in England and should be sold at the same prices as in London. If the Scottish glassmakers failed to meet these conditions, they would forfeit the monopoly. If, on the other hand, they complied, the council decreed that the prohibition of imported glass would continue until the expiry of the patent in 1641, which would not then be renewed, and 'it salbe laughfull to all his Majestei's subjects to mak braid glasse and all other sortis of glasse within this kingdome at thair pleasour'[55]. So some ten years after obtaining the first patent to make glass in Scotland, Hay and his associates were considered sufficiently well established to supply the country's needs, even if the quality of their products still left something to be desired.

[55] The monopoly was, in fact maintained until at least 1678, as will be shown.

PROBLEMS OF IMPORT AND EXPORT

A proclamation was duly issued at Edinburgh on 20 March 1621, forbidding anyone, after 1 August, 'to importe, convoy, or bring, or caus to be importit and broght, within theis kingdome frome ony foreyne pairt or pairtis ony maner, kynd, or fassioun of glasse or glassis quhatsomevir, under the pane of confiscatioun and foirfeytour of all suche glasse'. Any forfeited imports were to be equally divided between the Crown and those discovering the breach of patent (*RPC* 12, 451).

The prohibition appears to have been successful. The import book for Leith for 1622 shows that of the 317 ships which docked there between 2 November 1621 and 1 November 1622, only ten carried any glass. Seven from Danzig contained a total of 31 kists of window-glass, while three from London brought two dozen small looking-glasses, seven dozen hour-glasses and three dozen *façon-de-Venise* drinking-glasses[56].

Hay does not appear to have been content with a monopoly of the Scottish market, however, and, on 14 June 1621, a special licence was granted to him by James VI 'to bring into this Kingdom any glasses melted and made in Scotland, and the same to utter and sell'[57]. James appears to have ignored the decisions of the commission, and the terms of Mansell's patent, for reasons which can only be guessed at, giving Hay a considerable advantage. The licence was confirmed on 18 June in a letter from the English Privy Council to the officers of customs, which said that Sir Robert Mansell's patent for glass 'being respited till his return from His Majestie's service', they were, meanwhile, to allow no glass to be imported, except that made in Scotland (*CSPD 1619-1623*, 266). On the same day, the English Privy Council announced that, since the king had allowed importation of Scottish glass, to the prejudice of Mansell, he 'was graciously pleased to remitt unto Sir Robert Mansell the payment of £2800 yearly, to which he was formerly bound by vertue of his patent' (*APC*, July 1619-June 1621, 401). This would appear to be a considerable sacrifice, since the Exchequer was always short of money, but there is no evidence of any reciprocal charge to Hay.

STRATEGIES AND MACHINATIONS

ATTEMPTS TO UNDERMINE SIR ROBERT MANSELL

Meanwhile attempts to undermine Mansell were maintained. Isaac Bungar continued to campaign fiercely by any means, despite a spell in the Marshalsea Prison (Godfrey 1975, 103). In a statement defending his patent in 1624, Mansell complained that, while he was overseas (1620-21):

[56] NAS E.71/29/7, Leith Port Book, 1622.

[57] PRO SP.14/141/160.

> some of the petitioners [against the patent, Bungar being the foremost] having by practise set on foote a Patent for the making of glasse in Scotland, with liberty of importation into England, of purpose to destroy and roote out the whole manufacture in this Kingdome, did combine with the Maisters of Shipping, that usually served Sir Robert with Scotish-coale, for the making of Christall and white glasse in London, that they sodainly raised their usuall prizes from foureteene shillings the tonne, to twenty foure shilling the Tonne, and after so disapoynted him that no Scotch Cole could be had for money to maintaine the workes for three weekes[58].

As well as attempting to deprive Mansell of coal, Lady Mansell complained, in February 1621, that Sir Williiam Clavell had enticed some of her husband's workmen to go to Scotland (*APC* July 1619–June 1621, 343). It is clear that a concerted effort was made to use the Scottish connection to damage Mansell's works while he was out of the country, a ploy which was thwarted only by the determination and skill of his wife.

Also during 1621, opposition in the House of Commons to Mansell's monopoly reached its climax, with a declaration on 16 May that it was a grievance. However, after much acrimonious debate, his patent was eventually renewed on 22 May 1623, but with the proviso that imports of foreign glass *would* in future be permitted (Godfrey 1975, 119). The debate is described in detail by Godfrey (*ibid*, 105-15), the only point directly relevant to Scotland being a dispute about the relative quality of English and Scottish window glass. A certificate signed by 17 London glaziers, dated 4 April 1621 reads:

> whereas it is affirmed unto his Majestie by Bungar, Dynes and others that the Glasse now brought out of Scotland is better then the Glasse nowe made by Sir Robert Mansell, Upon viewe taken by us of the sayd Glasse wee finde in our Judgmentes that the Glasse is well Coloured, but soe Thin and unserviceable that wee had rather give Twenty two shillings sixe pennce for the Case of Glasse made by Sir Robert Mansell, then twenty Shillinges the Case of Glasse brought of Scotland[59].

Perhaps the truth lay somewhere between the two.

Sir William Clavell also continued to act in opposition to Mansell's patent. In a complaint to the English Privy Council of 13 June 1623, Mansell alleged that Clavell had 'seduced' workmen who were paid high wages and tied by covenants or bonds to work for him, to serve in Scotland in other works (*APC* 39, 11-12). Clavell denied the charge and counter-claimed that Mansell had enticed away *his* workmen from Scotland. A board appointed to examine the case reported on 27 June 1623 and found in favour of Mansell, agreeing that Clavell and John Worrall 'did practise to seduce them away to the exceeding great prejudice and almost utter overthrowe of the glasseworkes of the said Sir Robert Mansell' (*ibid*, 34). Both Clavell and Worrall were committed to the Marshalsea pending further consideration of the case.

[58] State Papers, Domestic, Jas I, Vol 162, No 63, *in* Hartshorne 1897, 426.

[59] PRO SP.14/120/108, Petition of glaziers, 4 and 5 April, 1621.

THE LONDON CONNECTION

A letter to Sir George Hay, written on 11 July 1623, from Sir Robert Aytoun (1570-1638), who appears to have been acting as his intermediary in London, offers conclusive proof of Hay's association with Clavell and that he was actually engaged in negotiations with Mansell. Aytoun began by saying that he had, on receiving letters from Hay, immediately visited the Duke of Richmond (who, as the Duke of Lennox, was a member of the English glass commission appointed in 1620). The Duke told him that 'Sir Robert Mansell was content to take your glass workes and pay you as much for them as any other would do', but the writer doubted that 'it will neither be favourable for the country nor so beneficial towards the refounding of your lordships charges as otherwise it might be'.

Aytoun went on to say that he went from the Duke of Richmond to see Sir William Clavell at the Marshalsea, where he showed him the copy of Hay's letter to the Duke, and 'he seemed to be much comforted with it'. The contents of the letter are enigmatic but are nevertheless important, in that they indicate considerable covert manoeuvering in London by Hay, who was at that time Lord Chancellor of Scotland. It seems that Clavell was relieved to be told that:

> my Lord Duke had told me that he was committed chiefly for going about to lay some aspersions upon yow from which he did maintaine himself to be very cleare, as having said nothing but what it seemed your lordship did take upon yow in yor owne letter, he did desire the copy of it but your lordship having commanded me to do otherwise I did retaine it by me, for any thing that I see, if our Scots councillors heer do not embrace the cause of their countrie more cheerfully then they do Sir William is like to ly long by it, and your lordship have litle right in yow.

He had offered to do Clavell as much service he could 'in your lordship's cause', but requested more guidance from Hay 'before I meddle in a thing that may reflect upon your lordship'. He ended the relevant section of his letter 'When I had so performed your lordship's directions to him I went and delivered you lordship's letter to Kilmoray'. The remainder concerns court and political matters[61].

Ludovick, Duke of Richmond and Earl of Newcastle upon Tyne (1574-1624) was a Scot, with strong local connections. He inherited the title Duke of Lennox through his father Esme in 1583, and was high commissioner to the Scottish Parliament in 1607. His first two wives were Scottish, and like Hay, he came from a Catholic family (*Scots Peerage* 5, 356-8). Sir Robert Aytoun, Hay's go-between, is best known as a poet. His family came from Berwickshire and owned lands in West Fifeshire. He was born at the Castle of Kinaldie, and attended St Andrews University, before studying law in Paris. He returned to England in 1603, found favour at court, and was appointed gentleman of the bedchamber and private

[61] NLS Adv Ms 33.1.1 vol 10, no 98, Sir Robert Aytoun in London to Sir George Hay, 11 July 1623.

secretary to the queen. He was knighted in 1612, and remained in England, dying at Whitehall in 1638 (*DNB*, 772-5).

VENETIAN GLASSMAKERS PERSUADED TO WORK IN SCOTLAND

Confirmation that Hay and his English backers were very successful in attracting Italian glassmakers to Scotland is contained in a letter from the Venetian ambassador in London, sent to the head of the Council of Ten on 29 April 1622. He referred to previous correspondence about attempts to persuade glassworkers from Murano to return home, particularly since virtually all imports from there had been stopped. Emphasising the urgency of the matter, he wrote:

> they have already set up new furnaces in Scotland well supplied and arranged by a certain company of merchants who have sent thither as their agent Leonardo Michellini a Venetian of low birth and a thorough rascal. The greater part of the men who worked here have betaken themselves thither, perhaps in the hope of having flints of the Ticino, as I wrote, by the ships which will go from our ports, whence other new workmen have also gone.

He went on to insist that he had done his best to persuade the men to return, adding:

> I assure your Serenity that I have even given my own money to some in order that they might return to Murano as they professed they wished to do; but afterwards learned that they had gone to Scotland and to work elsewhere, which alone would render them worthy of some punishment (*Cal State Pap Venetian 1621-1623*, 308).

Success in attracting skilled glassmakers away from Mansell to work in Scotland, together with the opening up of the English market, assisted by the close involvement of Clavell, Worral and Dines, members of the distribution network there, must have enabled greatly increased production in Hay's glassworks, particularly in the drinking-glass furnace(s).

GLASS EXPORTED TO ENGLAND

In 1621, Hay exported 500 common green drinking-glasses to London (Godfrey 1975, 220) with a value of £18 15s (sterling), as well as 225 cases of window glass, valued at £224 (sterling)[61]. No further importation of window glass is recorded in Godfrey's figures, although local Scottish demand would have continued. Figures for drinking-glasses, however, tell a different story. In her table 'Drinking Glasses Shipped In or Out of London', Godfrey (1975, 211) shows that in 1626, no fewer than 890 dozen crystal glasses, with a value of £267 (sterling) and 142,500 other glasses, valued at £593 15s, were imported from Scotland. This hugely increased figure confirms Mansell's statement of 28

[61] The latter was, however, only a very small proportion of Godfrey's estimated (1975, 211) possible English production of 5,000 to 6,000 cases of window glass a year.

January 1635, that, following the renewal of his patent in 1623, and before it bore fruit, 'his workemen and servants were drawne from him and went into Scotland, and most of the glasse here vented [was] imported from thence for diverse yeares'[62]. There is no doubt that there was a very active and successful Scottish drinking-glass industry in the mid-1620s, which posed a considerable threat to Mansell's patent.

There is some evidence that imports may have been greater even than the London figures demonstrate. In 1630, the Court of Session gave a ruling in the case of James Ord versus Alexander Duffs. Ord was at that point pursuing Duffs' heirs and executors 'for payment of the prices of certain glasses, viz. drinking-glasses, and window glasses' which had been shipped to Hull by the late Duffs. Ord alleged that Duffs 'after selling of the saids glasses in Hull in England, intrometted with the whole prices thereof, and never made him payment'. The incident had obviously happened several years previously, because the Lords of Council and Session ruled that the case was invalid, as it should have been started within three years of the action complained of (Gibson 1690, 492). Ord's court case does, however, demonstrate that London was not the only port receiving Scottish glass, and *may* indicate that he was still actively involved with glassmaking in 1630.

SALE OF HAY'S PATENT RIGHTS TO MANSELL

In 1627, having failed to take over Hay's glassworks in 1623, Mansell was forced to protect his monopoly and 'to settle the Manufacture [in England]' by buying the Scottish patent[63]. On 9 February 1627, Hay signed an indenture transferring his rights to Thomas Robinson, a glass seller in London. On 18 June that year Robinson in his turn, sold the rights to the Scottish patent to Sir Robert Mansell for an annual payment of £250 (sterling)[64]. One of the terms of the indenture was that:

> Sir Robert Mansell . . . shall and will from time to time and at all convenient times during the said tearme worke or cause to be wrought for such good and well conditioned glasse of all such usuall sorts as are now made there as shall be sufficient and necessarie for the use and service of the said kingdom of Scotland and shall sell and utter the same at and for such reasonable rates and prices as the glasse shalbe sold for in England.

Mansell went on to agree that no sort of green glass would be made in Scotland, since he had already granted to Robinson and John Dalby of London the rights to make such glass for seven years. Mansell was to abide by the terms of Hay's patent, and to pay Robinson £125 twice a year in the form of white glass, as required, and at the same cost as other glass-sellers paid. Any balance either way

62 State Papers Domestic, Chas I, Vol 282, No 99, *in* Hartshorne 1897, 432.

63 *ibid.*

64 NAS GD103/2/127, Indenture between James Robinson and Sir Robert Mansell, 18 June 1627. I am grateful to the staff of the NAS for bringing this to my attention.

was to be paid in cash. The indenture confirms that any green glass furnace in Scotland would have been closed down, but implies that Mansell intended to continue the production of white glass there. Instead, he appears to have closed down all the Scottish glasshouses[65]. Robinson paid Sir George Hay £200 (sterling) a year for his patent rights[66].

The Italians returned to his works in England, but Mansell claimed later that: 'After his men returned out of Scotland they made such ill condiconed glasse as at one tyme he lost £2000 thereby', forcing him to 'procure a whole new company from Mantua in Italie'[67]. Although their departure confirms the closure of the Scottish glass furnace, it was only a temporary cessation of activities, as will be shown later.

SUMMARY

There is no doubt that Sir George Hay founded the Scottish glass industry, but it is more difficult to be certain of the true nature of his subsequent involvement. Evidence is fragmentary: the Kinnoull family papers were burnt with Dupplin Castle in 1827[68] and, naturally enough, most of the material in other archives deals with his legal and political roles. Nevertheless, there are sufficient indicators from which to deduce that he was very much involved with the industry from the date of his first patent in 1610, up to the time of his death in 1634 (illus 23).

The fact that Hay took decisive action to close down a rival window glass furnace in 1617, yet he appears to have condoned at least one other, that of Meether, implies some positive relationship with that glassworks. He was involved as joint undertaker with James Ord, who appears to have produced both vessel glass and window glass as his assignee. He was a member of both the committee set up to examine Meether's glass, and the commission established to examine the glass made at Wemyss, which raises the question of whether he was scrutinising glass made by other assignees under his own patent. There is also the possibility that he took over William Crawford's works and bought him off by arranging the clay monopoly.

Hay's London intermediary, Sir Robert Aytoun, visited Sir William Clavell in prison in 1623, so there was certainly a link between Hay and the English opponents to Mansell's monopoly. He was also in close contact with one of the London glass commissioners, the Duke of Richmond. He may well have wished to avoid overt involvement with the controversy over the glass patents, but have preferred to use his power and influence behind the scenes, taking advantage of

65 NAS GD406/M1/28/17. Document setting out reasons why the second Earl of Kinnoull should set up a glassworks.

66 *ibid.*

67 State Papers Domestic, Chas I, vol 282, No 99, 'Costs etc. sustained by Sir R. Mansel, 28th Jan. 1634/5', *in* Hartshorne 1897, 432.

68 HMC Fourth Report, 514.

23
Memorial to Sir George Hay, first Earl of Kinnoull, who died in 1634. This large and sadly delapidated monument is in a small chapel at Kinnoull, Perthshire. The 'angel' hovers over the Arms of Scotland, while the base is decorated with arms and armour. (RCAHMS B14765. *Crown Copyright: Royal Commission on the Ancient and Historical Monuments of Scotland.*)

his position to build up the Scottish industry, over which he had control. Certainly he and his heirs benefited considerably since, having received £200 (sterling) annual payment for his patent rights after 1627, by 1640 Mansell was paying the second Earl of Kinnoull £300 (sterling) for the Scottish patent 'by his

Majestie's order'[69]. Hay's patent, which had been renewed for a further 31 years in 1634 (*RPC* 3rd Ser 1, 155), was inherited and exploited by his son, the second earl[70] and was again renewed on 16 October 1661 in favour of Charles Hay, brother to William, the then Earl of Kinnoull (Sir George's grandson), for a further 31 years (*RPC* 3rd Ser 1, 155-6). Subsequently transferred to other family members, the patent continued to generate income: in 1678, 68 years after it was first granted, the proprietors of the glassworks at North Leith paid the then owner, Lady Mary Hay, £333 6s 8d Scots 'for the Patent for makeing glass'[71]. There can be few patents of monopoly which were granted to one family for a such a lengthy period.

Further evidence that Hay was also indirectly involved in the glass industry can be found in the state papers. On 8 February 1619, Sir George Hay received the grant of the customs on 'smalt [blue pigment derived from cobalt], etc.' for 31 years (*CSPD 1619-1623*, 12). On 16 February 1619, at the request of Sir George Hay, a patent was granted to Abraham Baker for the sole making of smalts for 31 years, at a rent of £20 (sterling) (*ibid*, 15). This was, in fact, the renewal of a patent granted to Abraham Baker for a monopoly of the supply of smalt granted on 4 February 1609[72]. On 21 February 1626, Charles I demised to George Hay all customs payable for 'smalts, pot-ashes, and safers' imported, for a period of 24 years, at a rent of £240 (sterling) (*CSPD 1635-6*, 46). In a petition of 1635, Hay's successor, George, second Earl of Kinnoull, applied for a renewal of the grant, but it was refused at that time (*ibid*). However, on 2 August 1641, he received a commission renewing his former grant 'of all customs and subsidies of smalts, saffora, and potashes in England and Wales' (*CSPD 1625-1649*, 636) and it, too, remained in the family. On 17th July 1689, Dame Margaret Hay, administrator of the estate of the late Earl of Kinnoull, demonstrated that the king had granted to William, the late Earl, the farm of 'all customs, subsidies of poundage and other duties . . . for all smalts, borillias, or saffers and pot-ashes' imported or exported for 31 years from Lady Day 1664 (*Cal of Treasury Papers 1557-1696*, 56). As has been shown elsewhere, cobalt in the form of smalt or zaffre was used as a de-colouriser, or, of course, to make blue glass, while barilla and pot-ashes were essential ingredients in the glass batch.

It seems reasonable to conclude that Sir George Hay not only established the Scottish glass industry, but that he was very much involved in its expansion, maintaining actual control over it until 1627. He made a considerable contribution to early Scottish industrial enterprise, presiding over a business which, having started from nothing in 1610, was, by 1625, able to export large numbers of drinking-glasses, as well as providing window glass and bottles for the local market. Aided by the self-interest, and probably money, of

[69] PRO SP.16/417/141.
[70] NAS GD406/M1/28/17.
[71] NAS RH15/102/6/3/8. Glasshouse account.
[72] Corning Doc 33/10. Printed letters patent (Corning Museum of Glass).

English glassmakers and their friends, an itinerant Italian workforce of skilled glassmakers and Sir George Hay's own privileged position under royal patronage, there is no doubt that the early Scottish glass industry flourished under the Hay patent. It was a level of success not to be enjoyed again for many years.

5

GLASSWORKS AT MORISON'S HAVEN AND WESTPANS

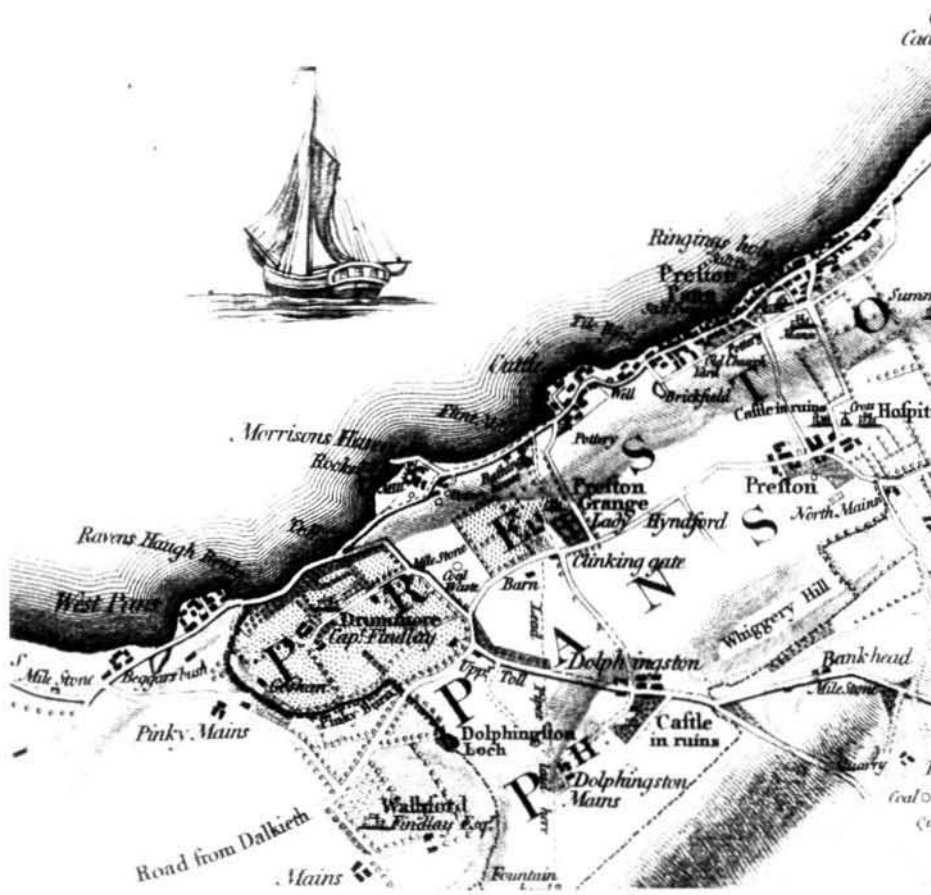
The absence of locations for early Scottish glassworks has already been mentioned, Wemyss being the only site named in records before 1625. In that year, however, on 6 December, a second name appears in the *Register of the Privy Council of Scotland*, providing the first indication that a glassworks was operating on the south coast of the Firth of Forth. A commission was issued to Sir John Hamilton of Prestoun, and Mr Alexander Morison, advocate, and their bailies, to search for, apprehend and present before the Council:

> some Jesuites, seminaries and mespreistis [who] hants and frequentis about Prestoun Panis and Aichesonis Haven, alias callit the Newhaven, and in speciall to the people attending the glassworkis thair, unto whome thay oft tymes say masse and uses otheris Popishe rites condemned be the lawis of this our kingdome (*RPC* 2nd Ser 1, 211)[1].

The town of Prestonpans was best known for the salt-pans which gave it the earlier name of Saltpriestoun. It had been erected to a burgh of barony in 1617 in favour of Sir John Hamilton of Preston, one of the recipients of the Scottish Privy Council commission quoted above (Chambers & Chambers 1832, 876). Achesons Haven, about half a mile to the west of the town, had originally belonged to the monks of Newbattle Abbey, who obtained a charter in 1526, permitting them to construct a harbour from which to export their coal (*ibid*, 789).

Known then as Newhaven, the harbour's name was altered as its ownership changed, becoming first Acheson's Haven and eventually Morison's Haven. It formed part of the Prestongrange estate which passed to Mark Kerr the commendator when the abbey was erected into a temporal lordship in his favour in 1587 (*RMS*, 5, 1307). In 1591, the grant was ratified and the lands were erected into the barony of Preston Grange and incorporated with the lordship of Newbattle (Murray *et al* 1966, 97). Mark Kerr was created Earl of Lothian in 1606. He died in 1609 and the estate was sold to John Morison of Edinburgh, whose heirs remained in possession of the land until 1746 (*ibid*, 92). Morison's Haven was the nearest port to Prestonpans and will be discussed in more detail in Chapter 9 (illus 24).

[1] My thanks to George Haggarty for this reference.



24
Detail from a map of Haddingtonshire by William Forrest, 1799, showing Westpans, Morison's Haven and Prestonpans. (*Reproduced by permission of the Trustees of the National Library of Scotland.*)

THE AVAILABILITY OF RAW MATERIALS

The stretch of coast between Musselburgh and Cockenzie was well suited to industrial development, including the production of glass. Coal was abundant in the area, and had been mined since the 13th century (Hatcher 1993, 97). Sand was, of course, available along the shore, as was salt, of which there was an enormous quantity produced locally. Describing the Prestonpans area in 1636, Brereton wrote that 'An infinite, innumerable number of salt-works here are erected upon this shore; all make salt of sea-water' (PH Brown 1891, 136). This may have been relevant to the choice of site, since salt could be used as a flux in the bottle-maker's batch[2]. Barker observes that, in England in the 17th century, all the most important glassmaking centres, with the exception of London, were situated near to salt workings (Barker 1977, 488 n.76). Ashes had to be purchased, but could be brought in by sea and the finished products exported.

2 It is, however, more likely to have been relevant to the later period of production.

either from Morison's Haven itself, or from Leith, Edinburgh, only some eight miles from Prestonpans, provided the largest home market available to the Scottish manufacturer at that time.

THE SITE OF JAMES ORD'S GLASSWORKS?

There is very little information about the early glassworks at Morison's Haven, but it does seem possible that this may have been the site of James Ord's vessel-making furnace, discussed earlier (Chapter 4 above). We know that he employed Italian glassmakers, who would be expected to be of the Catholic faith. Although none of the documents discussed earlier give a location for Ord's glassworks, there is no reason why the works mentioned in the Register of the Privy Council of Scotland in 1625 should not already have been in operation at Morison's Haven for several years. Since it has been shown that large quantities of drinking-glasses were being produced in Scotland after 1623, the Morison's Haven glassworks would appear to be a likely source.

Ord, as has been shown, was operating as assignee of Sir George Hay, who retained control over the Scottish patent rights until they were purchased by Sir Robert Mansell in 1627[3]. Although, at that point, Mansell agreed to close furnaces in Scotland making green glass, he retained the right to produce the better quality white glass[4]. Nevertheless, he appears to have shut down the Morison's Haven glassworks after 1627 and there seems to have been a hiatus in the production of glass in Scotland between 1627 and 1635, at which point Sir George Hay's son set out to re-activate the industry. The fate of James Ord is unknown, although he was still trying to recoup money owed to him in 1630 (Gibson 1690, 492). Despite having sold the patent rights to Robinson, Sir George Hay had, in fact, renewed them shortly before he died (*RPC* 3rd Ser 1, 155). In the letter from Charles I to Sir George Hay written in January 1634, which is quoted in Chapter 4, the king insisted that the patent should be renewed only on condition that a new glassworks was built and operated in Scotland, so royal support for the enterprise appears to have been assured from the beginning.

SIR ROBERT MANSELL'S OPPOSITION TO THE SECOND EARL'S ACTIVITIES

Following his father's death, George, second Earl of Kinnoull, took over his patent and, according to a manuscript in the Hamilton archives, built a glassworks 'to the expence of 4000 att the least'[5]. The manuscript sets out the position of the

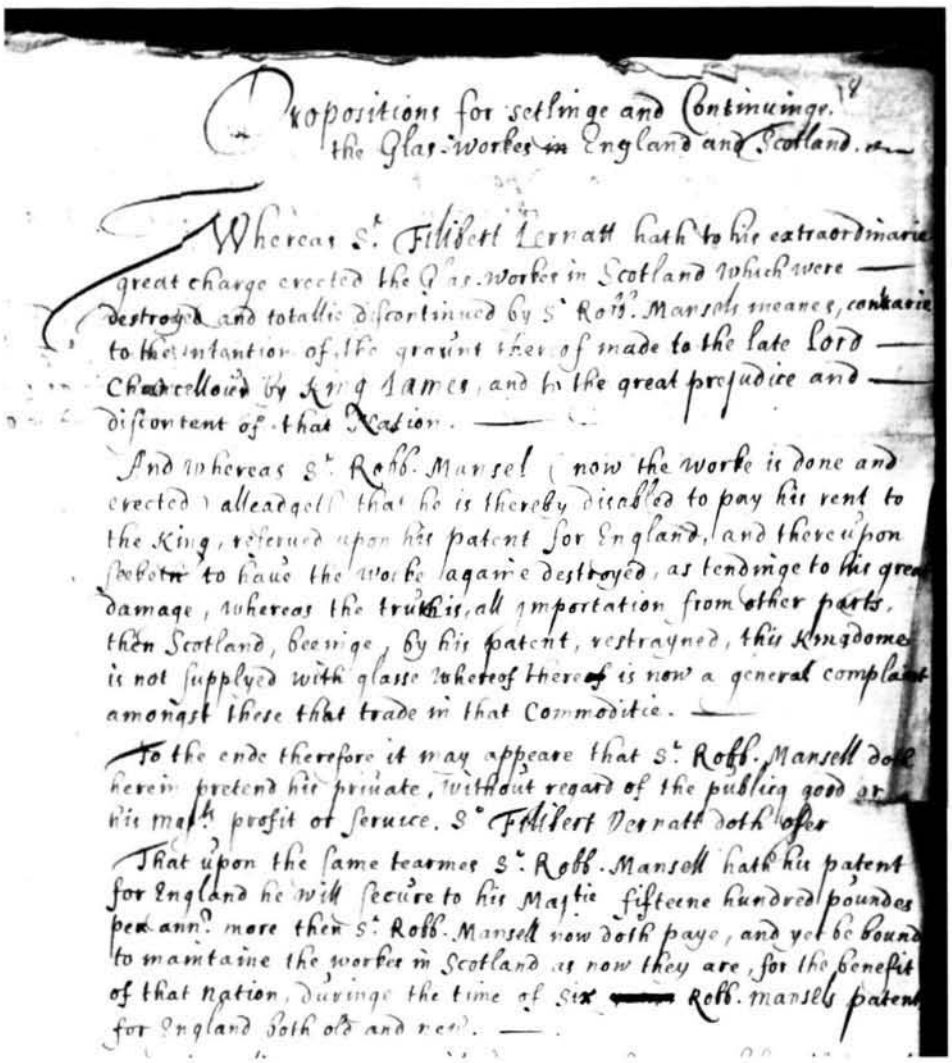
3 NAS GD103/2/127.
4 *ibid.*
5 NAS GD406/M1/28/17. The terms of GD406/M1/28/17 and /18 are so similar it seems likely that they were produced for the same hearing. The currency appears to be sterling. The paper is not dated, but would seem to be from 1635.

second Earl of Kinnoull as well as that of Sir Robert Mansell, who opposed him on the grounds that the patent had been assigned to Robinson 'from whome he claymes for 200L. pr annum and where are six yeares to come in that Pattent'. According to the Kinnoull manuscript, 'Sir Robt. Mansell hath not in Nyne yeares space done any thinge towards the Maintenance of that Manufacture [of glass] in that Kingdome, [Scotland] but on the contrarie hath utterly distroyed the Workes.' The Kinnoull case for disregarding the terms of the assignation of the patent to Mansell were that he had gone against the explicit wishes of the king when the patent was granted: that there should be a functioning glassworks in Scotland, and had, therefore, forfeited his rights. Like the Vernatti propositions discussed below, the Earl of Kinnoull made various offers to Mansell, including delivering 'all the greate drinkeing glasses which shalbe imported into England' to Mansell or his appointee at 3s 6d (sterling) a dozen, 'which is 6d cheaper than he sells them to his customers. The Wine glasses att 2s 4d which hee sells att 2s 6d. & 3s pr. doz. The Morters (which are small drinkeing glasses) att 14d which hee sells here for 16d pr doz.' It is unclear how the dispute was resolved, but it has been shown in Chapter 4 that by 1640, the second Earl of Kinnoull was receiving £300 (sterling) a year from Mansell for the Scottish patent rights, despite the fact that Sir Philibert Vernatti's glassworks was still operating at Prestonpans (see below). It does not, therefore, appear to have gone in Mansell's favour.

SIR PHILIBERT VERNATTI'S GLASSWORKS

Fortunately, there is firm evidence of both the ownership and the work force at a glassworks in Prestonpans in the mid-1630s. On 17 March 1635, a letter was written to Charles I and signed by eleven members of the Privy Council of Scotland, in support of 'that weill accomplished gentleman, Sir Philbert Vermitty . . . who, to his great charge, hath perfytted that worke of making of glasse in this kingdome quhereby manie of your Majesteis good subjects heir ar haldin at worke to their great advantage. . .' (*RPC* 2nd Ser 5, 513). The letter praised the King's fairness to the subjects of both Scotland and England, reminded him that Scottish glass could be imported legally into England and emphasised the value of encouraging 'the maisters of others arts and ingenious inventions to adventure with us'. It is likely that it was in response to a dispute between Sir Philbert Vernatti and Sir Robert Mansell, which had been heard before Charles and the Privy Council board in England in February 1635. The king had been sufficiently concerned with the case to ask that it should be delayed so that he could hear it himself (*CSPD 1635-1636*, 206). A further undated paper in the Hamilton archives confirms that Vernatti and Mansell were in dispute. Headed 'Propositions for setling and Continuing the Glas-workes in England and Scotland' (illus 25), it began:

> 'Whereas Sr. Filibert Vernatt hath to his extraordinarie great charge erected the Glas-workes in Scotland which were destroyed and totallie discontinued by Sr. Robt. Mansels meanes, contrarie to the intention of the grant thereof made


Propositions for setlinge and Continuinge the Glas-workes in England and Scotland.

Whereas S^r Fillibert Vernatt hath to his extraordinarie great charge erected the Glas-worke in Scotland which were destroyed and totallie discontinued by S^r Robb. Mansels meanes, contrarie to the intantion of the graunt ther of made to the late Lord Chancellour by King James, and to the great prejudice and discontent of that Nation.

And whereas S^r Robb. Mansel now the worke is done and erected alleadgeth that he is thereby disabled to pay his rent to the King, reserued upon his patent for England, and thereupon laboureth to haue the worke againe destroyed, as tendinge to his great damage, whereas the truth is, all importation from other parts, then Scotland, beeinge by his patent, restrayned, this Kingdome is not supplyed with glasse whereof there is now a general complaint amongst those that trade in that Commoditie.

To the ende therefore it may appeare that S^r Robb. Mansell doth herein pretend his priuate, without regard of the publicq good or his ma^ties profit or seruice. S^r Fillibert Vernatt doth offer

That upon the same tearmes S^r Robb. Mansell hath his patent for England he will secure to his Majtie fifteene hundred poundes per ann^m more then S^r Robb. Mansell now doth paye, and yet be bound to maintaine the worke in Scotland as now they are, for the benefit of that nation, duringe the time of Six Robb. mansels patent for England both old and new.

25
Sir Philibert Vernatti's proposal to Sir Robert Mansell, 1635. 'Propositions for setlinge and Continuinge the Glas-workes in England and Scotland'. (NAS GD406/M1/28/18. *Reproduced with the permission of the Keeper of the Records of Scotland.*)

> to the late Lord Chancellour by King James, and to the great prejudice and discontent of that Nation . . .[6]

and continued by stating that, since the Scottish glasswork had been built, Sir Robert Mansell was claiming it 'disabled' him to pay his rent to the king, and he wanted it destroyed. Vernatti also claimed that, because of Mansell's import restrictions, Scotland 'is not supplyed with glass whereof there is now a general complaint amongst those that trade in that Commoditie'. He then offered to take over Mansell's English patent on the same terms and said he would 'secure to his Majtie fifteene hundred poundes per annum more then Sir Robb. Mansell

6 NAS GD406/M1/28/18.

now doth paye, and yet be bound to maintaine the workes in Scotland . . .'. Alternatively, he offered to deliver to Mansell all the glasses he imported into England at a price 10% cheaper than Mansell's. As a third option, Vernatti suggested Mansell should take over the Scottish glassworks, on condition he continued to operate it and retained the workforce and that he paid the same (unspecified) amount as Vernatti to the Earl of Kinnoull for the patent rights. If he also paid Vernatti £1,000 (presumably sterling) for his pains, Mansell could 'enter and enjoye the workes as they are now duringe the tearme to come in the old patente.' In his final paragraph Vernatti categorically denied employing Mansell's workmen, protesting that 'he hath not, nor will . . . entertaine anie of his workemen that shal not be legallie departed from him'. Mansell's response can be imagined, but has not been found. Vernatti's glassworks did continue to operate under the Hay patent, and he obviously paid the Earl of Kinnoull for the privilege. It is impossible without further evidence to know whether there were two glassworks, since both Kinnoull and Vernatti claimed to have built one at great expense, or, as seems more likely, whether they were partners in one concern.

ITALIAN GLASSMAKERS IN SCOTLAND

The comment about the workmen is explained by an entry in the *Register of the Privy Council of Scotland*, of the same date as the Privy Council letter of March 1635 above. It is a list of depositions, given under oath, by eleven Italian glassmakers, before the Privy Council, each of them denying that they were under bond to work for Sir Robert Mansell and that they had been 'seduced' to work for Sir Philibert Vernatti and his brother Maximilian in Scotland (*RPC* 2nd Ser 5, 518).

Some five years before the dispute being discussed, on 2 April 1630, having yet again lost his Italian workmen, Mansell had obtained warrants from the English Privy Council ordering that

> a diligent search [should be made] as well in all Ships as on Land, and to take speciall care from tyme to tyme at all the Ports and places of ymbarqueing neere unto you for the apprehending of everie of the said persons that shall attempt to escape beyond the Seas and to send them hither in safe custodie to answere theire unjust dealings herin.

The Italians were named as Jacamo Sepomana, Venzinso Casleloana, Cornelies Vesintello, Christophelo Forcio, Francisco Ballanata, John Rushawe, Francisco Ravanello, John Maria, Dominico Maria, Roco Jainon, Francisco Bynndo, John Rygo, Nicholas Rygo, and Armora Gilioll (*APC 1629-1630*, 336). They were thought to have gone to France with Mansell's principal clerk, Vecon [?Bacon], who had set up his own glassworks, making drinking-glasses in *façon-de-Venise* crystal.

On 28 January 1635, in a 'Statement of the costs charges difficulties and losses sustained by Sir Robert Mansell in the business of glass' (*CSPD 1634-1635*, 476), Mansell complained once more that 'his men are again drawn into Scotland'. This time the men were not named, but the list of Italians who swore their depositions before the Scottish Privy Council later that year contained several who were named on Mansell's list of 1630. Often the names are spelt differently, but this is hardly surprising, given the variations in the spelling in the 17th century, and the problems inherent in the transcription of foreign names by English and Scottish clerks.

The list of Italians working for Sir Philbert Vernatti in Scotland in 1635 is given below, with the number of years they said they had worked for Mansell, and the name given in Mansell's list of 1630. All admitted they had worked previously for Mansell, some denied ever being bound to him, others swore that their bonds had expired, all insisted that they were free at the time they made the deposition.

Vernatti 1635		*Mansell 1630*
Giacomo Lepomanno	4 years	Jacamo Sepomana
Francisco Maxalao		
Christopher Farsy	4 years	Christophelo Forcio
Valeria Biondi		
Francisco Biondi	7 years	Francisco Bynndo
Francisco Ballana		Francisco Ballanata
Giovanni Rigetto		John Rygo
Johne Rousi		John Rushawe
Charles Martine		
Basteanne Nicoll		
Johne McAcombla	2 years	??John Maria [del Aqua]

Table 4
List of Italians working for Sir Philibert Vernatti in 1635 and Sir Robert Mansell in 1630.

GLASSMAKERS' FAMILIES

Maximilian Vernatti is named as having recruited some of the men listed above, and he appears to have lived with his family in the Prestonpans area, overseeing the running of the glassworks on behalf of his brother, Philibert. In June 1636, a ship moored off Prestonpans was suspected of carrying the plague, and the Privy Council of Scotland took steps to isolate the passengers until declared free of infection. A decree issued by the Council reads in part: 'and sielyke allowes the said commissioners to bring ashore out of the ship of Preston, callit George Nicolson's ship, ane young childe of Maximilian Vernattois with the nurse of the childe and ane servant and to putt thame apart be thameselffes in some convenient place' (*RPC*, 2nd Ser 6, 273).

26
George Seton, 3rd Earl of Winton, from a portrait by Adam de Colone, 1625. (Drawing by Alexandra Shepherd.)

Further evidence that the glassworkers had their families with them comes from the parish records. As Catholics, the Italian families do not normally appear in the kirk records of the time, but in 1636 Christopher Fiarlie (Farsy/Forcio above) 'glasmaker' appeared before the Prestonpans Kirk Session accused of having his child baptised 'by ane papishe priest contrair the laws of our Kirk'[7]. His answer bears witness to the movement between Mansell's glassworks and Scotland: the baptism was not out of any contempt for Scottish laws or religion, but he had done it twice before in England, and thought his action 'would been tolerated as well here'. He was told he 'must not look for such liberation' in Scotland, and must not only refrain from doing such a thing again, but must make amends by naming the priest who had performed the ceremony.

Farsy replied that his name 'was John Inkyt a priest who he had known in London, and who happening to come to his house shortly after his wife's delivery, was asked to baptize the bairne.' After consultation 'with Mr. Maximilian and others of his fellows', Farsy agreed to confess before the session and to pay a fine.

The small Italian community remained at the glassworks in Prestonpans for at least the next ten years. In 1645 local kirk members were again concerned about their religious practices. At a meeting on 7 May 1645, the Kirk Session was informed:

> that there was certane strangeris in the parochine of Saltprestoun makers of glasse who hes bein resident there now of a long tyme and yet doth not conforme themselves to the order of this kirk but that they professe poprie and resorts now and then to the house of Seatoune on the Lords day to the great scandall and offence of the Gospell.

The minister, Robert Ker, was instructed to do all he could 'to reclame them from their errours by conferance and all other meanis possible' (Kirk (ed) 1977, 175). Seton House, not far from Prestonpans (col illus 11), was the residence of the Earl of Winton, a prominent local Catholic landowner (illus 26), and constant source of concern to the Kirk Session.

[7] NAS CH2/307/28.

Although the Italians would have provided glassblowers and servitors, labourers and other less skilled workers were recruited locally, as the Scottish Privy Council letter supporting Vernatti confirms. Among the reasons cited for maintaining the glassworks was that 'manie of your Majesteis good subjects heir ar haldin at worke to their great advantage' (*RPC* 2nd Ser 5, 513). The few parish records still extant for that period often fail to state the occupations of those recorded, but one local workman is mentioned in 1636. John Mongomerie (sic), described rather vaguely as 'ane of the Glasmakers or beidmaker or at least ane of their number [of] servantis' confessed to the Prestonpans kirk session that he was living with a local girl, Margaret Hunter, to whom he was not married. He was ordered to remove her from his house forthwith (Kirk (ed) 1977, 164). There is, however, a further entry on 31 July 1637, proclaiming the marriage between John Mongomerie 'glasmaker' and the same girl.

SIR PHILIBERT VERNATTI'S BACKGROUND

Although there is very little information about his glassworks, the name of Sir Philbert Vernatti appears frequently in English state papers and it has been possible to piece together something of his history and interests. Several short articles about the family are contained in issues of *Fenland Notes and Queries* published between 1904 and 1906, under the editorship of Rev WD Sweeting. His interest in the Vernatti family arose because of Sir Philbert's connection with the massive drainage schemes undertaken in the first half of the 17th century in eastern England.

The Vernatti family was of Dutch origin. Abraham Vernatti had a daughter and four sons, two of whom were involved with the Scottish glassworks: Philbert (d 1643[8]) and Maximilian. Philbert Vernatti received degrees of LLD from the University of Leyden and, in 1613, from Oxford University (*Complete Baronetage* 1902, 397).

In 1626, Cornelius Vermuyden had undertaken the drainage of Hatfield Chase with the support of a group of adventurers, prominent amongst whom was Sir Philibert Vernatti, whose family name is still recalled by Vernatt's Drain, near Spalding (Sweeting 1904-6, 6, 30). There are numerous references both to the venture and to Vernatti himself in the English state papers from 1628, many concerned with the considerable construction problems and the ardent local opposition they encountered. Sir Philibert Vernatti was a man of substance who owned an estate in Yorkshire, but claims for financial compensation and the huge debts incurred through the drainage schemes eventually ruined him. In 1638 he was forced to obtain royal protection from arrest at the instigation of a creditor,

8 He was alive on 7 April 1643, when a creditor Thomas Jenyns applied for his arrest. (HMC Report 5 (1876) London, 72), but on 22 Nov 1643, there is mention of deeds 'belonging to Sir Philibert Vernatti deceased' of Carleton, Co York, Kt (*ibid*, 114).

and in 1639 he petitioned the king that he deserved a better fate than 'utter destruction' as recompense for 'eleven years labour and 100,000 li cost bestowed with reasonable good success upon the recovering of so much waste and lost land as in time will be worth to King and countree a million of pounds p. ann. for ever'. (He had not received the expected return on his investment from the king, for reclaimed land estimated to cover 6,000 acres (*ibid*)). Vernatti died in about 1643, leaving no will. Administration of his affairs was granted first to Thomas Jenyns, his main creditor, and then to a John Gibbon[9]. It is probable that the glassworks at Morison's Haven ceased production some time after his death. An entry in the Prestonpans Kirk Session accounts for November 1646, records a grant of £5 10s to 'Janet Irvine wha bare ane bairn to ane of the glasmakers and having nothing wherewith to transport herself with the child to England'[10].

Vernatti was, like Sir George Hay, interested in the exploitation of new technology in various fields, including an intriguing patent for making saltpetre 'out of the city excrements' (*CSPD 1634-1635*, 29), and a new method of drying malt for brewing (*ibid*, 159). In 1634 Archibald, Earl of Argyll, lent him £100 (sterling) 'to secure a charter for the incorporation of Maltsters and Brewers'[11]. Also like George Hay, he was interested in iron smelting and obtained a patent in 1636 for making iron with sea coal, pit coal, peat or charcoal (*CSPD 1636-1637*, 300). He apparently set up furnaces in the Forest of Dean, but does not appear to have been successful (Dudley 1665, 15)[12]. What prompted Vernatti to become proprietor of a glassworks in Scotland remains a mystery, although, judging by references in the English state papers to his other ventures, it may have been one of his more successful enterprises. There is, however, some evidence of a social link between Vernatti and Mansell, through the Knyvett family. In 1600, Sir Robert Mansell referred to 'my dear nephew' Thomas Knyvett, his attendant at a duel in which he was involved (Statham 1917, 356). Elizabeth, daughter of Nathaniel Bacon, Mansell's brother-in-law had married Sir Thomas Knyvett of Ashwellthorp, Norfolk (*ibid*, 357n.), who became Warden of the Mint (PRO SP.39/20). On 24 May 1631, Nathaniel Knyvett sent a message to 'his brother Sir Philibert Vernatti' announcing the arrival of a daughter, and asking his wife to be godmother (*CSPD 1631*, 335). Among the portraits inherited by a descendant of Sir Philbert Vernatti, listed by Sweeting (1906, 31), are those of Nathaniel Knyvett, 1631 and Mary Knyvett, 1631[13].

9 PRO PROB.6/24, 19 left; PROB.6/25, 171 left.

10 NAS CH2/307/5.

11 NAS GD103/2/141. Agreement between Sir Philibert Vernatti and Archibald Duke of Argyll, 14 August 1634.

12 There appears to be no extant evidence of his Forest of Dean enterprise (Dr CE Hart, HM Senior Verderer, Forest of Dean, pers comm 1996).

13 *Musgrave's Obituary* lists Nathaniel Knyvett, Ashwellthorpe, Norfolk, 15 Nov 1659 and Thomas Knyvett, Lord Berners, Ashwellthorpe, Norfolk, 30 June 1658 (Musgrave 1901, 6, 390).

SIR JAMES HOPE OF CRAIGHALL AND A GLASSWORKS AT 'THE PANNES'

Although any direct evidence of the type of glass which would have been produced at Morison's Haven is lacking, certainly a group of skilled Italians would have been capable of working in the *façon-de-Venise* style and they may well have made fine crystal. There is rather more information about the post-Vernatti period of production in the locality, however, contained in some remarkable written material in the archives of a leading Scottish family (the Hopetoun papers). This consists of the diaries of Sir James Hope of Craighall (1614-61), extracts of which were published by the Scottish History Society in 1919 (Balfour Paul (ed) 1919). Sir James was an eminent lawyer and knowledgeable metallurgist, being appointed Master of the Mint in 1641. He married in 1638, Anna, daughter and heiress of Robert Foulis of Leadhills, a wealthy Edinburgh goldsmith, through whom he inherited the Leadhills estate, where he was closely involved in the working of the mines (*Scots Peerage* 4, 491-2). His diary entry for 2 August 1647, describes a meeting which he attended with Sir Alexander Hamilton (d.1649), General of the Artillery; Sir James Balfour of Denmylne, baronet, Lord Lyon King of Arms (1600-1657); 'Johne Mille', 'Mr. Maissone' and an Italian glassmaker, Christopher Visitella (also referred to as Cornelius Vizitelli) (Balfour Paul (ed) 1919, 139).

It is significant that a Cornelies Vesintello was listed among the glassmakers who absconded from Sir Robert Mansell in 1630 (see list above). He is almost certainly the same man and appears to have lived most of his life in Britain. Listed among the aliens living in St Annes in the Blackfriars, London, in 1599, are 'John Visitell and Magdalen his weiff, Cornelius and John his sonnes' (*Ret Aliens*, 51). His father's occupation is not mentioned, but there was a major glassworks at Blackfriars. An artist with the same family name, Isaac Visitella, was resident in Edinburgh in the mid-17th century (Balfour Paul (ed) 1919, 112). He died in 1657 and was described in his testament as a painter, an indweller in the Canongate, among whose goods were 14 portraits, including two of the Earl of Winton, the landowner at whose house the Catholic glassmakers worshipped (Apted & Hannabus 1978, 99).

BLUEPRINT FOR A GLASSHOUSE

The reason for the meeting in August 1647 was described by Sir James Hope as 'anent ye setting up againe by us foure of the Glasse workes at the pannes.' Prestonpans was sometimes referred to simply as 'the pannes', although there were other salt pans along the same stretch of coast, notably at Westpans, which was very near to Morison's Haven, despite being in the next parish of Inveresk (illus 24). Sir James Hope specifically wrote 'againe', and although it is probable that they held their meeting after the closure of the Vernatti glassworks, following Sir Philbert Vernatti's death, it is more likely that he was referring to another short-lived works set up by John Jossie, a merchant at Westpans, and specifically mentioned in the diary entry.

Visitella was clearly anticipating having to build new furnaces, but this is not surprising, since furnaces were expected to last only a short time, because of the extreme heat to which they were exposed (Scoville 1950, 37 in Godfrey 1975, 143). Sir James Hope set out in some detail the costings given by Cornelius Visitella 'for erecting and entertaineing of a worke for tuo workemen and tuo serviteurs' (Balfour Paul (ed) 1919, 140). The diary contains a valuable insight into the operational requirements and products of a mid-17th century glassworks. In view of its importance, it will be reproduced in full. (All prices are in sterling).

He gave up his accompt for erecting and entertaineing of a worke for tuo workeman and two serviteurs thus-

The dressing of the workehouses, building of ye fornaces, ye makeing of brickes for yt effect and pottes £80 stlg. that is for the first erecting of ye worke.

Foure tunne of 2000 wgt of Barilia or soda at £25 st. a tunne is £100 sex hundreth weight of Magnes at 15/- st. pr 1[cwt] is £4.10/-
Ane hundreth weight of saphire £2, 10/ st.
Tuo dozen of Hollow yrons or blowers £3 st.
For some moulds for makeing of Glasses £5 st.
All wch will be wtin or about £200 sterling for ye first erecting of the worke.
That ye aforesds Barilia being mixed wt about tuo part sand, they will use of yt compositione about 400 weight a weeke whereof tuo fitters wt yr tuo serviteurs wil be able to make 1800 glasses a weeke either beare or wyne or halfe of ye one and halfe of the uther. That the weeklie charges for tuo

workemen wil be	£4 10 0
There tuo servitrs	£1 10 0
The Consor	£0 15 0
The Materi	£3 0 0
Coalles 5 Cartfull	£0 10 0
Three labourers	£0 15 0
packeing and yrons mending	£0 10 0
Suma weekelie Ch	£11 0 0
The 900 wyne Glasses at 2/- p. dozen is	£7 10 0
The 900 beare at 2/6d	£9 7 6
Suma weeklie proceed	£16 17 6

That he could be able to boylle up his mater to als great puritie as ye Venice glasses, bot that then of three hundreth of Barilia he will have bot 100 or at most 105 of yt mater for Glasses. That this Barilia is nothing els bot yt salt wch is called Soda, called barilia because it comes from such a Toune, or because it comes in barrilles. That it differs from Pott Ashes, or cineres clavellati, that it is made of a certaine herbe, these of any wood or herbe almost; that wtout a lixive and these wt one.

That he hes seene a glasse made wch would hold 40 English Gallouns.

That window glasses and drinking-glasses can not be made in one fornace because those requyre a great deall stronger heatt then these; That the fornace

> for those is yrfor long vauted; and for these round bot however yt he could not make window glasse, nather possiblie could find workemen who have skill of both, so wee needed not thinke of makeing both sort glasses in one fornace wch was my ouvertur to him because wee wer informed that ye greatest impediment in ye worke would be the vent of ye glasses in yt they would make more in one weeke then could possiblie be vented in a mounth, and in one yeere then in three, wch wee were informed of be Johne Joussie who wt in these few yeeres had sett up *these warkes at ye pannes* [author's italics], and as he sd for the same reasone, was forced to quitte them with 20000lb of losse. That the saphire is to give colour to the glasse lyke it selfe; and ye magnes to make ye glasse transparent and pelucide (Balfour Paul (ed) 1919, 139-41)[14].

CORNELIUS VISITELLA'S PLANS FOR A GLASSHOUSE

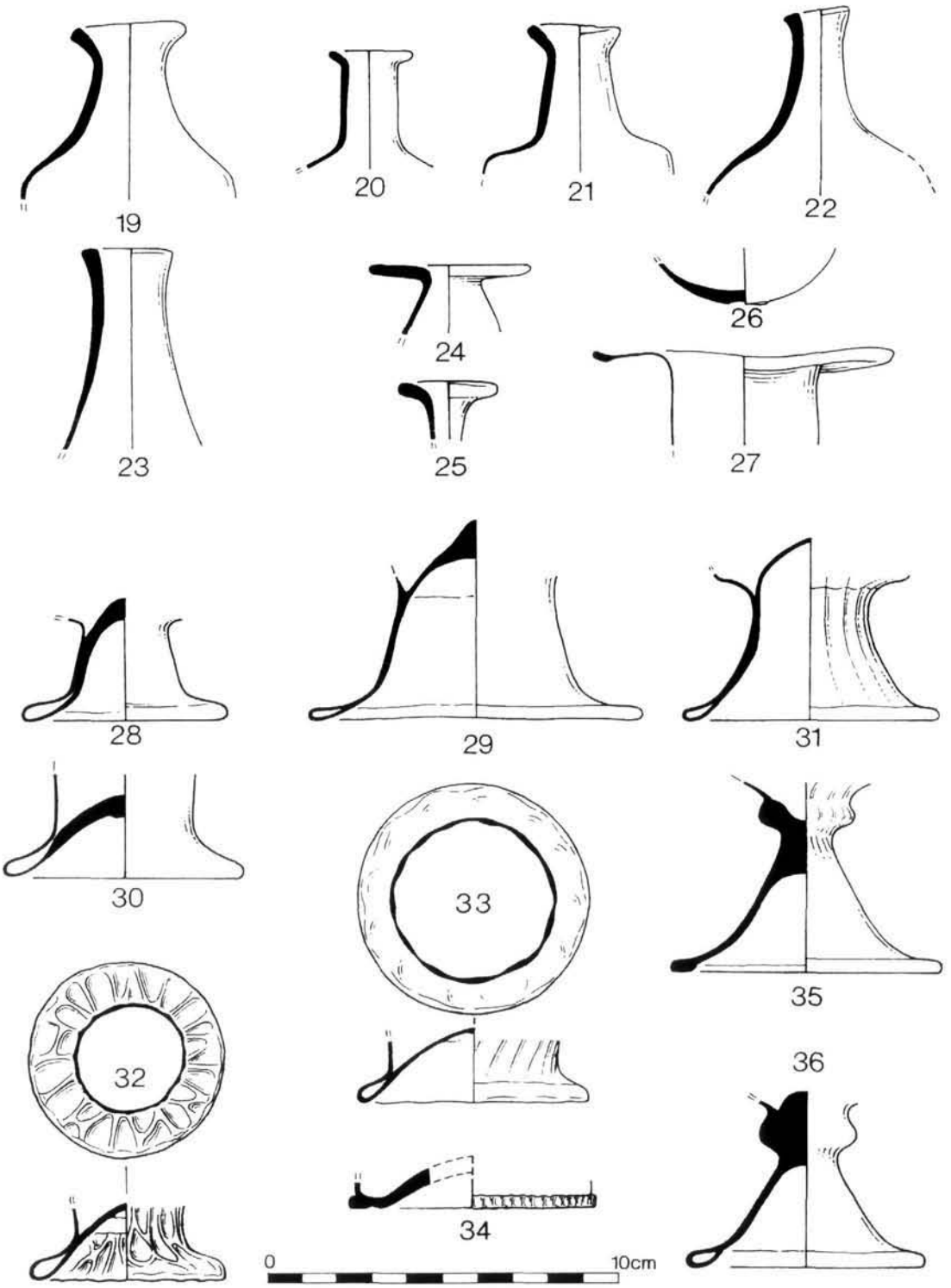
The amount of useful information given in this manuscript is such that separate analysis of the various subjects covered is required. Firstly, the furnace structure: Visitella begins with the assumption that clay was available with which to make both bricks and crucibles, and that the bricks would be made on site. In the 18th and 19th centuries brickworks were established at both Prestonpans and Westpans, where local clay was readily available (Douglas & Oglethorpe 1993).

INGREDIENTS REQUIRED

The specification was for a vessel-glass furnace, for which imported barilla, or soda, would be required as flux. His comment that fine crystal, like that from Venice, could be made by the use of a larger proportion of barilla in the batch is interesting and implies that he considered the sand available to be of sufficiently good quality for that purpose. It could be regarded as further confirmation that the area was the site of the glassworks which produced the crystal exported to London in 1626. The large amount, six cwt, of manganese, would seem to indicate that it was to be bought in as an ore and calcined *in situ* to create the necessary fine powder, since only tiny amounts were used in each batch. Manganese was used to counteract the green tint of the glass caused by the presence of iron in the sand but if too much were used the whole batch would turn black. Some 31 years later, in 1678, accounts for the Leith glassworks show that manganese was obtained from the Leadhill mines[15]. The 'saphire' referred to was cobalt ore, also calcined to create zaffre, and used in conjunction with manganese as a decolouriser since the 16th century (Godfrey 1975, 160). Hope neatly describes the complementary functions of the two ores.

14 G Marshall (1980, 276-7), interprets the final paragraph as indicating that, having assessed all relevant factors, Hope 'was unimpressed' and decided that 'the venture was unlikely to be systematically profitable. Therefore, the glass manufactory was not erected.' This interpretation would seem to be open to argument a) because Hope was simply quoting Visitella's answers to his queries, and although he was clearly disappointed in some of his intentions, the diary extract did not indicate any conclusion; b) because the absence of evidence that the glasshouse was built does not preclude the possibility that it was.

15 NAS RH15/102/6/3/8, Accounts.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MOULDED GLASSES

Visitella's specification was for the mass production of beer and wine glasses, the quickest way to make which was to 'blow-mould' them. Moulds, either carved from hard wood, and kept wet to reduce burning, or of metal, were used to shape the body of the vessel, and to impart a decorative surface. The simplest type was the 'dip mould' in which the glassblower would insert the gather, inflating it until it took on the shape and pattern of the mould (see illus 55 below). It was then withdrawn and further blown until it was the required size. The cheaper wine and beer glasses of the 17th century were usually in the form of beakers with pushed-in feet, the beer glasses being the larger, as the price differential implies. No complete glasses known to have been made during Mansell's monopoly are extant, either English or Scottish (Charleston 1984, 66), although English archaeological excavations have provided a considerable volume of information, particularly about green glass like that made at Kimmeridge, Dorset (1618-23) (Crossley 1987, 358-362), and Haughton Green (1615-53) (Vose 1994, 27-33) (illus 27). Both of these glasshouses were staffed by French immigrants, so it is possible that the style of wares produced by the Italians in Scotland differed somewhat from the shards found there. Charleston illustrates a somewhat later cristallo beaker with mould-blown decoration, which may have some similarity to the Scottish wares, but in the absence of any evidence, this can be only conjecture (Charleston 1984, plate 21c).

27 (opposite) Further glass fragments from Haughton Green, near Manchester: nos 19-27 are from storage vessels, nos 28-36 drinking vessels or bowls, including a beaker (30) and knopped wine glasses (35, 36). The base of 29 is 10cm in diameter (from Vose 1994, 27).

PROPOSED PRICES

The selling prices suggested by Visitella appear to be very low. When Mansell was fighting to retain his monopoly in 1639, he presented a list of his charges (sterling) to the House of Lords, emphasising that glasses were cheaper under his regime than they had been previously. He stated that his ordinary beer glasses 'sold formerly for 7s 4d and never under 6s per dozen are now, and have been for 15 yeers past sold by me, for 4s per dozen.' Ordinary drinking-glasses for wine, formerly sold at 4s per dozen, were sold by Mansell for 2s 6d per dozen[16]. Visitella was proposing prices of 2s per dozen for wineglasses and 2s 6d a dozen for beer, which suggests that they must have been inferior in either quality or size, or that production costs were less.

The price of coal in Scotland would have been lower, since it was available at the glasshouse site from the nearby coal workings at Prestongrange, while Mansell had to transport his from Newcastle. If local sand were used, that would have cost virtually nothing. Imports of barilla from Italy or Spain would have had to be transported further, however. Visitella's estimate of £25 a ton in 1647 can be compared to Maria del Aqua's alleged payment at Ord's Scottish furnace of approximately £20 a ton in *c*1619[17], and Sir Robert Mansell's costing of £30 a ton in 1635[18]. The fact that half the total estimated cost of setting up a furnace to

16 BM Ms 669, f4 (7) *in* Hartshorne 1897, 434-5. Prices in sterling.

17 PRO SP.14/112, no 46.

18 Godfrey (1975, 196) quoting Mansell's 'The True State of the Business of Glasse'. This comparison assumes that the term 'ton' refers to the same weight in each case, but that was not necessarily so.

make white glass was taken up by the expense of bringing in barilla is telling. Presumably the cost of transport to England would also have increased the selling price of the Scottish glasses there.

MANPOWER: STAFFING THE GLASSWORKS

Visitelli's account is also useful in that it lists the staff required in a glassworks designed for operation by two glassblowers, each to be paid £2 5s (sterling) a week, a very high wage, but comparable to those paid in England (Godfrey 1975, 188). Each worked with his servitor, at a wage of 15s a week, and they were supported by three labourers, no doubt recruited locally, who could earn 5s each. The conciator, or founder, without whose skill the glassworks could not function, was to be paid 15s weekly (presumably all sterling). He was responsible for the founding of the batch, a far from exact process, as Neri confirmed in 1611, saying that the quantities of ingredients 'cannot be precisely determined either by weight or measure, but must be wholly left to the eye and judgement, tryal and experience of the Conciatore.' (Neri, 1611, 21) It was quite common for a glassworks to be operated by only two teams, or 'chairs', as they are often known. Godfrey writes that Robson's works at Blackfriars probably had two chairs, said to have produced about 1,500 glasses a week over 7 weeks (Godfrey 1975, 222). At Wollaton 1,800 green drinking-glasses were produced in a week by only one chair (*ibid*). Visitella's estimate of 1,800 glasses a week between two chairs does not, therefore, appear unreasonable.

The fire in the furnace had to be constantly maintained during production, and the normal method was to work in six hour shifts through the 24 hours. This punishing schedule was set out by Merrett in 1662. After describing the men dressed in shirts, wearing broad-brimmed hats of straw to shield their eyes, he says:

> They work six hours at a time measured by one Glass only, and then others succeed them, and when these latter have wrought their six hours the former return to their labour, and by this means the furnaces are never idle, whilst they are in good condition, and the pots break not, and the fire keeps the Metall in fusion. (Merret 1662, 249)

CRUCIBLES

Most excavated furnaces appear to have been designed to hold four pots, two on each side of the fire grate. The sizes of crucibles seem to have varied widely, so it is difficult to estimate how many pots would have been required to contain the 4cwt [203kg] of metal Visitella envisaged being used in a week, although Merrett describes pots large enough to hold 3cwt or 4cwt each (*ibid*, 243). Merrett also says that 'the number of the pots is always double to the working Boccas [mouths] that each Master may have one pot refined, and to work out of, and another for Metall to refine in whilst he works out the pot which hath refined in it' (*ibid*, 239). Visitella's costing includes provision for 'fornaces', implying that there was to be a

separate furnace for preparing the frit, and perhaps for annealing, although the lehr could be in the form of a wing of the main furnace.

TEMPERATURES AND FURNACE DESIGN

There are two further comments which throw light on the glassworks of the period. Visitella confirms that window glass and drinking-glasses were not made in the same furnace. He also states that the temperature required to melt the ingredients for green window glass was a great deal higher than that needed for drinking-glasses, and that the design of the furnaces was also different, the 'long vauted' dome of the window glass furnace creating a fiercer heat than the rounded one used for drinking-glass production. The term 'long vauted' is likely to have referred to the French rectangular furnaces, used by immigrants from Lorraine and Normandy for making window glass. Italian furnaces were traditionally round, and they usually specialised in the production of drinking-glasses. Although the two types of glass could not be made in the same furnace at that time, according to Visitella, 18th-century papers imply rather more versatility in furnace design by then[19]. Christopher Merrett, too, emphasises that the heat in the green-glass furnaces was extremely high (Merrett 1662, 245). Visitella also makes the point that glassmakers were specialists, they either blew window glass or vessels, but not both.

SOME EXTRA DETAILS

A manuscript at Hopetoun House, dated 29 July 1647, four days before the meeting discussed above, contains notes which relate closely to the diary entry[20]. They appear to have been added to, in another hand, and these extra comments are also of some interest. At the end of the list of items required to set up a glassworks has been written: 'Item for homebring of one Maister & one serviteur £10 for himselfe will serve for one workman, & he hes a serviteur here alreddie.' So Visitella and his servitor were living in the area and seeking work – but it confirms that the other Italian glassmakers had left. After the list of wine and beer glasses which could be produced, the same person has written 'Mortar Glasses may be made for 22d a dozen whereof one workemen with his serviteur will make sextie dozen a weeke'. They are not mentioned in the diary entry, but were one of the products made by Mansell in England. His price was 1s 4d a dozen in 1635, considerably less than Visitella's costing[21].

There is no information about whether a glassworks was, in fact, built as a result of this meeting, but Visitella returned to Leadhills and stayed with Sir James Hope for a further seven or eight weeks later in 1647 (Balfour Paul (ed) 1919, 145). No further mention of a glassworks has come to light in the Hopetoun papers, but there is one more intriguing reference to Visitella on a scrap of paper headed 'Mr

19 See chap 11: flint glass and bottles were made in the same furnace.

20 NRA(S) 888, Bundle 3477.

21 Mortar glasses = 'small drinkeing glasses' (NAS GD406/M1/28/18).

Vizitellis Memorandum for sode & saline 3 Jan. 1649'. The text of the short and incomplete note refers to an alternative soda to barilla 'Called salline of Alexandria wich is used for making of cristall wich is salid at Amsterdam the preis is now and on for 10lb or 12lb the tonne so that if you please to by 5 or 6 hunderwayt of salline'[22]. This note does imply active involvement with glassmaking in 1649, but is not in itself sufficient to prove that the projected glassworks was built.

JOHN JOSSIE'S GLASSWORKS AT WESTPANS

Sir James Hope was investigating the possibility of producing both window and vessel glass in order to ensure a viable market, because he regarded the possiblility of selling enough drinking-glasses to maintain a single-product works as very doubtful. The name of his adviser on the difficulty of marketing glass is of great interest, since these few words in Sir James Hope's diary provide the only documentary evidence that has come to light so far about another east coast glassworks, that of John Jossie (Joussie, Jowsie). According to Sir James Hope, Jossie had, within the previous few years, established a glassworks in the area, had failed to find a market for his wares, and had closed it down with the loss of £20,000, which even in Scots money was a very large amount.

John Jossie of Westpans was a merchant in Edinburgh, who was created a burgess and guild brother by right of his wife, Catherine Morison, on 13 August 1634 (*Edin Burgs 1406-1700*, 282). He had married Catherine, daughter of the late Harye Morison, merchant, burgess and guild brother, on 19 September 1633 (*Edin Marriages 1595-1700*, 369). Jossie was also an overseas trader, and owned lands in Aberdeenshire. On 18 September 1644, Jossie and his eldest son Robert bought sixty-four acres of land at Prestongrange (*RMS* 9, 1566). The exact location is not specified, but they were later described as the Drummore estate, which was bought by Sir Hew Dalrymple, Lord Drummore (see Chapter 10 below), and which included part of Westpans. Jossie was also active in local affairs; in 1652 he was made a bailie, and he was chosen to represent the burgh of Edinburgh at the London Parliament (*Nicoll's Diary*, 88; 99). He was again elected to be a magistrate in 1655 and was First Bailie in 1655, 1657 and 1660 (Laing (ed) 1842, 389). Jossie was buried in Greyfriars churchyard, Edinburgh, on 8 July 1668 (*Reg Interments*, 350).

THE VISITELLAS AT WESTPANS

Although of a much later date, there is evidence that Cornelius Visitella did, in fact, operate at a re-established glassworks, almost certainly on John Jossie's Westpans site. On 28 October 1662, Jacob Visitella, probably Cornelius's son,

[22] NRA(S) 888, no bundle number.

described as 'glass maker at West Pans', borrowed £63 9s Scots from a wright, John Bayne, who also lived there. The bond was witnessed by Edward Dagnia, another Italian glassmaker, who will be discussed elsewhere[23]. This bond confirms the evidence of a functioning glassworks which was provided by botanist John Ray, in his description of a journey through Scotland in 1661. On 19 August, he travelled from Dunbar to Leith, stopping for a trip out to the Bass Rock on the way. After resuming his journey he wrote:

> By the way also we saw glasses made of kelp and sand mixed together, and calcined in an oven. The crucibles which contained the melted glass, they told us, were made of tobacco-pipe clay. At Leith we saw one of those citadels built by the Protector . . . (Ray 1760, 194)

Characteristically, Fleming could not resist embellishing this very useful quotation, most importantly with the addition of a place name. His 'quotation' provides a vivid illustration of the liberties he habitually took with primary material:

> John Ray, the English naturalist, in his *Itinerary* (page 104), states that 'while travelling along the shore at Prestonpans, I saw glass being produced there in August 1661 from a mixture of kelp, salt and local sand, all calcined and melted in ovens. The crucibles which contained the molten metal were made by the local potters of specially selected pipeclay found in the neighbourhood which has proved a most satisfactory refractory material.' (Fleming 1938, 101).

Ray was an acute observer and precise recorder, so there is no doubt that he did see glassmaking somewhere along the coast between the Bass Rock and Leith. Since it is highly unlikely that there were two glass furnaces operating, and since Jacob Visitella and Edward Dagnia were at Westpans, it seems reasonable to assume that that was where he saw them working[24]. Ray describes the use of kelp, available via the local coastal trade and relatively inexpensive, not the barilla listed in Sir James Hope's diary, implying that lower quality, and therefore cheaper, glasses were being produced at that time.

Jacob Visitella was operating under the Hay patent, which had been renewed in 1634, and which was again renewed, in favour of Charles Hay, brother to William Earl of Kinnoull, on 16 October 1661[25]. In 1663, Jacob Visitella renounced his right to make glass under the patent, in favour of Robert Pape, who was setting up a glassworks in the Citadel at Leith, as will be shown in Chapter 6. Visitella undertook not to work in glass, unless licensed to do so by Robert Pape, for two years, under penalty of £100 Scots[26]. Shortly afterwards Edward Dagnia (who was probably working with Visitella at Westpans)[27] contracted to make glass for

[23] NAS RD4/6/290.

[24] It should, however, be born in mind that Morison's Haven and Westpans were physically close together, although in separate parishes.

[25] NLS Adv Ms 25.3.4, f42; *RPCS* 3rd Ser i, 155.

[26] NAS RD2/9/253.

[27] NAS RD4/6/290. Dagnia witnessed the bond entered into by Visitella in July 1662.

Pape at the Citadel[28], so it appears that the glass furnace at Westpans finally closed in 1663. The period between the Hope diary of 1647 and the Visitella bond of 1662 is, unfortunately, a difficult one in which to find the evidence necessary to confirm the continuous operation of a glassworks at Westpans. The Register of Deeds is not indexed before 1661, while parish and kirk session record keeping was, not surprisingly, disrupted by political, military, and ecclesiastical events. The names of Visitella and Dagnia appear in abundance in English parish records, but not at all in Scotland[29]. On the other hand, the Visitellas had clearly made Scotland their home – a Jacob Visitella was still making glass in Prestonpans in 1707, as will be shown later. It seems more plausible that a small Westpans glass furnace should have continued to operate after 1647, possibly under the patronage of Sir James Hope of Craighall, who lived until 1661, than that it should have been re-opened shortly before Ray's observation of that year.

Some of the recurring problems experienced by owners of Scottish glass-houses, were over-ambitious initial projects, inadequately researched markets and the fact that the works were managed by entrepreneurs with no knowledge of glassmaking. In the case of Westpans, Cornelius Visitella, clearly an experienced and knowledgeable glassmaker who wanted to stay in Scotland, appears to have been involved from the beginning, indeed he may well have put the idea to Sir James Hope of Craighall in the first place. If that were the case, and if he were in charge of his own furnace with a son to train, he would certainly have had every incentive to keep working, despite any external difficulties, and would presumably have been flexible enough to adjust to market fluctuations and to make do with locally available materials if necessary. Where hired workmen could and did, demand 'play' wages and leave if they were not forthcoming, the Visitellas would not have been held to that ransom. Indeed, at some point, Jacob Visitella himself became licensee of the patent rights. This appears to be the only occasion in the early Scottish glass industry on which the patent was leased to an actual glassmaker, a very different situation from the usual one, where the holder of the patent had to hire a glassmaking team from elsewhere. Clearly it was also the most likely recipe for success, particularly in times of economic and social uncertainity.

The question of a market large enough to absorb production remains, however. Clearly Sir James Hope had been planning to compensate for the small Scottish market by diversifying production into window and drinking-glasses, a solution which Cornelius Visitella dismissed as impossible. Since only one type of glass was practicable, and Visitella was clearly not a maker of window glass, the most likely outcome would have been a decision to combine the production of drinking-glasses with that of containers for the local apothecary trade, for which there would have been a steady demand. Archaeological investigation at the contemporary Haughton Green (1615-1653) glasshouse site near Manchester (Vose 1994, 24-30) shows that a wide variety of vessel glass was made at the one

[28] NAS RD4/11/430.

[29] NLS IGI, on CD Rom.

furnace there (illus 15), including beakers, jugs, wine glasses, bottles, flasks and vials, all of which would have been well within the capability of Italian glassmakers like the Visitellas and Dagnias.

Although more evidence is needed, it does seem likely that, albeit on a much smaller scale, glass production continued on the south coast of the Forth after the death of Philibert Vernatti and the departure of most of his Italian workforce in *c*1646. The Visitella glassworks bridges the gap between the foundation of the glass industry, under the control of Sir George Hay and subsequently his son, and the establishment of glassmaking at Leith, where the second phase of the Scottish industry began – the shift towards the predominance of bottle production.

Name	*Date of Reference*
Morison's Haven (162?-c1646)	
Leonardo Michellini	1635
Giacomo Lepomanno	1635
Francisco Maxalao	1635
Christopher Farsy (Forcio)	1635, 1636
Valeria Biondi	1635
Francisco Biondi	1635
Francisco Ballanato	1635
Giovanni Rigetto	1635
Johne Rousi	1635
Charles Martine	1635
Basteane Nicoll	1635
Johne McAcombla (? mis-spelling for John Maria del Aqua)	1635
John Montgomerie	1636, 1637
Westpans (1647-1663)	
Cornelius Visitella,	1647
Edward Dagnia	1662
Jacob Visitella	1663

Table 5
Glassworkmen known to have operated at Morison's Haven and Westpans.

6

LEITH: THE FIRST 25 YEARS OF GLASSMAKING

Of all the sites discussed in this monograph, Leith has the best known and longest lasting association with the glass industry. The first glasshouse was built there in 1663 and the last glass cone was demolished in 1912, although production had stopped some 40 years earlier (Woodward 1984, 10). During more than two centuries of production, the site of the glasshouses changed; the first one was built in the Citadel, the next in North Leith, near the river bank. In the late 1740s, a new cone was erected on the sands of South Leith and that site remained the centre of production, expanding at one point to encompass seven cones[1]. Numerous different partnerships were involved over time, making a range of products, including, by the end of the 18th century, very fine crystal, but throughout the whole period the mainstay of the industry was bottle production.

AN UNKNOWN GLASSWORKS AT NEWHAVEN

Before discussing the glassworks at Leith, however, mention must be made of a previously unrecorded glasshouse at Newhaven, the fishing village adjacent to, but quite separate from, North Leith. William Maitland writing in 1753 does, in fact, refer to a glassworks there (1753, 500), but no further information appears to have been published about it. Maitland wrote:

> 'The Remarkables of Newhaven are as follows: At the Eastern End of the Village was a Ropery erected by . . . King James IV, the Vestigia whereof are still remaining along the Coast for a considerable Space. Adjoining to the Eastern End of the said Village was a Glass-house, and hard by a Salt-work, both set up by Englishmen'[2].

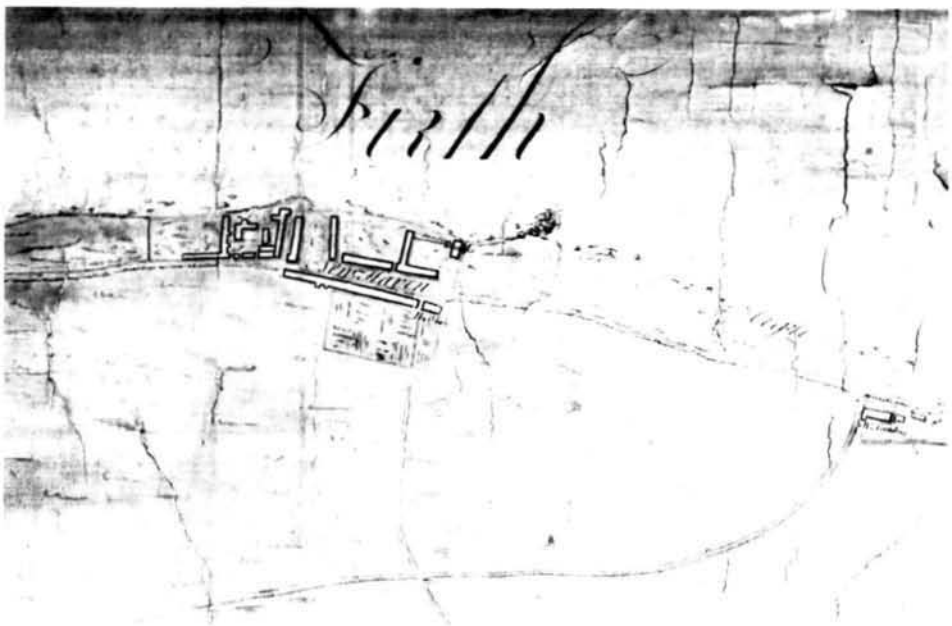
Irons (1898 2, 458) names three 'Englishmen' who were granted tacks of ground at Newhaven for making salt in 1567, as Anthony Hickman, John Achille, and Cornelius du Vois. In fact a letter from Queen Mary of 24 May 1567 granting them the land, described them as 'merchants in London', which is not necessarily synonymous with being English[3]. The same ground was transferred in November 1597 to Eustachius Roche, a Fleming, 'for the making of Great Salt with the houses, Biggings, Stone, Timber, and Dykes thereon'[4]. The land in question was

1 'Thomson's Plan of Leith and its Environs, 1827'.

2 Murdoch (1996) draws attention to Maitland's comment.

3 ECA City muniments box 7, bundle 15.

4 ECA City muniments box 7, bundle 15. Thanks to Sheila Forbes for these two references.



28
Plan of Newhaven, 1759, detail from 'Plan of the Lands belonging to the City of Edinburgh Heriots Hospital and other Heritors on the North of the City', surveyed by Fergus and Robinson. Note the rocks (craigs) just out to sea off the east end of the village and the open ground, the Links, between Newhaven and Leith. The glasshouse appears to have been situated at the extreme east end of the village. (RCAHMS EDD/1/136/5p. *Crown Copyright: Royal Commission on the Ancient and Historical Monuments of Scotland.*)

bordered by the sea on the north, the 'Common passage' to the south, the great craigstone on the east and 'the Common passage before the Fisherhouses' on the west. Papers in the Edinburgh city chambers show that the site was occupied by a Hugh Brown and others in the early 17th century[5], but none of them mentions a glassworks.

Two further references have come to light, which confirm that there was indeed a glasshouse at Newhaven, but which give no indication of its date. On 5 June 1724, the North Leith Kirk Session minutes record the decisions of a committee set up to divide the parish into 'quarters'. Newhaven had been part of the parish of North Leith since 1631, when it was transferred from St Cuthbert's (McGowran 1985, 184). The committee divided Newhaven as follows: 'From the Crew inclusive all the South Side of the Street and part of the North Side of the Street of New Haven that surrounds the old Glasshouse', and 'From the bounds of the old Glasshouse to the West end of the Town on the North side of the Street of New Haven'[6]. At this period, Newhaven consisted of two rows of houses on either side of the main street, which ran parallel to the shore, alongside the harbour. There was an open space of some three-quarters of a mile before the boundary of North Leith, some of it designated as Newhaven Links, part of which was used as the ropery referred to by Maitland (illus 28).

In 1742, Edinburgh town council authorised the city treasurer, David Inglis, to 'sell and dispose of the stones and other materials whereof the old Glasshouse

5 *ibid.*

6 NAS CH2/621/7. My thanks to Sheila Forbes for this reference. 'The Crew' is also mentioned in later sasines.

near Newhaven is composed to the best advantage he can'[7]. It is significant that, even 18 years after the glasshouse was first described as 'old', sufficient stone remained to be worth salvaging, which does seem to indicate a substantial structure. Although the town council records refer to a site 'near', rather than *in* Newhaven, it is not feasible that they could have meant the Citadel glassworks, since all the indications from the council records are that the Citadel was always precisely referred to. The term 'near Newhaven' may simply indicate that it was on the fringe of the village nearest to North Leith, a supposition supported by the 1724 description, which implied that the glasshouse site marked the eastern end of the built-up area of the village[8].

It is possible, although without evidence it is purely speculative, that Newhaven was the site of one of the very early glasshouses, built under the auspices of Sir George Hay, in the period from 1617 into the 1620s. Certainly Emanuel Mether must have owned a sizeable concern to warrant the investigation of a Privy Council committee in 1620 (see Chapter 4 above). If James Ord's glasshouse was indeed at Morison's Haven, as suggested in Chapter 5, the locations of the three other glassworks, belonging to William Ward's brother, William Crawford, and Emanuel Mether, remain unknown, although one of them must have been at Wemyss. It is, therefore, not beyond the realms of possibility that Newhaven was the site of one of the others.

THE CITADEL OF LEITH GLASSHOUSE

The start of glass production at Leith itself dates from 1663, when one of the earliest newspapers to be published in Scotland, the *Kingdom's Intelligencer* for 12-19 November 1663, printed a notice:

> That there is a new frame of a Glass-house erected in the Citadel of Leith, able to serve the Country with all sorts of Glasses, white and green, and of all cullors, better Mettal and cheaper than can be brought from abroad[9].

That notice was reprinted each week until 24 December 1663, when the well-known 'Remarkable Advertisement to the Country and Strangers' appeared. Since it provides information about both products and prices, it is worth reproducing in full:

> That there is a Glass-house erected in the Citadal of Leith, where all sorts and quantities of Glasses are made and sould at the prices following: To wit, the Wine-glass at three shillings two boddels, the Beer glass at two shillings six pence, the quart Bottel at eighteen shillings, the pynt bottel at nine shillings, the chopin Bottel at four shillings six pence, the muskin Bottel at two shillings

[7] ECA Council minutes, 5 May 1742 (SL1/1/63, p 36).

[8] The ancient rivalry between the inhabitants of Newhaven and North Leith, which still exists, would make any confusion of the two locations extremely unlikely.

[9] NLS *Kingdom's Intelligencer*, 1663; see also Arnot 1779, 349.

> six pence, all Scots money; and so forth of all sorts, conform to the proportion of the Glasses, better stuff and stronger, than is imported.

A boddle was a small copper coin equal to two pence Scots (Robinson 1985, 52). Fleming uses this advertisement curiously: he does not mention the newspaper but claims that the figures came from 'an old journey book' and goes on to embroider the prices[10].

The precise site of the glassworks cannot be determined, except that it was within the confines of the Citadel. The reason for the choice of site is not clear, since it was not adjacent to a source of fuel nor a harbour, so all raw materials would have required sea transport and some land carriage, albeit for a short distance.

The construction of the Leith Citadel on Cromwell's instructions in 1656, is well documented. Robertson and Wood show that it was built in a heavily populated area of North Leith, on land obtained by purchasing and demolishing tenements, houses, shops and a barn, as well as using garden ground (Robertson & Wood 1928, 113-5).

When John Ray visited Leith in 1661, he devoted a paragraph of his journal to a description of the Citadel:

> There are three forts advanced above the rest, and two platforms; the works round about are faced with freestone towards the ditch and are almost as high as the highest building within; and withal thick and substantial. Below are pleasant, convenient and well-built houses for the governor, officers and soldiers, and for magazines and stores; there is also a capacious chapel, the piazza or void space within is as large as Trinity College in Cambridge great court. The building cost £100,000 stg; indeed I do not see how it could cost less (*ibid*, 112).

Most of the English soldiers were withdrawn from Leith in 1660 following the Restoration and in July 1661, Charles II ordered that the Citadel should be demolished, except for the northern portion 'which formed a defence against encroachment by the sea' (Mowat nd, 199). The land was granted to the Earl of Lauderdale, who, for £6,000, sold to Edinburgh: the 'Cittadel of Leith and pertinents' and all the property, lands, 'haven and port . . . possessed or acquired by the late usurpers', which was transfered to the town under a charter of 1663 (Robertson & Wood 1928, 117). It was bounded by 'the Links, commonly called the Links of Newhaven belonging to the burgh of Edinburgh and the sea at the lowest ebbing thereof on the north and west;' and extended eastwards as far as the Water of Leith (illus 29).

[10] He 'quotes', for example, 'Beer glasses – two schillings and six placks . . . Chopin [bottles] – four schillings and six merks', which does not make sense. A 'plack' was a copper coin valued at four pennies Scots (Robinson 1985, 499), while a 'merk' was worth 13s 4d (*ibid*, 112).

29
Plan of North Leith, a detail from the same plan as illus 28, showing the north bank of the Water of Leith, site of the glassworks. It also shows the Citadel, location of the first glasshouse in Leith. (RCAHMS EDD/1/136/3p. *Crown Copyright: Royal Commission on the Ancient and Historical Monuments of Scotland.*)

Robertson and Wood (1928, 90) reiterate an often-repeated statement that, while Monck lived in Leith, 'he induced some English families of considerable wealth to settle in Leith, by whom, it is said, the glass industry was introduced into this area'[11]. No evidence is offered to support this theory, although the registers of the South Leith parish church did refer in 1654 to an increase in their seated accommodation, allocated to the 'English families in the Citadell (Traffekers)[12]' (Robertson 1911, 99).

11 See Hutchinson 1825, 206; Irons 1898, 121. It is possible that the involvement of Sir James Standsfield, the English Cromwellian colonel discussed below, was the source of this statement.

12 'Trafficker' meant go-between or negotiator (Robinson 1985, 732) suggesting that the English were certainly involved in business there.

ROBERT PAPE OF FAIRLIEHOPE: FOUNDER OF THE CITADEL GLASSWORKS

The glassworks in the Citadel were set up not by an Englishman, however, but by a Scot: Robert Pape (Paipe, Pope), who came from a family of lawyers. He was the second son of John Pape of Pleasands yr., advocate, whose father had been a writer to the signet (Grant 1944, 169). His older brother was John Pape of Wallyford. On 16 April 1664, Robert Pape married Margaret Somervell, daughter of James Somervell of Edinburgh and Lilias Bannatyne[13], and on 4 June of that year, he bought Fairliehope, 'in the Baronie of Linton and sheriffdom of Peebles'[14]. The marriage contract, in which Robert Pape is described as 'maister of the glass works in Scotland', which was signed on 2 June 1664, set Margaret Somervell's dowry at 4,000 merks[15].

It has already been shown in Chapter 4 that Sir George Hay's patent, granting the sole right to make glass in Scotland, had been renewed in 1634 and again, in favour of his grandson Charles Hay brother to William Earl of Kinnoull, on 16 October 1661[16]. Charles Hay died on 11 September 1663, and was buried at Holyrood Church (*Scots Peerage*, 5, 224) but he had already, on 29 July 1663, 'for ane certaine somme of money', transferred his patent rights to James Marquis of Montrose and Dame Anna Douglas, Countess of Kinnoull, his mother[17].

GRANT OF THE GLASS PATENT RIGHTS TO ROBERT PAPE

About two weeks before Hay's patent rights were transferred to his relatives, on 17 July 1663, a contract was signed between Charles Hay and Robert Pape of Fairliehope, granting Pape 'the full and only priviledge of making of all sorts of glasses and of erecting of glass works' in Scotland for two years from lambas (1 August) 1663. Pape, with William Halyburton, merchant in Edinburgh, as cautioner, agreed to pay Hay 1,400 merks Scots, for each year of the agreement, spread over the two years, the final 700 merks being due on 1 August 1665[18].

The next day, 18 July 1663, the man previously authorised by Charles Hay to produce glass, Jacob Visitella, 'glassmaker in the Westpans'[19], signed an agreement with Robert Pape, renouncing all the rights which had been granted to him by Charles Hay in favour of Pape. He bound himself to 'worke no more in glasse except ane power or licence sal be granted to me for that effect by Robert Pape in whose persone the said Charles has transffered his wryght. . .' under penalty of £100 Scots[20].

13 NAS RD4/10/185, Marriage contract.
14 NAS RS3/8/384.
15 NAS RD4/10/185.
16 NLS Adv Ms 25.3.4 f42; *RPC* 3rd Ser. i, 155.
17 Ann Douglas, eldest daughter of William Douglas, Earl of Morton. She died in 1667 (*Scots Peerage*, v, 225).
18 NAS RD2/10/207, registered 5 Oct 1663, after Charles Hay's death.
19 NAS RD4/6/290.
20 NAS RH15/102/6/3/3.

There is a further legal document in the National Archives of Scotland which is related to ownership of the patent. It is witnessed by the Earl of Kinnoull, among others, and, after referring to the deed transferring Charles Hay's rights to themselves and the subsequent licence for Robert Pape to make glass, states that James Marquis of Montrose and dame [blank] Douglas Countess of Kinnoull declare:

> That we have payed no soumes of money nor done any good deid to the said Charles Hay for the makeing and granting to us of the forsaids tuo severall assignations Bot that our names are onlie borrowed thereto and intrusted therein for the use and behove of James Hay [the third son] brother germain to the said Charles Hay Thairfor witt yee us to be bind and obleist . . . to make just compt reckoning and payment to the said James Hay his heirs [etc.] of whatsomever soumes of monie or other benifit profeit or comoditie whatsomever it shall happene us or any of us to obtaine and recover be vertew of the saids tuo severall assignations. . .[21]

So the patent appears to have been held in trust for James Hay who certainly owned it in 1671, by which time the Marquis of Montrose and the Countess of Kinnoull were dead. In August that year, he signed an agreement transferring the rights to his sister Lady Margaret Hay, who had 'consented and payed to me ane certain soumme of money and done other good deeds' for the privilege[22]. Lady Margaret Hay was the eighth child of George, second Earl of Kinnoull, who does not appear to have married (*Scots Peerage*, 5, 225). Such agreements confirm the value to the Hays of the glass patent and the income gained from it, and re-emphasise their continued control of the glass industry.

A CONTRACT WITH EDWARD DAGNIA

Robert Pape's licence began on 1 August 1663 but it was not until 12 October that year that he signed a contract with Edward Dagnia, the glassmaker, who had, in 1662, witnessed a bond for Jacob Visitella[23]. The agreement set out the obligations of both parties and is important in its details.

Robert Pape, 'as master and owner of the glasswork within the Citadel' bound himself to furnish the metal, coal and everything else necessary for the glasswork, for the whole period of his 'tack licence and patent' granted by the deceased Charles Hay, 'to the effect the said glassworkes be not laid wast void or cease throw the said Robert his fault'. He also agreed to pay Edward Dagnia weekly for:

> all the glasses the said Edward shall make and delyver to the said Robert or his clerk good sufficient sailable waire conforme to the raittes following. That is to say for the hundreth vialles ane shilling sterling
> for the hundreth halfe mutchkine violls two shilling sterling
> for mutchkine violls three shilling sterling the hundreth

21 NAS RH15/102/6/3/3. Contract between Dagnia and Pape, registered 16 Aug 1664.
22 NAS RH15/102/6/4.
23 NAS RD4/11/430; warrant RD14/4/1141.

for chopin violls six shillings sterling the hundreth
for all wyne glasses bottells one dozen of[?and] thrie and of all other kyndes of grein glasses conforme to the pryces wherefor the samen sall happen to be sold and raits of the other glasses above specified
In lyke manner of whytt mettall ffor the hundreth [?] two shillings sterling
for the hundreth beir bell fyve shillings
for wyne smaill ten shillings the hundreth
and for all other sorts of wytt glasses conforme to the raittes aforesaid.

Dagnia agreed to deliver 'ten more and above everie hundreth and thrie more and above everie dozen' of all sorts of glasses[24]. The range of products Dagnia was to produce is interesting, including as it does both white (clear) and green glass.

One crucial aspect of their contract is that Pape also agreed to pay Edward Dagnia 5s (sterling) a week for making the pots, preparing the white or green metal, to Pape's orders, and performing the duty of conciator. Dagnia also undertook to take care of the tools and to supervise the workforce and was obviously one of the master glassmakers possessing all the considerable skills necessary to run a glasshouse, from setting the fire, to preparing the frit, and from preparing and firing the pots, to blowing the glass. He also agreed not to leave during the time of the licence, nor to take time off unless he were sick, or Pape agreed he could do so. The contract was witnessed by James Somervell, Pape's father-in-law and George Abercrombie, writer in Edinburgh, of whom more later.

The Dagnias were Italian glassmakers, brought to England from L'Altare in about 1630, by Sir Robert Mansell. One branch founded the first recorded glasshouse in Bristol in *c.*1651 (Newman 1987, 87). Edward Dagnia's presence in Scotland in the 1660s is of considerable interest. He had his family with him, son Edward witnessed his signature in 1664[25] and another son, John, was old enough to act as cautioner for Edward senior's wife, Joanna Coo, in 1665[26]. Both were almost certainly working with him as glassmakers, in the usual family tradition. The Dagnias are well known to glass historians, usually in association with glassworks on Tyneside: an account of the family members working in Newcastle and South Shields by Herbert Wood was published in 1920 (1920, 229-43).

Wood did not attempt to trace the Dagnias before their arrival in the north-east but was fairly certain that they came from the family which had originally worked in Gloucestershire[27]. Neither he nor other writers mentions any of them being in Scotland. Significantly, however, the 'Dagnia Family Pedigree', printed in Wood's article, begins with 'Dagnia = Joanna', who had children Onesiphorus (d. 1712), Edward (d. 1712) and John (d. 1717). Although Onesiphorus is not

[24] This system conforms to the idea of the 'glassmaker's dozen', when the workmen were paid for a certain number of glasses, but actually made an agreed number more – which provided the purchaser with his profit. In this case the 'dozen' would be 15, but in other cases it was 20 or 21.

[25] NAS RD4/19/144. Bond 3 Dec 1664.

[26] NAS RD14/6/245. 'Obligation: Joanna Coo and hir cautioners qua James Cranston', 18 Oct 1665.

[27] Bristol was in Gloucestershire at that time.

mentioned in known Scottish documents, it seems very likely that it was, in fact, these sons of Edward Dagnia, 'master worker of the glaseworkes at Leith'[28], who eventually founded the glassmaking dynasty on Tyneside.

Edward Dagnia senior died between 3 December 1664[29] and 18 October 1665, on which date his widow, Joanna Coo, borrowed £28 Scots from merchant James Cranstoun, promising to repay it by 2 February 1666[30]. In Onesiphorus's will, published in 1712, is an annuity to his wife Margaret of £20 and 'to my dear mother Joanna Dagnia the annuity of £6' (Wood 1920, 238)[31].

Table 6 Glassworkmen known to have worked at Leith Citadel.

Names	*Date of reference*
Edward Deagney (Dagnia)	1663, 1664
John Dagnia	1665
Edward Dagnia jun.	1664
Matthew Demarin	1664

Robert Pape's adventure in the glassmaking business was not to run smoothly, as will be shown, but even the terms of his licence raise intriguing questions. Firstly, it seems strange to take on such a large capital investment for the very short period of two years, which appears to have included the time required to build the furnaces and set up the business. Given that the licence term began on 1 August 1663, and that the advertisement for his glass did not appear until 24 December, it would seem that five of the agreed twenty-four months were unproductive – a considerable proportion, and for which he had to pay a fee to the Hay family of approximately 583 merks. Secondly, there is no renewal clause in the agreement with Charles Hay, although it does not seem feasible that Pape should invest so much money without some long-term plan, since no-one could hope to recoup the capital outlay required to establish such an enterprise within a short period, especially with the added burden of 1400 merks a year payable to the Hay family.

There is also, of course, the question of why the descendant of a family of lawyers should wish to enter such uncharted waters. It is possible that one clue may lie in his mother's surname – Haliburton. John Paip's marriage to Geillis Haliburton on 12 June 1629 is recorded in the Canongate parish register (Grant 1944, 169)[32]. Robert Pape's cautioner in his agreement with Charles Hay was William Haliburton, merchant in Edinburgh. It may, of course, be entirely co-incidental, but the mother of Sir George Hay, owner of the first patent to make glass in Scotland, was Margaret Haliburton (d. 1633), daughter of Sir James Haliburton

28 NAS RD14/7/975, Bond, Edward Dagnia and John Henderson, 3 Dec 1664.

29 NAS RD14/7/975, Agreement releasing Edward Dagnia and John Henderson from the obligation to repay their shares of a 100 merk loan.

30 NAS RD14/6/245.

31 The IGI shows that the name Coo was used as an alternative to Coe and that the family appears to have been particularly associated with Essex.

32 She died in September 1645.

of Pitcur (*Scots Peerage* 5, 223). There may, therefore, have been a family connection, through the maternal line, between Robert Pape and the Hay family. Ownership of the glass patent was not *per se* of any financial value to the Hays, of course, so it would have been in their interest to encourage investment in a new glassworks at the end of Jacob Visitella's tenure, in order to ensure continued income from the licence.

PROBLEMS OF OPERATING THE WORKS

COMPETITION FROM IMPORTED GLASS

Pape appears to have experienced difficulties in selling his glass from the beginning. Only about six weeks after the advertisement appeared in the *Kingdom's Intelligencer*, on 9 February 1664, he petitioned the Scottish Privy Council for the prohibition of imported glass, except for window glass. After the usual preamble, saying that he had spent 'his whole estate and fortune for advancement of the publick good' in building the glassworks, he put forward a conspiracy theory to account for the lack of sales:

> such is the humour of some merchands and inclination to ruine and destroy all publick workes wherby either credit or benefite may aryse to their nation, that they not only abstain from buying all glasses maid in the said glasshouse, bot also doe import great quantities of glasse from abroad, wherby the said work will be altogether rendered uselesse and unproffitable, ther being such a multitude of the glasses already made therin unsold, which, with these that the work is easily able to affoord will be more then will sufficiently serve the whole countrey. (*RPC* 3rd Ser 1, 498)

He was granted his request and all imports, apart from window glass, were banned on pain of confiscation.

It is impossible to assess the validity of Pape's allegations. The volume of shipping in mid-winter was usually much less than during the months of more clement weather (Smout 1963, 60)[33] and it is hard to understand why local merchants should be so antagonistic without due cause. It may be that the quality of the Leith bottles was not as good as those the merchants imported, or that the local merchants obtained bottles from Newcastle more cheaply than Pape could provide them, or perhaps he was simply producing too many for the Scottish market. He was not the first, nor last, entrepreneur to experience that problem. Nevertheless, as will be shown, Sir James Standsfield complained to the authorities in precisely the same terms in 1687, some 23 years later, so both men may have had good grounds for their assertion.

The prohibition did not resolve Pape's difficulties; on 24 March 1664, he again

[33] The coastal trade was maintained despite the winter conditions, however.

appealed to the Scottish Privy Council, claiming that, despite the earlier act, 'a great deal of foreign glass has been privatly imported and stored in cellars in Leith, and there is word of more to come . . .'. He asked for authority to search all ships suspected of carrying glass, to require masters and merchants to declare what they imported, and the customers (collectors of customs) to declare what quantity they received duty for. Finally, he requested permission to examine the custom books and to open and search all cellars and houses suspected of containing imported glass. The Privy Council referred the petition to the treasurer, so that he could, from time to time, 'upon the petitioners information, give order for seazing and confiscating all such glasses. . .' (*RPC* 3rd Ser 1, 525) – hardly the response for which Pape hoped.

To compound his problems, George Abercromby, the man Pape had appointed as clerk to the glassworks, had absconded 'without accounting for his intromissions'. Recourse once more to the Privy Council, on 14 July 1664, led to a warrant for his arrest and imprisonment 'until he make account and payment . . . of his glasses and others entrusted to him, or the price thereof' (*RPC* 3rd Ser 1, 570). It seems reasonable to assume that George Abercromby was the writer who had earlier witnessed Robert Pape's agreement with Edward Dagnia.

LEGAL DISPUTES WITH EMPLOYEES

It appears that, at least for a time, production at the glassworks ceased. In a case heard by the Regality Court of Edinburgh in April 1664, a glassmaker called Matthew Demarin claimed that he had signed a contract with Robert Pape on 22 October 1663, to make glass at the Citadel, for a specified period, at set prices. However, since 6 February 1664, Pape had 'not suffered his glasshous to be imployed', with the result that Demarin, a 'stranger', had no means of earning a livelihood. The court upheld Demarin's appeal that Pape should be ordered to provide him with employment under the terms of his contract, or discharge him from it, so that he could move elsewhere. Pape was ordered to pay the £12 penalty, provided for in their agreement[34].

There was also some disagreement between Robert Pape and Edward Dagnia, although this was resolved without recourse to the courts. On 30 August and 5 September 1664 an arbitration agreement was signed and witnessed, endorsing the resolution of their claims by John Jossie and Walter Cheislie, 'late bailies burgesses of Edinburgh'[35]. John Jossie had, of course, set up his own short-lived glasshouse in the 1640s and owned the land at Westpans on which Jacob Visitella had his glass furnace, so he had some experience of the industry. The arbitrators' remit was to sort out the penalties due to each party under their contract of 12 October 1663. Robert Pape was ordered to pay £34 1s 10d (sterling) to Edward Dagnia before 1 November 1664, while Dagnia was found to owe him £3 for 'six

[34] ECA Act or Regality Court Book, vol 6.

[35] NAS RD14/4/1237.

[illegible] pynt bottles sold be him to Mr. Thomas ?elers merchant in Leith' and a further 5s 4d for kelp.

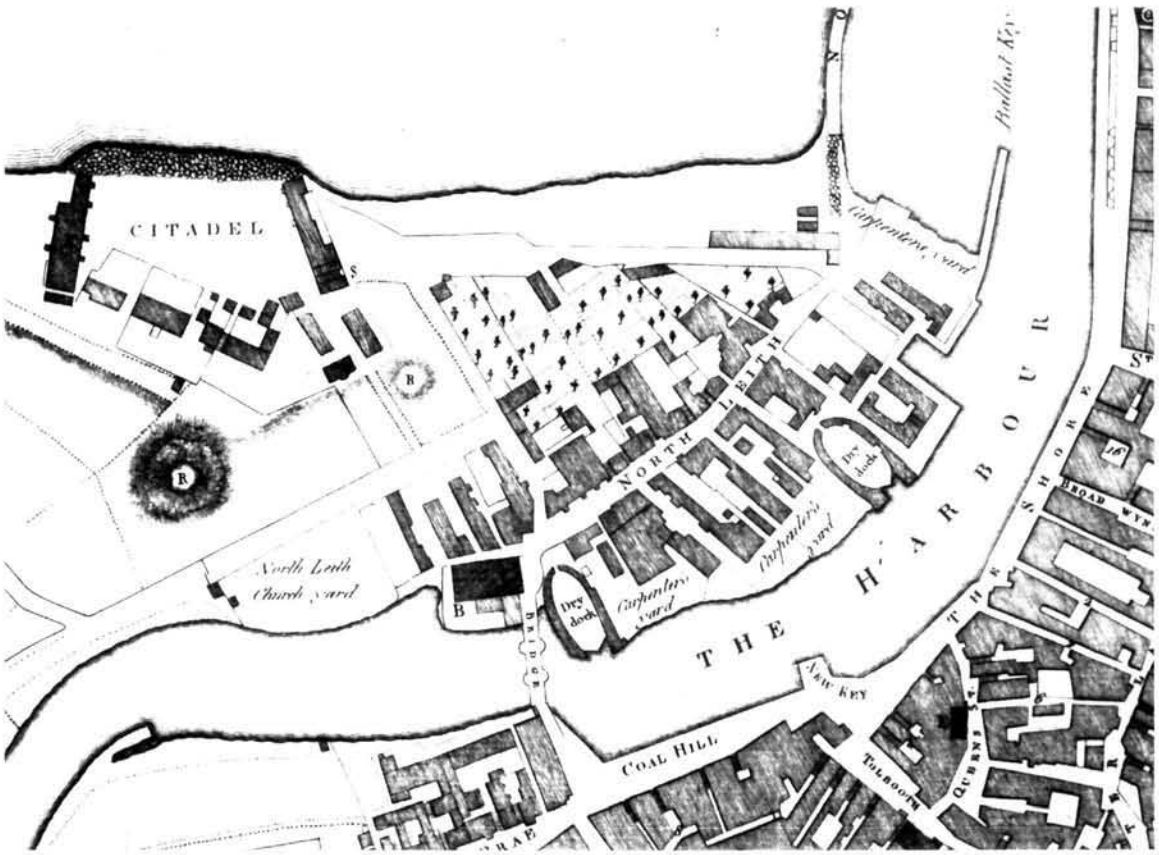
SALE AND ULTIMATE FAILURE OF THE CITADEL GLASSWORKS

The glassworks does not appear to have ceased production at that point, however; Edward Dagnia was still described as 'master worker of the glaseworkes at Leith', in a bond dated 3 December 1664[36]. By then, however, he was working for someone else. On 24 September 1664, only just over a year after his agreement with Charles Hay, Robert Pape's short-lived foray into glass production ceased when he sold the right to make glass under the Hay patent to James Bell, merchant burgess of Edinburgh. Bell agreed to pay Pape 950 merks Scots before 2 August 1665, a date coincident with the end of Pape's licence[37]. Unfortunately, no further information about the Citadel glassworks has been found.

It seems very unlikely that so much money and effort should have been expended for an intentionally short-term project, but there is no evidence that the glassworks continued to operate. Certainly the death of Edward Dagnia would not have been conducive to continuity, although it is significant that the Visitella family appears to have remained in the area. The glasswork may well have continued in production for some time, of course, since it seems likely that James Bell bought it as a going concern, and the lack of evidence that it continued, does not mean it did *not*. However, a statement made by Sir James Standsfield in 1687 confirms that it certainly failed eventually. Standsfield claimed that his own first attempt to establish a glassworks at Leith had been the third one to fail[38], so it seems reasonable to assume that the two earlier attempts to which he referred were those of Pape and Bell. It is worth remembering, however, that Margaret Hay apparently thought it worth while to pay her brother for ownership of the glass patent in 1671. She must have considered it to be of commercial value, but it was only of financial benefit to her while glass was actually being produced.

James Bell was a common name in 17th-century Edinburgh, and it is difficult to be certain of the glassworks owner's identity. An entry in the Register of Deeds shows that a James Bell and his brother William set up as partners in 'trade merchandize and commerce' in 1664, with an initial joint capital of 33,000 merks. William was about to leave for Holland and the 'west of the united provinces for commerceing and doing of his other lawfull affeares'[39]. Other bonds in the register indicate that this James Bell and his family were very involved in commercial transactions until 1676, when his name ceased to appear. In 1668 a James Bell borrowed, jointly 'with my elder brother Adam Bell younger of

36 NAS RD14/7/995.
37 NAS RD4/15/94. Contract between Robert Pape and James Bell, 24 Sept 1664.
38 NAS RD2/26/380.
39 NAS RD2/26/380.



30 Plan of the Town of Leith, Alexander Wood, 1777. John Sime's dry dock is the one furthest from the bridge, Glasshouse Quay being on the seaward side. (Gough Maps, Scotland 89, detail. *Bodleian Library, University of Oxford.*)

Belford', £200 (sterling) from James Stansfield[40]. It seems that the whole family did business together, since a bond of 1670 was in the names of 'Andrew Bell of Belford, Adam Bell younger thereof my oldest lawfull sone and William and James Bells merchants burgesses of Edinburgh'[41]. Unfortunately, none of the many deeds examined relates to the glass industry.

THE MOVE TO NORTH LEITH

Whether or not the Citadel works continued, the next glasshouse to be built was on a more obviously suitable and more clearly identifiable site in North Leith. On 14 February 1673, a charter was granted by the magistrates of Edinburgh to Sir James Standsfield of Newmilns, of a plot of land in North Leith, fronting onto the river and to the seaward side of the then bridge[42] (illus 29). The various sasines relating to this plot of land describe it in the usual manner, naming the individuals

40 NAS RD12/9/49.
41 NAS RD2/28/75.
42 NAS GD69/126. 'Inventory of writs . . . the dwelling house in North Leith, Yard and Glasshouse built thereon . . .'; RS27/21/317.

owning adjacent sites. These can be difficult to trace but in this case the southern boundary was the Water of Leith, where a quay was later built (or an existing one was improved), for the use of the glasshouse. Sue Mowat, in her book *The Port of Leith* (nd, 238-9), shows that John Sime, 'premier shipbuilder in North Leith', petitioned Edinburgh council in 1770 for assistance with his plan to build a dry dock on the site adjacent to Glasshouse Quay. Permission was granted, and Simes's dock is prominent on subsequent maps, so defining the site of the earlier glassworks (illus 30).

Sir James Standsfield of Newmilns (d 1687), said to be a former Cromwellian colonel[43] is best known for his involvement with the well-documented woollen manufactory at Newmilns, in which he was the major shareholder with an investment of £300 (sterling)[44], and the circumstances of his death. Originally from Yorkshire, he settled in Scotland and acquired the land near Haddington on which the woollen mill was built (*Edin Burgs*, 8). He was knighted by Charles II and is described by Scott (1905, lxx) as being, in 1681, a man of considerable wealth. In 1660 Sir James Standsfield was created burgess and guild brother of Edinburgh, gratis, and £5 was voted to him for his service to the town. He was clearly interested in setting up businesses on property he owned; in addition to the Newmilns venture, he was co-partner in a brewery built on his land[45]. He also had shipping interests: in 1674, for example, he owned a quarter of the *Castle of Edinburgh*[46], and he sold merchandise, including glass, overseas[47]. As well as his business interests, Sir James Standsfield lent money to a wide spectrum of society, from the aristocracy to merchants, ship's captains to carpenters. On 12 October 1671 James Hamilton and his spouse assigned to him their property in North Leith in payment of a debt[48]. It was on the north bank of the Water of Leith 'containing ane tenement of Land and yaird at the back' and was the site on which the glassworks was eventually built in 1678.

THE FIRST NORTH LEITH PARTNERSHIP

Glassmaking was still subject to the Hay patent, however. On 24 January 1678 Lady Margaret Hay, for 'ane certaine somme of money', assigned her rights to the four original co-partners, 'conform to their proportionall pairts'. They were Archibald, Earl of Argyll and Colin, Earl of Balcarres, who had a quarter share between them, and Sir James Standsfield and James St Clair of Roslin, who owned the 'other threi fourth pairts . . . equall betwixt them'[49]. The co-partnership agreement between the four men was signed about three weeks later, on 18 February 1678. They agreed to

43 NLS introduction to Ms 25709, Newhailes papers.

44 NAS RD4/59/8 Co-partnership agreement 1682.

45 NAS RD4/57/264. Co-partnership agreement.

46 NAS RD4/50/679.

47 NAS RH15/102/8/1. Commission to supercargo.

48 NLS Ms 25717 f 17. The assignation was later the subject of a protracted legal dispute between Standsfield's heirs and the Hamilton family, papers relating to which are contained in the Newhailes archive in the NLS.

49 NAS RH15/102/6/3/7. 'Translation Ladie Margaret Hay to the Earle of Argylle and Balcarras and others' 24 Jan 1678.

the 'erecting and upfitting of ane glassework within the toune of North Leith . . . furnishing all materialls for upfitting and maintaining the same and keeping of servants thereto'[50]. They were to provide between them £5,000 Scots, in two equal instalments, the first before 1 March, the second by 1 June, and whatever extra sums were deemed necessary by the clerk to maintain and carry on the business, to a maximum of £6,000 Scots, (although there was a proviso that this sum could be exceeded if all agreed). They were to meet at the glasshouse twice a year, in order to examine the accounts and the products. Sir James Standsfield and James St Clair were the two executive partners, empowered to make decisions, give orders and agree wages, but they were expected to consult with the other partners if they were in Edinburgh at the time. After three years a partner could withdraw his stock, but was obliged to offer his share to the other partners in the first instance, and other partners could be admitted on the same terms. If one of the partners failed to make the agreed payments, he would lose his share of the patent rights, which would pass to the others.

An entry in some extant accounts records: 'By allowance to the Lady Mary Hay for the Patent for makeing glass £333 06[s] 08[d]' (Scots)[51]. The sum paid might imply that it was an instalment, being exactly one third of £1000, but that cannot be confirmed. Mary Hay, another daughter of George second Earl of Kinnoull, and younger sister of Margaret, was born in Perth on 15 May 1633, married George 8th Earl Marischal in 1662, and lived until 1701 (*Scots Peerage* 5, 220-25). However, it seems likely that Mary's name is a mistake on the part of the writer, since Margaret Hay's name is repeated in the partnership agreement, and she was still alive in 1689.

RECRUITING A WORKFORCE

The dates of the new glassworks are also somewhat confusing. There is an extant warrant dated Edinburgh 11 January 1678, addressed to 'Thomas London at the glasshouse in Leith, authorising him to pay a John Montgomery and his servitor 8s (sterling) a week, starting on 13 January'[52]. It is likely that the two men had been contracted to provide the technical expertise in anticipation of the legal agreements. Certainly the glasshouse appears to be been up and running quickly: by May 1678, at least three more glass blowers, Daniel Kirby, John Richards and John Baptista Mercier were working there[53], all of them having been recruited in London[54]. An account submitted by John Baptista Mercier indicates that he took over the role of conciator (founder) when required in October 1678[55]. In fact, he

[50] NLS DEP175 Box 29, bundle 40.

[51] NAS RH15/102/6/3/8. 'The Glasshouse in comp. with the Earles of Arguile, Belcarres, Sr. Robt Gordon of Gordinston and James Stclair of Roslin.' The date is not stated, but is probably 1678.

[52] NAS RH15/102/6/3/9. It is quite possible that John Montgomery was related to the glassworker of the same name employed at Morison's Haven in 1637.

[53] NAS RH15/102/8/2. 'Acct to John Farquhar of the severall payments to the Workmen . . . unto 30 Nov. 1678'.

[54] NAS RH15/102/6/3/8.

[55] NAS RH15/102/8/2. '[?] accompt of what worke I have done for the use of Sir James Standsfield knight and James St Clare Lord of Roslin', nd.

appears also to have been involved with the construction of the subsidiary furnaces, since he charged for a week 'for makeing of the Calker' and 'ane other weeke for makeing of the Lear of the forneis', as well as for calcining the metal. Jottings on the back of his account list vials (7384), mortars (2037), wine (370) and half pints (206), presumably items produced at that time, but no date is given. More building work took place at the end of 1679, when the town council of Musselburgh granted the owners of the glassworks permission to take eight cartfuls of stone from the town's quarries 'for the use of the said Glassworks' (Paterson 1857, 64).

John Farquhair was employed as glasshouse clerk, and by October William Barrow had joined the workforce[56]. A list of the wages paid to them to the end of November 1678 shows the payment each individual received on a weekly basis, the most common amount being £12 Scots. Their earnings varied considerably, however, as did the time between payments. The total wages bill for the five men, from the beginning of May to the end of November, was £920 7s 10d Scots.

MOSES HENZELL FROM NEWCASTLE

By the end of 1678, Sir James Standsfield was trying to obtain experienced glassmakers and gatherers from Newcastle, but with only limited success. The men already *in situ* appear to have been bottle and drinking-glass makers, and it seems that he wanted to expand into the manufacture of window glass. Three interesting letters concerning Moses and Joseph Henzell, members of another well-known glass-making family, are extant and demonstrate very clearly the difficulties experienced by glasshouse owners in obtaining staff[57]. John Leaman in Newcastle, acting as intermediary, wrote to Standsfield on 31 December 1678, saying that the Henzells did not wish to become partners in the business, and were 'very haughty spirited men', who insisted on high charges and stringent conditions, despite being 'bare of silver'. He enclosed with his letter another from Moses Henzell himself, setting out their conditions, which were obviously based on some knowledge of the glassworks at North Leith. The Henzells demanded £5 (sterling) each in advance, and asked that all their tools should be made in Newcastle at Standsfield's cost. They were not happy with the furnace design, wanting the 'lonnet hoole of the stoock hooll' a foot lower and twice the size[58]. Moses also wanted to ensure that they would suffer no loss if their working hole was too small to produce the expected '12 score foot' daily. He does not specify the production time, but presumably he was being contracted to make window glass by the broad-glass method. It seems likely that he was referring to his output in square feet: 240 square feet of glass, would make 60 sheets, assuming that each sheet measured approximately four feet square. This is a higher rate of production than that given by Godfrey (1975, 201). Henzell said he would try to

[56] NAS RH15/102/8/2. Accounts.

[57] NAS RH15/102/6/1;/2;/3.

[58] 'linnet holes . . . transmitted heat from the main furnace to the subsidiary ones' (Vose 1980, 62).

bring gatherers with him, but that Sir James Standsfield would have to provide lodgings and fuel for them at his own expense, as well as their transport costs.

Standsfield replied on 24 January 1679. The letter was acknowledged by Moses Henzell on 4 February, when he demanded a signed and witnessed bond agreeing to their conditions, as well as a letter to John Leaman 'to agree with the smith for makeing the tooles, and we will see that they shall be well done'. He was adamant that no gatherer would go to Scotland unless provided with free accommodation; 'Therefore Sir, if you would have your worke furnished with good servants which is the key of a worke, you must come to the rates . . .'. He expressed his hope that Standsfield did not 'desire to oppress nor abuse us . . . or be against that which is soe rationally and reasonably desired', finally pointing out that 'we heare that there is neither clay, nor potts, ready' and offering to provide some if Standsfield paid[59]. A final sting in the tail is the *postscript*, informing Standsfield that Joseph Henzell had decided not to go to Scotland after all, but that Moses would bring a young glassmaker instead. He ended, 'wee doe expect that as the glas is made weekly wee must be pade weekly as the fassion and custome off all glasshouses is'. The tone of his letter, and the nature of his demands, imply a man who knew well both his business and his worth.

Some men from Newcastle did indeed go to work at North Leith, but Sir James Standsfield lived to regret their bargain. A letter from Onosiphorus Dagnia in 1681, which will be discussed more fully below, refers to the glassmakers from Newcastle as 'wicked sort of people', whose workmanship was 'but ornery'. He mentions a letter from Baptista Mercier, telling him that Standsfield had lent '£35 to pay his [the Newcastle workman's] depts and loose him out of prison and allsoe the rest had mony lend, nevertheless thire worst word in thire mouthes thay think to good for you'[60]. Moses Henzell is not mentioned by name but he may well have been the person referred to, since he appears to have been unemployed when recruited by Standsfield, perhaps implying a less than desirable character despite the family's reputation.

The Hennezel (Hensey) family were working as glass makers in the Vosges area of Lorraine from at least the 15th century, having originally moved there from Bohemia (Tyzack 1995, 11). Kenyon (1967, 125-31), using material originally gathered by the Comte de Hennezel d'Ormois and Monsieur Georges Varlot, gives some details of the family's history. Hennezels from the Darney area migrated to England in 1568, to work for Jean Carré in the Weald, and their descendants worked in Stourbridge and Newcastle, their speciality being broad glass for windows. The French notes used by Kenyon provide an interesting insight into Moses and Joseph Hennezel's heritage. When they first came to England, the Lorrainers had refused to teach foreigners their methods, which were traditionally passed only from father to son, and then only to 'the

[59] NAS RH15/102/6/1. Moses Henzell at Newcastle to Sir James Stanfield at Edinburgh, 4 Feb 1679.

[60] NAS RH15/102/6/3/14. Onosiphorus Dagnia, Glasshouse of Newcastle to Sir James Stanfield, Edinburgh, 11 June 1681.

descendants of the four ancient houses: de Hennezel, de Tysac, de Thietry [Tittory] and de Bisval', guarding their secrets being a matter of honour. An un-named contemporary English author described them as 'silent, haughty, masters of themselves'. Their status as 'gentilhommes verriers' was obviously lost as they became anglicised, but some of the character traits seem to have survived.

THE ENGLISH WORKFORCE

Apart from John Baptista Mercier, most of the other glassmakers recruited to work at Leith appear to have been English. There was considerable financial outlay involved in recruiting such a workforce. Both Daniel Kirby and Baptista Mercier went to London at different times to set up contracts with glassmakers, who then had to be transported to Leith; for example, £50 4s 0d Scots was paid to David Gillis 'for the passage of John Hannie, Andrew Newby, John Davie & their wifes'[61].

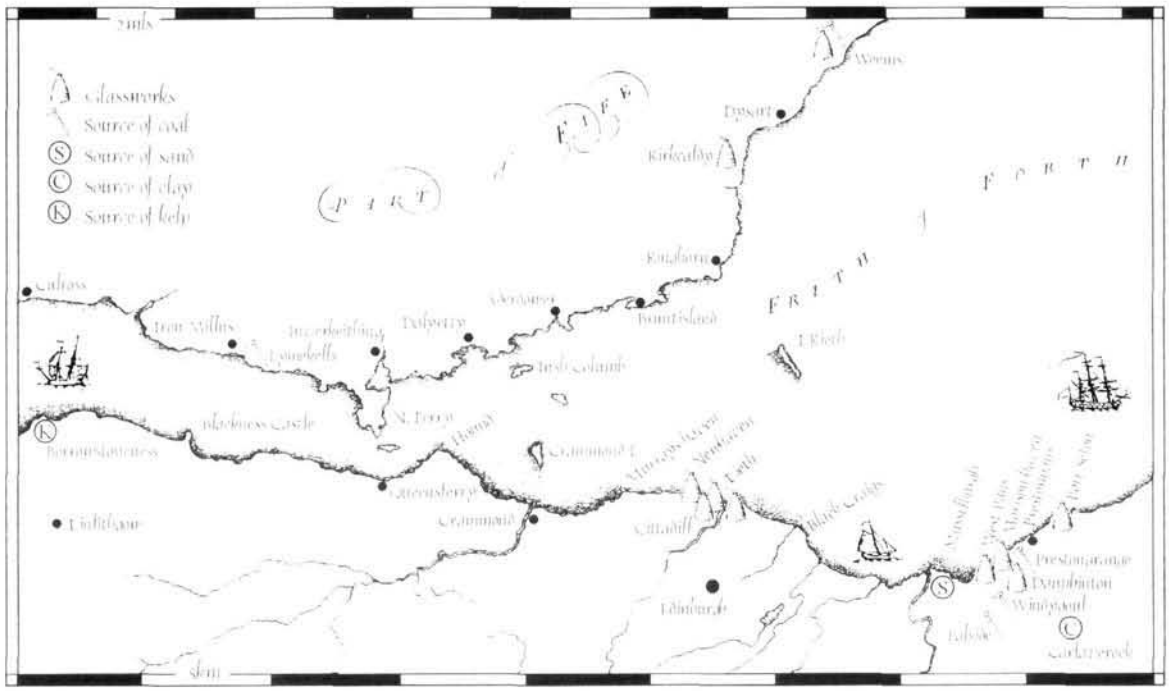
Names	*Date of Reference*
Thomas London ?clerk	1678
John Ffarquhair glasshouse clerk	1678, 1682
John Warde alias Montgomery	1678, 1682
John Baptista Mercier	1678, 1682
Daniel Kirby	1678, 1682
John Richards, principal glassmaker	1678
William Barrow	1678, 1682
James Bristoll – maker or seller of brass moulds	1682
Moses Henzell	1679
John Leggor	1681
John Tyzack	1681
David Gillis	1682
William Smith	1682
John Hannie	1682
Andrew Newby	1682
John Davie	1682
?Peter Lart	1682
Richard Shepherd	1682
Philip Taylor (Tyler) Londoner from Dublin	1687
John Long (Longe) Londoner from Dublin	1687

Table 7 Glassworkmen known to have worked at North Leith.

RAW MATERIALS

Since the site of the glassworks was not adjacent to any of the raw materials required, they all had to be shipped in and were obtained from a variety of sources. There are a number of extant accounts in the Standsfield papers, which show that coal was

61 NAS RH15/102/6/3/8. Glasshouse account nd.



31 The Firth of Forth, showing the glassworks up to 1750 and sources of supply mentioned in the records; based on a map of the Lothians, John Elphinstone, 1744. (*Map by Jan Dunbar Aberdeen City Council Archaeology Unit.*)

brought in from Wemyss and Sheriffhall, sand from Musselburgh, barilla and other unspecified materials from London. Tools costing the considerable sum of £262 2s 0d Scots, were bought from John Leamon a merchant in Newcastle; bricks and ashes were shipped up from London as a return cargo, coal having been carried on the outward journey; kelp was obtained from Borrowstoneness (Bo'ness) in the county of Linlithgow (now West Lothian). There are many more entries where no source of supply is given[62] (illus 31).

CHANGES TO THE MANAGEMENT

SIR ROBERT GORDON OF GORDONSTOUN JOINS THE PARTNERSHIP

At some point during the early years of the North Leith glassworks, Sir Robert Gordon of Gordonstoun joined the co-partnership, and the share ownership shifted slightly. The Earls of Argyll and Balcarres retained their one-eighth shares, while Sir James Standsfield and James St Clair of Roslin reduced their holdings to five-sixteenths each, and Sir Robert Gordon held one-eighth[63]. Their total agreed investment was £16,977 7s 2d Scots.

62 NAS RH15/102/6/3/8, Glasshouse account nd.

63 *ibid.*

On 16 June 1680 Sir James Standsfield sold two-thirds of the North Leith site to Sir Robert Gordon and James St Clair, who each paid him 2,333 merks 4s 4d. The property consisted of 'the dwelling house yeard and pertinents underwritten viz: that great yeard within the toun of Leith . . . now containing ane tenement of land bigged therin with ane yeard at the back . . .'[64]. They also agreed to pay one penny blench ferme to Standsfield and two-thirds of the feu duties payable to his superiors, the burgh of Edinburgh. However, ownership of the fabric of the glassworks was not included in the deal: 'the walls stone timber and instruments of the same glasshouse are noways included . . . but is hereby expressly declared to pertain and belong to me the said Sir James Standsfield, James St Clare and Sir Robert Gordon according to our severall interests and partes of the glasswork and noe farder.' The agreement went on to state that, in the event of the dissolution of the copartnership, each of the remaining partners, who had met his obligations, 'shall be holden . . . to cause transport their respective proportiones of the saids walls timber stone furniture and pertinents therof within the space of six monthes' or longer, if agreed, 'and free and void the ground of the samen'. Clearly the site and the buildings on it were of greater importance than the furnaces built there.

A LETTER FROM ONOSIPHORUS DAGNIA

The affairs of the company do not seem to have gone smoothly, however. Even during its brief period of operation, it appears that the glassworks fire was out at times. An interesting letter from Onosiphorus Dagnia at the 'Glasshouse of Newcastle' (the Closegate glassworks), in June 1681, is among the Standsfield papers[65]. He began: 'I understand by John Tyacke[66] you have a mind to set forward your work againe if you could gett workmen'. He went on to commiserate with Standsfield about his experience of the 'last workmen you had I am sertain there is not such another crewe in England', as discussed above, and continued:

> Sir if you are intended to put it forward againe I will bring others with myself that shall carey on your work with corrig and to profit (if we can agree) I think about 15 or 16 weeks worke will serve the contry, wich I can doe and follow my imploy hear, you will have no men relying upone you as for playing weages, (which other wais if you have a set of workmen of your owne and have not imployment for them will expect playing wages). If your worship please to bear the charges I will come over and give you the nearest account of what stock may serve for a 15 weeks fire in all particulars, and likewise will doe your business in bying your ashes for there is a great matter in your ashes, for there is ashes that one bushell will goe as far as one and a half of other sum which I have good reason to know. Sir I desire you to consider on it and return me an ancer with the first post, for I am intended for London spedily. If I can doe you any favouris I shall be willing to doe it. I once writ before concarning your ?wight work but received no ancer, John Tizack tould me you received my letter . . .

64 NAS RD13/44/644.

65 NAS RH15/102/6/3/14. Onosiphorus Dagnia to Sir James Stanfield, Edinburgh, 11 June 1681.

66 Thysac (Tyzak), from the Lorraine family.

There is no evidence to suggest that Standsfield took up the offer, and it is difficult to know whether what, on the face of it, appears to have been a sensible and reasonable suggestion, bearing in mind the small Scottish market, was actually an act of kindness, or a cynical commercial ploy designed to ensure that a rival glasshouse should not continue in opposition to Dagnia's own. Certainly the Newcastle glassmakers would have been very happy to supply the Scottish market themselves and to avoid the competition for skilled workmen, but the tone of the letter is concerned and friendly, and Onosiphorus had almost certainly lived in Scotland, when his father worked at Westpans and the Citadel. His comment about 15 or 16 weeks work 'serving the country' is significant. Godfrey shows (1975, 187) that most glasshouses expected to work between 35 and 40 weeks a year, allowing for repairs to the furnaces. In Dagnia's view, therefore, the Leith glasshouse was likely to produce at least double the market capacity, although the likelihood of longer periods of stoppage may have been greater in Scotland at that period, because of the lack of available expertise and other difficulties.

THE GLASS PRODUCED AT NORTH LEITH

It is clear from the accounts that bottles, vials, drinking-glasses and window glass were made at North Leith between 1678 and 1682, an ambitious range of products, confirmed by the roup inventary discussed below. One payment listed is 'To Mr. Bristoll for 2 brass mools for drinking glasses'. These would have been the moulds into which glasses were blown, like those discussed between Cornelius Visitella and Sir James Hope of Craighall in 1647. Payments in 1682 to Baptista Mercier ' for his tyme & attendance in London buying Barilla and other materialls for the Glasshouse', and for the hire of a horse for him to bring a parcel of manganese from the Hopetoun lead mines, 'for a trial', also confirm that good quality white glass was being made.

A puzzling entry is the sale by John Baptista Mercier of 3 'stamp glasses' for 6d, while 31 'stamps' were sold by Daniel Kirby for 10s 2d Scots and 57 by John Ward (Montgomery) for 9s 8d[67]. The 'stamp' may refer to the metal die, engraved with the initials or design, used to impress the name, initials or mark of the owner on the blob of molten glass on sealed bottles and glasses (illus 11 above). However, the OED refers to stamp glass as a drinking glass with a thick stem (from an obsolete german word *Stampe*), but gives no example of usage. Perhaps these were similar to firing or 'bumping' glasses, which had a short thick stem and thick foot, strong enough to be banged on the table after a toast.

Responsibility for running the glasshouse also changed during the first partnership. In October 1680, Alexander Young, who later bought up the rouped glass, sometimes referred to as 'Captain Young', appears to have taken over, and he compiled an inventory of all the items not under lock and key at the

[67] NAS RH15/102/6/3/8.

glasshouse[68]. Since the extant inventary only covers those items not locked up, it has to be assumed that the more valuable objects, like the glassmaking tools and expensive raw materials, were elsewhere. The first items on his list are 66 large and 16 small clay pots, with 12 'pott bottoms'. The latter were described by a pot-maker later in the 18th century as a 'kind of stool . . . which raises [the pots] about six and a half or seven inches above the floor'[69]. There were six white iron plates, probably for marvering; clay and cullet in the cellar; and 21 'crills for holding of brod glas', as well as eight chists (kists) of cut glass (sheets of glass cut for windows). There was also a collection of old furnishings and battered barrows. It was not an impressive list, but one which confirms beyond doubt that window glass had formed a considerable part of the production.

A further inventary in the Gordon of Gordonstoun papers, compiled by George Hay and James Bristol prior to the roup in January 1683, which will be discussed below, provides more evidence that a wide range of products was made at North Leith[70]. Unfortunately, the page listing the glass in *situ* is badly damaged, with one section completely missing. Nevertheless, the surviving list is informative. It includes 13,617 [square] feet of window glass; beer glasses and crewets[71]. Bracketed together under the heading 'small glasses' were listed the following items:

4332 Sougaroons
965 Brandys
436 ordinary Brandys
1410 vialls
3870 houreglass vialls
16 marmalats
49 severalls

The exact purpose of some of these items is uncertain: the meaning of 'sougaroon' is hard to guess[72], but it seems likely that a 'marmalat' was designed to hold marmalade or jam. English potter George Ecton's inventory (1696) included 18 'malmelett dishes'. The term 'marmalade' was known in England from the 16th century (Vaisey & Celoria 1974, 28, n75). The brandy glasses would not have been of the modern balloon shape – Newman suggests that 'early English glasses for drinking brandy were cylindrical tumblers' (1987, 49), so the Scottish shape is likely to have been similar. The large number of hour-glass vials is particularly interesting, since it is the only reference to them being made in Scotland which has come to light (illus 17 above; col illus 7). The range of items

68 NAS RH15/102/6/3/12. 'Ane Inventar taken up by Alexander Young, 11 Oct 1680.'

69 NAS CS231/C/6/5. State of the Process of Oppression and Damage etc. John Carr against William Tennant, 1796.

70 NLS DEP175 Box 35 bundle 64. 'Inventary of the Tools belonging to the Glasshouse in North Leith . . .'.

71 Cruets are described by Mehlman (1982, 146) as 'small bottles, usually with a stopper or lid and sometimes a handle . . . for serving condiments (oil, vinegar, lemon juice, etc) at the dining table.'

72 'Suggeroun' is a dialect word for a kind of oats (Robinson 1985), so it is just possible that these were porringers.

produced is a clear indication that the proprietors of the North Leith glasshouse were attempting to provide the affluent local market with many of the goods, both luxury and practical, which had formerly been imported.

A second page of the inventory lists the tools and raw materials used in the two furnaces, under the headings 'Broad glass irons' and 'White Glasshouse irons'. Some of the terms used (combined with the inevitably idiosyncratic spelling) are impossible to interpret, but the lists cover a comprehensive range of essential items, including another '66 great potts and 6 little ones of clay whereof bottoms 51'; wood ashes, salt petre, sand, frit, cullet, and eight moulds.

END OF THE PARTNERSHIP AND OF THE GLASSHOUSE

The glassworks ceased operations at the end of 1682, although the original partnership was clearly in trouble a year earlier. A draft agreement, which is unsigned and undated, is titled on the reverse: 'Consent be the Earles of Argyle & Balcarres & others to [blank] for roupeing the glasswork in Leith materialls & others pertaining thereto 1681'[73]. A year later an 'Act in ffavours of Sir Robert Gordon of Gordonstoune & others', dated 2 December 1682, was granted in response to a petition to the Lords of Counsell and Session by Sir Robert Gordon, Sir James Standsfield and Lady Roslin, executrix to the deceased James St Clair of Roslin. They alleged that the manufactory had 'gone to ruine by the late Earle of Argyle and Earle of Balcarres their not advanceing of their shares and proportiones of money', according to the co-partnership agreement[74]. The petitioners applied for, and were granted, permission to hold a public roup of 'the tooles, instruments, ffurnitures and utencills of the said glass work with the glasshouse . . . yet lying useless at Leith'. Two of the lords, Sir Andrew Braine of Saline and Sir John Murray of Drumcairne, were appointed to oversee the roup and the distribution of assets. A final payment was made 'To the glassworkers after the fire was put out', on 21 December 1682[75], in preparation for the roup on 5 January 1683[76], and £91 for expenses incurred was paid in February 1683[77].

SALE OF THE GLASSHOUSE AND CONTENTS

The glasshouse, tools and materials were bought for 890 merks by William Blackwood, merchant in Edinburgh, the under-bidders being William Pattoun, James Rue and Alexander Young[78]. Blackwood was also underbidder for the other two lots. The window glass, bottles and other glasses were bought by Alexander Young, former glasshouse clerk, for 1,200 merks; the dwelling-house

[73] NAS RH15/102/6/3/15.
[74] NLS DEP175 Box 41 bundle 84, 'Acts in ffavours of Sir Robert Gordon of Gordonstoune and others', 1682.
[75] NAS RH15/102/6/3/8.
[76] NLS DEP175 Box 48 bundle 115, 'Information for Sir Robert Gordon of Gordonstoun & others, 1686'.
[77] NAS RH102/15/8/2.
[78] NLS DEP175 Box 93 (no bundle number), 'The Conditions of offer & seall of the Glasshouses tools & matterialls window Glasses Bottells & uther glasses wt the lodging Adjacent to the Glass Houses'.

was sold to James Rue for 2,100 merks. Blackwood obviously bought just the fabric of the glasshouses, not the land on which they stood. Despite the fact that the sale took place under supervision, there was much subsequent procrastination over the legal niceties, which resulted in long delays in paying out the proceeds. Sir Robert Gordon was still trying to obtain the money due to him in 1686[79]. The name of Rue does not appear again in the extant papers, but a Robert Blackwood became a shareholder in the glassworks. It is possible that the succesful bidders may have been acting on behalf of the three remaining partners in the glassworks, who certainly owned the glasshouses and tools in 1687, as will be shown. Perhaps concern about this caused the delay in settlement.

In the Standsfield papers are also some small clues to the glassworks site itself. In 1682, George Wilson, mason, was paid £361 1s 6d Scots for 'rebuilding the peair about the glasshouse, repairing the lodging and furnishing thereto'[80]. Since the glasshouse had been built only four years earlier, it seem likely that the quay pre-dated it.

There is scant information about the immediate post-roup period; John Blackie, collector of North Leith, issued a receipt to Alexander Young, in July 1683, for £5 12s Scots in payment of the land stent for Sir James Stanfield's glasshouse, covering the preceding year to Whitsunday[81]. There is also a copy of an account dated at Edinburgh, 4 March 1684, sent by Sir Robert Gordon to Sir James Standsfield, asking him to tell his servant to set out the account on a sheet of paper, and write above it: 'account due by the masters of the Glashous at Leeth to workemen and others given in by Sir James Standsfield and Gordonstoun to my lord Salin and my lord Drumcairn and at the bottom subscribe your name that I may put my name to it and then gett the lords hands to it'[82]. This was clearly part of their attempt to extract the money held by the lords, and appears to show that the workmen, to whom money was owed, were still in Leith. It seems that Standsfield and Gordon remained active shareholders, and they may have recruited others to join them. James Scott Marshall, the Leith historian, states that the glasshouse closed in 1681 and that, at the roup, Standsfield and Gordon 'bought the business between them. Alexander Ainslie was engaged as manager, and with more men from Newcastle production started again' (Marshall JS 1986, 42), but no references are given.

A valuation of Sir James Standsfield's holding in the glassworks in July 1686 is extant and provides useful confirmation of the extent of the property and his capital losses at that time. He owned a third of 'the great land in North Leith where the tuo Glasse houses are built' and of 'the close theirof', which with his five-sixteenths of the two glasshouses, the materials, tools, the unsold glass and outstanding debts 'cost mee £5305 08[s] 6[d] Allernerly besides £1555 11[s] 2[d]

[79] NLS, DEP175 Box 48 bundle 115. 'Information for Sir Robert Gordon . . . anent expenses waired out upon the Glasswork in Leith'.

[80] NAS RH15/102/2. Accounts.

[81] NAS RH15/102/8/2.

[82] NAS RH15/102/6/3/16.

for my one third pt of the great house adjacent thereto. And all only here estimated £2400 00 00'[83] which seems to indicate that no glass was being made at that point.

One of the former partners, James St Clair of Roslin, died leaving a massive debt of £55,979 5s 9d Scots to two merchants in Rouen[84]. In a document signed at Windsor Castle on 20 September 1686, and registered with the Court in Edinburgh, his heir, also James St Clair of Roslin, sold to Alexander Hamilton, merchant in Edinburgh:

> all right title or interest which the said umquhil James Sinclair my father had or could pretend as one of the partiners of the Glasswork in Leith In and [?] the said Glassworke And to the Glasse houses window glasses botles wyne glasses tewells and materialls belonging thereto and to the good stone lodgeing or tenement of land adjacent thereto betwixt and the water with the yairds and pertinents of the same with all soumes of money advanced and furnished by the said umquhil James Sinclair upon the accompt of his copartners in the said Glasseworke with all right or pretence he had for the same or which acer[ue?] to me as air to him. . .

He also assigned to Alexander Hamilton all rights to rents and any other money due from the glasswork and pertinents. The implication of this document is that either James St Clair's heirs were still waiting for the money due to them from his share of the roup proceeds, or that he was still part-owner.

A NEW BEGINNING AND A NEW TYPE OF GLASS

THE GLASSHOUSE RESTARTED

The glasshouse tools and some materials remained on site at North Leith, but the fire appears to have been out for some four years after the auction of stock, perhaps through want of skilled manpower. That Sir James Standsfield remained anxious to restart production is clear from an optimistic letter he wrote to Robert Gordon of Gordonstoun in April 1687, which is of considerable interest[85]. He began by saying that, 'haveing mett with 2 Glassmakers who pretend to be bred Artists for makeing Christall and Flint glasses', he and Alexander Hamilton had sorted out a revised share allocation: Hamilton and Standsfield were each to have five-twelfths, and Gordon the remaining two. He planned to restart the glassworks and to use all the materials on site 'which hath long laid useless to us' for crystal glass, the only material lacking being two hundredweight of manganese. Robert Gordon appears to have been in London, because Sir James Standsfield then asked him to buy the manganese, either at 'the Dutch pothouse'

[83] NLS Ms 25709/78v An abreviate of Sir James Standsfields affaires Calculate to the Tearme of Whitsunday now last past in this current yeare 1686.

[84] NAS RD12/26/624.

[85] NLS DEP175 Box 70, f 1971, James Standsfield in Edinburgh to Robert Gordon, 7 April 1687.

at Lambeth 'as for accompt Mr. John Barrowmeng(?) de Costa' who would 'use you very kindly', or 'Mr. Knight's pothouse in the Armitage' and to send it on the first available ship to Leith, for delivery to George Farquhar. (John Farquhar had been clerk to the glassworks in 1678). He promised to 'have them at worke within 24 hours after its arriveall', despite the tools being damaged by rust, and the rain 'comeing down thro' the plaister of most of the Romes.'

THE INTRODUCTION OF LEAD GLASS INTO SCOTLAND

The two men referred to by Standsfield were Philip Taylor (Tylor) and John Long(e), glassmakers from London who had been working in Dublin. They brought with them a very valuable commodity – the secret of making lead crystal – and it is to their arrival that its manufacture in Scotland can first be dated. Lead glass was made in Dublin at two glasshouses, one under the patent granted to Sir Philip Lloyd on 8 July 1675, and the second at 'Lazy Hill' which is known to have been in operation by 1680 (Francis 2000, 50). Recent research by Peter Francis has shown that much of the experimentation leading to the perfection of lead glass had taken place at Nijmegen in Holland prior to the granting of the English patent to George Ravenscroft in 1674. The three men chiefly responsible for its development were John Odacio Formica, an Italian, who eventually moved to Ireland; John Baptista da Costa, who went to England and established a glasshouse there by 1673; and Jean Guillaume Reinier, who later worked in Sweden. Da Costa shared his knowledge with Ravenscroft, whose name is generally associated with the invention of lead glass, and he was, as the Standsfield letter shows, well known to Taylor and Long.

Standsfield described the requirements of the glassmakers, which include, significantly, white lead:

> For makeing flint glasse and provision for 20 weeks fire and delivering wekely ?at ?least 1200 of [?] wyne and beere glasses of such sorts and shapes as desired and as good as any in England are viz: weekely 200 wt. of Salt Peter [potassium nitrate, providing potash (Searle 1930 3, 87)] sold in Georges Yard on Tower Hill, 200 [?lbs] weight of white leade which is ordinarily called the dust of white leade for the use of a Glasshouse, which is sold by Doctor Savage neare to hockley in the hole at the bottome of Clerkenwell groove London. The particulars desired for makeing milk white glass is 20[?lb] wt. of Pulverine [ashes of barilla], 20 lb wt of Antimony to be had at any Drugstore in Cheapeside about 4d or 5d pr lb. it is to bee of a good silver collour, the buyer must breake a piece of it to try it be not hollow within[86].

It is known that opaque white glass, often called 'milk glass', was made in England from the late 17th century (Newman 1977, 221).

[86] Newman (1977, 25) says antimony produces yellow glass if used with lead. David Whitehouse, director Corning Museum of Glass, says that the ingredients listed 'suggest that [the glass] was yellow or orange' (pers comm Feb 1999).

James Standsfield continued his letter with a list of further ingredients 'for makeing toyes in shappie glass', which required half a hundredweight of 'Litteridge De Lore' (litharge, or lead monoxide was used to produce superior glass, and to prevent crisselling) and a quarter of a hundredweight each of white arsenic, yellow arsenic and flower of brimstone (sulphur)[87]. The glassmakers, described as 'sharp men', who knew their business well, could make plate glass for mirrors and coaches, but not in large sizes. They had with them two servants and two 'firemen'. Robert Gordon was asked to find out the prices of flint glasses in England, and how they were sold. The letter ends with the hope that 'wee may retrieve our former losses, if the men be as great artists as they pretend and prove honnest men'.

A CONTRACT WITH THE GLASSMAKERS FROM IRELAND

A contract was duly signed at Edinburgh, two weeks later, on 20 April 1687, between Sir James Standsfield for himself and Robert Gordon; Alexander Hamilton, as assignee of James St Clair, eldest son of the deceased James St Clair of Roslin; and the two London glassmakers, Philip Taylor and John Long, 'latelie of Dublin in Ireland'[88]. The range of wares agreed on was rather less ambitious than that implied by Sir James Standsfield's earlier letter, but still included lead (flint) glass. The partners agreed to pay 'the rates and prycees following viz:'

> ffor every hundreth of wyne and beere glasses and crewets accompting ane hundreth and ten for the hundreth[89] the soume of three shillings and six pence sterling per hundred the same being made of crystall or flint metall And for ilk ane hundreth of ordnair wyne and beer glasses to be made of the cullet or refuse of the cristall or flint two shillings sterling per hundred.

Bottles and 'other pieces of work' of crystal were to be paid 'proportionallie to the weight and value of the metall they shall be made of' at the same rate as the best wine and beer glasses. The same system was also to apply to bottles and other items made of the cullet. They were to be paid 1s 3d (sterling) for 100 mortars and 10d for 100 viols. They were also to produce 'all sorts of Apothecarie ware that is sold', at prices ranging from 6s (sterling) a gross [12 doz] to £10 (sterling) for 100, 'and so proportionallie'. Ordinary green bottles were to be made 21 to the dozen, but the price was left blank.

Philip Taylor and John Long were to be paid three-quarters of the money they had earned during the previous week each Saturday night, the remaining quarter to be paid at the end of each three months. The contract was for five years, with

[87] Arsenic was used as a decolouriser, but also to make white opaque glass (newman 1977, 26).

[88] NLS DEP175 Box 29, bundle 43. Their signatures are Tyler and Longe, although their names are given as Taylor and Long in the contract itself. The name Longe is of some significance in Irish glass history: in 1589 a George Longe, who was concerned with several English glasshouses, bought the patent to manufacture glass in Ireland, and established a glasshouse at Curryglas, Co Cork (Wills 1968, sig 8, 5).

[89] See note 24 above on the 'glassmakers's dozen', when the workmen were paid for a certain number of glasses, but actually made an agreed number more.

the option that the glassmakers could leave after three, provided they gave four months notice in writing. The owners agreed to keep the glassmakers in employment 'in the whyte glassworkhouse in North Leith the number of twenty working weeks yearly and ilk year'. If they were unable to keep the fire in for the full 20 weeks, they were to pay the men the same wages as they had earned while working. Sir James Standsfield and Alexander Hamilton could end the agreement after the first 20 weeks, provided they gave six weeks notice.

The glassmakers were to make at least 1,200 wine or beer glasses a week, or whatever else they were told, all to be 'as good and sufficient merchantable ware and alse good and fashionable in all respects as those who usually come down from London to this kingdom of Scotland.' They also agreed not to do anything which might harm the company; not to remove any materials or instruments; to deliver all the glass they made to the partners and not to sell any themselves; to take care of the pots and tools, and not to waste the metal. Any glasses which were not up to standard were to be remelted and remade for no payment.

The operation of the glasshouse for less than half the year was clearly considered sufficient, both for the needs of the market, and also in order to make a profit. On this occasion, however, an interesting clause was inserted into the agreement, squeezed between two of the more usual paragraphs. Taylor and Long agreed to work

> night and day so long as the fire burns each of them six houres by turnes. And during the space the said John Long is not workeing he obleiss him to make handles for swords and knives[90] and other com[?oddities] Als also all sorts of whyte and schappie work and delyver the same to his saids masters who are to pay him for his paynes in makeing thereof what they think fitt.

The precise meaning of this clause is unclear. It is hard to see how Long could work during the six hours between shifts, but if he meant that he was to make the handles and other items during the 32 weeks of the year when the fire was out, he would have had to do so by lamp-working. It is also interesting to speculate on the nature of the objects he planned to make, since the term 'schappie' work appears to be unknown[91]. There is no doubt, however, that the two men brought to

90 There is a reference to glass-handled knives for presents among the East India Company's exports to China in 1686 (Godden 1986, 146). Thanks to Peter Francis for drawing this article to my attention. Excavations near St Denis, Paris, in 1981, uncovered an 'opaque sky-blue glass knife-handle' with elaborately moulded surface decoration, dated to before 1270 (Tait 1991, 151). Thanks to David Whitehouse for this reference.

91 Efforts to discover the meaning of 'schappie' work have so far failed. The staff of the Corning Museum of Glass suggest that it may derive from a French word 'choppe' meaning tankard or beer mug; the German counterpart 'Schoppen' also means tankard. Other suggestions are that it might refer to shaped glass. Colin and Sue Brain suggest that it might refer to 'calcidonies' glass, giving the appearance of chalcedony, a banded translucent mineral often used for 'toys'. This appears the most likely explanation in the context of the letter. (I wonder whether the term was a corruption of the name of the well-known German glass decorator Johann Schaper (1621–70). Perhaps a certain type of work or material was known colloquially among 17th-century glassmakers as 'schappie glass'?)

Scotland skills and knowledge of great value. Sadly, the range of products of which they were capable were not made for long, and Taylor and Long's names do not appear again in the remaining records.

STRATEGIES FOR SURVIVAL

APPLICATION FOR PROTECTION AGAINST IMPORTS

At the end of the 17th century the ability to produce good quality glass as fashionable as that imported from London, did not guarantee commercial success. In order to improve the chance of survival of this, their third attempt to establish a glassworks at North Leith, the partners again required protection from imported glass. A draft copy of a 'Petition for Sir James Standsfield & Alexander Hamilton anent the glasse house manufactorie in North Leith', dated 1687, and addressed to the Lord High Chancellor of Scotland, also remains in the Gordonstoun papers[92]. It states that the earlier partnership had spent 'upwards of 20000 Scots' to build two glasshouses in North Leith, the one 'for the whyte work for makeing all sorts and species of glasses', the other for green glass 'viz: window glass which was never attempted in Scotland before'. The petition then continued in *exactly* the same words as those used by Pape in 1663, accusing merchants of deliberately ruining them by not buying their products, and by importing glass from abroad. Their future plans were then described: they wanted to attempt to make glass for a fourth time, employing the men described above, to make 'all sorts and species in Christall, flint as also for apothecaries and bottles (window glasses only excepted)'. The petitioners went on to request prohibition of all glass imports except for window glass; powers to appoint their own waiters and to confiscate any glass imported after June 1687; and that the glassworks should be given the status of manufactory for 19 years, from 1 June 1687. The result is not known.

THE MAINSTAY: BOTTLES

It appears that, whatever else they produced, bottles were still a useful way of making money. On 26 August 1687 Alexander Ainslie wrote from Leith to Sir James Standsfield about various business matters and passed on the information that Alexander Hamilton, who would be away for several days, had requested that Standsfield would visit the glassworks in his absence[93]. He went on to say that they were about to make bottles again for five or six weeks, using 'some old broken stuff', and annealing them in 'ane arch in the great furnace'. They planned to make 1200 bottles a week, the only expenses being £2 (sterling) for coal and £3 16s 0d for wages, the broken glass costing very little. The estimated profit, if the bottles were sold at 3s 4d a dozen, would be £11 0s 1⅔d (sterling) a week.

92 NLS DEP175 Box 41 bundle 115.

93 NAS RH15/102/6/3/17.

However, Ainslie suggested a sale price of 3s a dozen, pointing out that that was the cost of English bottles in Edinburgh, and expressing confidence that he could sell them as fast as they were made at the lower price. The workmen were 'formerly' paid 12d for each 21 bottles, but 'Mr. Hamilton desires also that your Honr. would consider the workemens price for botles it being blank in the contract.' The contract described above was, indeed, blank at that point. Ainslie's letter confirms, incidentally, that he was closely involved with the running of the glassworks and at that time was probably managing it as part of his wider duties.

THE MURDER OF SIR JAMES STANDSFIELD

Three months after that letter, Sir James Standsfield met an untimely death, details of which are given in a summary of the subsequent trial of his elder son, Philip (Roughead 1995, 63-84). On 28 November 1687, Sir James' body was found in the River Tyne (East Lothian) and was secretly buried by Philip, as that of a suicide. However, the Lord Advocate ordered an exhumation and autopsy, which showed that Sir James had been strangled, not drowned. When Philip was asked to help lift his father back into the coffin, fresh blood appeared on the linen swathing, a sign traditionally regarded as proof of guilt in a murder. His subsequent trial for parricide and treason in the High Court on 23 January 1688 was the last in Scotland to cite the ancient ordeal of *bahr-recht*. Roughead (1995, 63) begins his account of the murder with a quotation from King James VI's *Demonologie*: 'In a secret Murther, if the dead carkasse be at any time thereafter handled by the Murtherer, it will gush out of blood; as if the blood were crying to Heaven for revenge of the Murther.' There was also, however, a considerable body of more relevant evidence against Philip, whom the indictment called a 'profligate and debauched person', and who, despite his father's frequent financial help, had twice tried to shoot him. After much abuse, Sir James had, shortly before his death, taken steps to disinherit Philip in favour of his brother John. Philip was found guilty and on 24 February 1688, he was hung, his tongue was cut out and burned, while his right hand was cut off and displayed at Haddington. The Newmills property was eventually sold to 'the notorious Colonel Francis Charteris', later chief creditor to William Morison of Prestongrange (*Edin Burgs* 1, 8).

Since Sir James Standsfield appears to have been the shareholder most directly involved with management of the glassworks, his death must have caused considerable problems there. There are no further mentions of Taylor and Long, it is likely that they moved away to work elsewhere after Standsfield's violent death and the apparent collapse of the co-partnership. The glassworks did not close, however, as will be shown in the following chapter.

7

MANUFACTURE AT LEITH AFTER 1688

After the false starts described in the previous chapter, firstly by Robert Pape at the Citadel, and then at North Leith under the management of Sir James Standsfield, glassmaking at Leith entered a more successful phase, despite the disruption which must have been caused by Standsfield's murder. No information about events at the glassworks immediately after his death has been found, although lengthy correspondence concerning his surviving son and the settlement of his estate remains in the National Library of Scotland[1]. Whether the two skilled English glassmakers – who had arrived so fortuitously from Dublin and been greeted with such enthusiasm by Standsfield – remained for even a short time is not known, but seems unlikely. Clearly someone else had to take over management of the concern – and the man who shouldered that responsibility was Standsfield's reliable and trusted aide, Alexander Ainslie.

A NEW PARTNERSHIP

Some ten months after the death of Sir James Standsfield and the consequent demise of the co-partnership, a completely new company was formed to run the Leith glassworks. The new partnership was formed on 9 August 1688, and comprised George, Viscount Tarbat; John Watson, merchant; Andrew Pourie (Powrie) druggist; Alexander Ainslie, merchant; and John Dehew (Dehen, Dehine), glassmaker[2]. Their intention was to revert to the production of only green glass bottles and vials, a cheaper product than lead glass, for which there was a much more secure market, and one for which the level of skill possessed by glassmakers like Taylor and Long was not required. The capital stock was £200 (sterling), of which John Watson paid £75, Andrew Pourie £50, and the others £25 each[3]. The co-partnership agreement stipulated that there should be two shareholders meetings a year, in October and April, with a £1 (sterling) fine for absence without good reason. It was also agreed that further capital might be required, in which case the partners were obliged to pay proportionally, within fourteen days of being informed, 'the soume for each tymes advance not exceeding £48 sterling'.

1 NLS Ms 25709-42 Newhailes papers.
2 NAS RD12.34.9. Deposition by John Dehew glassmaker to his wife Elizabeth Barton, 3 Jan 1694.
3 NAS GD305.1.164-46. 'Memorandum for the Viscount of Tarbet of the Contents of the Tacks and Contracts anent the Glasshouse in Leith'.

THE CONTRACT WITH JOHN DEHEW

On the same day, a contract was signed between the partners and one of their number, John Dehew the glassmaker, who agreed to make 'all sorts of Green glass botles . . . as also Chimisterie Ware and Vialls to the best of his skeill'. John Dehew was almost certainly a member of the de Houx family, one of the four great glass-making dynasties of Lorraine[4]. Dehew also contracted to provide 'such workemen as he shall thinke convenient . . . the finisher, blowers [?] taker in and gatherer being upon his owne Charges'. The unskilled staff were to be paid by the company. This is the only contract to have come to light, which specifically divides responsibility for the workforce in this way. Dehew was to be given a dwelling-house and the cost of a fire in one room, and was to be paid for the glass he made every Saturday night. The list of prices due to him is interesting in that it shows the difference between 'marked', or sealed, bottles and plain ones, but it is somewhat confusing. It appears to read:

> for each dozen of half muskin botles plain 12d? to the doz.
> 1½ ster. for muskines plain
> 2½ muskins marked
> chopins plain 5d ditto marked 7d
> pynt botles plain 10d
> for ditto marked 12d
> [obscured] soe to double the prices as the size is doubled
> Item all retorts and receivers at the rate of plaine botles conforme to the size therof
> Item for each ?110 [?] of vialls what heirafter shall be agreid upon. As also for half muskine Rounds Chopines etc.

A NEW LEASE

According to E Dunbar Dunbar, the partners took a lease of 'the new Glasse-house in North Leith', on 23 August, 1688[5]. The Cromartie archives put the date as the 22 August, and say that the agreement was between the co-partners and Sir Robert Gordon of Gordonstoun, Alexander Hamilton, and the factor appointed by the Lords of Session to collect the rents of Sir James Standsfield's estate. The original tack appears to have been set on 2 February 1688, for the 'houses and pertinents and worke tools' for three years following the partners' entry at Martinmas that year. The site owners agreed to keep the glasshouse, dwelling house and other buildings watertight, for which they were to receive £30 (sterling) a year rent, the first payment being on Whitsunday 1689. The rent was to be paid retrospectively every six months. At the end of the three years, the co-partnership had the option to renew the tack for seven years, on the same terms, or to terminate the agreement, giving 40 days notice of their intention[6].

4 *ibid.* Isaac and John are recurrent family names. Glassmakers bearing numerous variations of the name (eg Dehine) are recorded in England from the late 16th century onwards, some of them working in the Manchester area (Vose 1994, 60-3).

5 Dunbar 1866, 128, quoting an unspecified family source. This is confirmed in DEP175 Box 30 bundle 45.

6 NAS GD305/1/164/46.

COSTING OF BOTTLE PRODUCTION

Dunbar also published 'A Noate how the profite appears weekly, upon the makeing of Botles,' in connection with the new partnership. The author assumed a production rate of 2,880 bottles a week, using four pots in the furnace, 'each pott to containe 120 chapine botles, which makes 480 to ane furnay, and to have 6 furnayes per weeke'. The selling price was to be 3d each. The detailed costing (in sterling) is of interest:

For the metle of 2880 peice of chapine botles	£03 00 00
To Coalls	03 00 00
To Workmen for makeing 2880 peice of botles, at a half penny per peice,	06 00 00
To 2 Sizars, [?teasers] each at five shillings,	00 10 00
To Pounders of metle,	00 10 00
To Iron and mending of worke-toulls,	00 10 00
To ane man to worke about the house for carring of botles, and pounding of clay, &c.,	00 04 00
To ane to make potts,	00 10 00
To ane Founder,	00 10 00
To ane Clarke,	00 10 00
To House-rent,	00 10 00
To Pott-drink,	00 01 00
To Candle, and for Stro for pakeing glass,	00 01 00
Charges,	16 01 00
The weekly profite is,	19 19 00
	£36 00 00

This costing, like others detailed in this monograph, seems very optimistic. No allowance is made for play-wages during the weeks when the fire had to be extinguished for mending the furnaces, with the consequent loss of production. Although repairs to tools were included in the estimate, the much greater cost of furnace repairs was not, nor was any allowance made for breakages.

Alexander Ainslie in his letter of August 1687, discussed in the last chapter, mentioned the former payment to the workmen of 12d for 21 bottles, so it appears that the rate was to be cut, as Alexander Hamilton had suggested, and by the considerable amount of 1½d (sterling) for 21 bottles. If the intention was to have four pots, they would presumably have been worked by two teams of blower and finisher, the payment being shared between them. The pot-maker, the founder who was responsible for mixing the metal, and the glass-house clerk were all to receive the same rate of pay.

ALEXANDER AINSLIE AND HIS PARTNERS

Alexander Ainslie (1661-1720), who was subsequently associated with the glass-works for many years, was, of course, already well acquainted with its operation.

Dunbar 1866, 128.

32
Eminent politician and investor in industry, George Mackenzie, Viscount Tarbat. After Medina, post-1703. (*Reproduced by permission of the Witt Library, Courtauld Institute, London.*)

He had been apprenticed to Sir James Standsfield in 1683, and had then worked as his factor. Although only 26 at the time of Standsfield's death, he was obviously a capable man, whose 'care and diligence' persuaded a London merchant to appoint him his factor in 1688[8]. A general discharge by Ainslie of all the money he had spent on behalf of Sir James Standsfield, signed in 1692, confirms that he had been a significant employee[9]. He married in 1693 (*Edin. Marriages*, 9), his wife, Elizabeth Gray, being the daughter of Sir William Gray of Pittendrum (Ainslie 1994, 30). In 1694 he became burgess and guild brother of Edinburgh by right of his apprenticeship to Standsfield (*Edin Burgs*, 1, 24).

8 NAS RD2/69/784.

9 NAS RH15/102/8/2.

George Mackenzie, Viscount Tarbat, later the first Earl of Cromartie (1632-1714), was described by Monica Clough (1982, 1) as 'one of Scotland's leading magnates and politicians; under James II and VII, William and Mary, and Anne, he energetically promoted a number of infant industries through enabling legislation, and by private investment' (illus 32). After a somewhat turbulent start to his career, he eventually became a Privy Councillor, Lord of Session and Lord Register Clerk of Scotland under James II, and was considered to be an astute, if 'slippery' politician (Clough 1990, 5). His industrial interests included a paperworks and a linen manufactory, as well as the glassworks. The Cromartie papers contain several items relating to the glassworks and his involvement in it, used by Clough as the basis of her article. In fact, George Mackenzie was acquainted with the glasshouse some ten years before becoming a co-partner: a diary entry for 7 January 1679 records that, at Leith, 'I saw at the Glass work antimony to whyte glass,' and he also mentions barilla being used there[10].

Andrew Pourie, druggist (d before 1702), was made a burgess and guild brother of Edinburgh in 1684, by right of his wife Elizabeth, daughter of Robert Smyth of Southfield (*Edin Burgs* 1, 404)[11]. He was co-partner in a tobacco company with James Balfour, his brother-in-law, and later owner of the glassworks[12]. John Watson, merchant, was also involved with other manufactories, as co-partner in a large gunpowder company[13] and a partner of Sir James Standsfield in a brewery in Leith[14].

John Dehew the younger, came from Newcastle and his brother Isaac was also a glassmaker in Leith[15]. He was married to Elizabeth Barton, by whom he had six children, three of whom were registered in North Leith, in 1690, 1691 and 1693. He died before 7 October 1700[16].

THE PROGRESS OF THE GLASSWORKS

APPLICATION FOR THE STATUS OF MANUFACTORY

On 3 October 1689, Watson, Pourie, Dehew and Ainslie[17], applied to the Privy Council of Scotland for grant of the status of a manufactory, and the prohibition

10 NAS GD305/1/164/28. This entry is not mentioned by Clough. Antimony could be added to a non-lead glass batch to act as an opacifier in white glass (Newman 1977, 25). It would be both surprising and significant if white glass was being made at Leith in 1679. Antimony could also, however, be used as a decolourant and manuscript recipes from the end of the 18th-century include small quantities among the ingredients for both flint and green glass (Wellcome Institute Ms 2526, Glass-making, list of components c1785, no author).

11 His wife's mother was Anna Stansfield, but no connection with Sir James Standsfield has been traced.

12 NAS RD4/90/86.

13 NAS GD421/5/372.

14 NAS RD4/57/264.

15 North Leith OPR.

16 It is just possible that he was a descendant of John Dines, glazier, the opponent to Sir Robert Mansell's monopoly, discussed in Chapter 4.

17 Dehew and Ainslie are, curiously, described as 'carpenters'.

of the importation of green glass bottles and vials (*RPC*, 3rd Ser., 14, 382). The basis of their petition was a familiar one: they had produced

> with so great perfectione and success as to the making of green glass botles, chimistrie and apothecarie glasses, that they have alreadie made upwards of tuo thousand duzone of green glass botles and the samen both alse good and at als low rates as any that can be had from London or Newcastle . . . and they are in a position not only to serve the country with these but to make a greater quantitie in the space of four moneths then wes ever vended in the natione during the space of tuelve moneths.

The petitioners went on to claim that the masters of the glassworks in Newcastle, having 'formerly ruined the Glass Work at Leith by seducing the principal servants[18] . . . so now presentlie . . . have attempted to brybe and seduce one of our principall servants by offering him a considerable soume to desert the work', their remedy being the ban on imports and the grant of manufactory status. Presumably such an appeal was likely to meet with a sympathetic response, as indeed it did, but it reflected the usual problem – a Scottish market too small to absorb production, and the difficulty of recruiting and keeping skilled workmen. In fact, of course, the Scottish glassmakers sought out *their* skilled workforce from other glassworks, and the problem of losing workers to rival glasshouses was of equal concern to the Newcastle masters (the Dehews being known to have come from there in the first place). The petition stated that the co-partners had taken a ten-year tack of the glasshouse and had been making glass for the previous three months.

An Act was duly passed on 3 October 1689, the terms of which were published in Edinburgh, as a 'Proclamation in favours of the Glass-Manufactory in Leith', on 8 October 1689[19]. The glassworks was declared to be a manufactory, and the company was granted all the privileges inherent in that status, provided they sold the chopin bottles at half-a-crown a dozen, sixpence a dozen less than the sale price on which the initial costings were based in 1687. Imports of bottles, chemistry and apothecary glasses were banned, unless they had been ordered before 3 October and were delivered before 1 December.

A further petition was presented to the Privy Council on 28 June 1690, which set out some of the difficulties said to have been experienced by the new partnership (*RPC*, 3rd Ser, 15, 297). It stated that, after twelve months trial, they found 'their losses excessive in respect of sea hazard'. They had to import all their materials from London[20], which was very expensive, particularly because of the effect of the war with France, and they made a loss if they had to sell chopin bottles at 2s 6d a dozen. They therefore asked permission to raise the price to the same level as the Newcastle bottles – 3s (sterling) a dozen. They also alleged that 'many

18 No evidence has come to light to amplify this statement, and it is not clear to which of the previous enterprises he referred.

19 NAS GD305/1/167/87.

20 This implies that they were unable to use local sand and kelp, perhaps because it did not produce glass of sufficiently good quality to compete with Newcastle.

circumvent the act by bringing home bottles purposely filled with some liquor or other that they may pass'. They were given permission to raise the price during the war, and a ban was imposed on bottles containing anything other than wine or drugs.

THE POOR STATE OF THE GLASSHOUSE

The glasshouse itself – and other buildings – appear to have been in poor condition. A balance sheet, still among Sir Robert Gordon's papers, includes an entry for October 1689 for payment to wright Francis Thomson for 'viewing the Glasshouse it seeming to fall'[21]. Although some work was done in 1689, Ainslie and his partners had to resort to the courts to force the owners to repair the buildings[22]. Entries for deals, nails, lime and tiles show that some building work was undertaken in 1689 and 1690, including expenditure on 3 chists and 48 feet of window glass. In May 1691, Francis Thomson visited twice about an estimate for a new roof for the glasshouse, following which major repairs to the buildings costing £420 Scots were carried out. A contract between Francis Thomson, wright of North Leith, and the three owners, Sir Robert Gordon, Alexander Hamilton and Sir James Standsfield's executors, gives some idea of the size of the 'great lodging'[23]. The tenement building was to be re-roofed with timber and tiles, the chimneys at the east and west ends of the building were to be raised, and the wooden winding stair and door at the north corner of the house repaired. Two sheds[24] were to be built 'for the tuo saller doors heads next the key', and the shed over the door to the back cellar was to be mended. Plaster on the upper stories was to be repaired and Thomson was to 'pinn and harle the tuo midle rownds [?turrets] and to help the Easter Timber Rownd soe farr as is needfull'. His bill was paid on 2 December 1691.

Just over a year later, the three owners went on to make repairs and alterations to the quay. George Rankine, mason in Leith, agreed to

> take down the easter and wester ends of that part of the north peir of Leith belonging to the glasswoork and opposit thereunto To the foundation from the front of the said woork and inward and againe to build up the same in good sufficient [?] woorke as it was formerly and to put in wall stones where formerly they were and to recounter or turn the Cunires [?corners] seven foots towards the front of each end and to lavell the wholl front of the said peir turning the same six or seven foot inward . . .[25].

21 NLS Dep175 Box 29 bundle 43, 'Accompt of Charge & Discharge Betwixt The Heritors of the Glass-hous in Leith and the Copartners in Compa[?] of the Glaswerk there 21 Feb. 1689'.

22 NLS DEP175 Box 22 bundle 17, 'Instrument Ainslie & others agst Hamiltons, 28 Oct 1690'.

23 NLS DEP175 Box 30 bundle 44, 'Obligation be Francis Thomsone to the heritors of the Glasshouses in North Leith 1691'.

24 'shadd' – shade = shed, a roofed structure used as a shelter or store (Robinson 1985, 603).

25 NLS DEP175 Box 30 bundle 44, 'Agreement betwixt Sir Robert Gordon and George Rankine', 7 March 1692.

Rankine agreed to complete the project by Whitsunday, at a charge of £150 Scots.

OWNERSHIP OF THE GLASSHOUSE SITE

SALE OF THE SITE OF THE GLASSHOUSE: SIR ROBERT GORDON OF GORDONSTOUN

On 28 April 1693, Alexander Hamilton, who had bought James St Clair of Roslin's share in the glassworks and his one-third share of the site and permanent buildings in 1686, sold the site to Sir Robert Gordon of Gordonstoun for £1,000 Scots[26]. Gordon already owned one-third and on 29 December 1693, he became the sole owner, when he paid another £1,000 Scots to Hew Dalrymple for the remaining third. Dalrymple had obtained a decreet of adjudication on 2 January 1692 against John Standsfield, 'only lawful son' of the deceased Sir James Standsfield for the one-third of the property which had belonged to him. So by the end of 1693, Sir Robert Gordon of Gordonstoun owned the whole site in North Leith 'now containing ane tenement of land bigged theron with ane yeard at the back of the north part of the samen in which is now bigged two timber houses for the glasse works . . .'[27]. The glassworks company continued to lease the glasshouse, tenement and glass tools from Gordon for £30 (sterling) a year[28].

At the end of 1697 the condition of the glasshouses themselves was again causing concern. Alexander Ainslie, having paid the half-yearly rent, wrote an understandably anxious letter to Sir Robert Gordon, requesting urgent repairs to the wester glasshouse, which he described as being in a 'very dangerous conditione some of the roof being failled soe that their was no high weind but wee all thought that it should fall which would be dangerous the fire being in'[29]. He had employed a wright to make the most urgent repairs, and had a slater pointing 'the house', which was essential 'for if it be not keeped water tight it would soon decay being all wood'. It seems reasonable to assume that Ainslie was, once more, using both the glass furnaces on the site. A wooden hovel surrounding the furnace was a common feature of 17th-century glasshouses, and one with obvious hazards.

THE SITE BOUGHT BY JAMES BALFOUR AND ALEXANDER AINSLIE

Five and a half years after becoming sole owner, on 10 June 1699, Sir Robert Gordon of Gordonstoun sold the property (which was, of course, separate from the glassmaking business) to James Balfour, merchant in Edinburgh, and Alexander Ainslie, for 4,000 merks Scots. Balfour bought five-eighths, Ainslie three-eighths, of 'the dwelling houses high and laigh under and above with the

[26] NAS RD3/44/646. 'Disposition Alexander Hamilton to Sir Robert Gordon, 28 April 1693'.

[27] NAS RD13/44/645. 'Disposition by Mr. Hew Dalrymple to Sir Robert Gordon, 29 Dec. 1693'.

[28] NLS Dep 175 Box 30, bundle 45. 'Copie of my Glasshous discharge', 17 Oct 1696.

[29] NLS. Dep 175 Box 30, bundle 45. From Leith, 6 Dec 1697.

office houses and pertinents thereof with the yeard and new build glasshouses thereon . . .[30] and also that pairt and portion of the pyre and shoar belonging thereto.' They agreed to hold the property 'in free blench ferme' for one penny Scots a year. They were granted the right to 'the haill instruments tewells and other materialls belonging to the said glasswork' except for two iron kettles, which were for Gordon's own use. If they should decide to quit the site, Balfour and Ainslie agreed to pay 1,000 merks to Gordon[31].

The glassworks appears to have operated continuously throughout the period from 1688. Evidence for production includes receipts for glass from Leith, addressed to Alexander Ainslie in 1694, in the Breadalbane papers and others among the Tarbat household receipts[32]. A hearth tax payment of £10 was made by Alexander Ainslie 'clerk to the glass manufactory' in 1695, for his family and the four servants in his household, at least one of whom, Robert Glasgow, was a glassmaker[33]. A partnership agreement describes Alexander Ainslie as 'clerk to the glasswork at Leith' in 1696[34], and payment of a debt of £10 14s 8d (sterling) 'for good and sufficient bottles' was agreed by Ainslie in 1699[35]. John Dehew's price list had included 'marked' bottles, and there is a letter in the Cromartie papers ordering some: one of Lord Tarbat's secretaries wrote to Ainslie in 1695, asking him for twenty dozen chopin and 10 dozen muchkin bottles, and that they should 'be marked gif it is all [possible?]' (Clough 1982, 3).

CHANGES IN OWNERSHIP

There were changes in the ownership of the business, however, during this period. On 8 June 1699, a further one-eighth share in the glassworks was transferred from Sir Robert Gordon to James Balfour[36]. On 21 October 1699 James Balfour assigned to his son, also James, all his various business interests, including:

> all and haill that my fyve 1st eight parts of the propertie of the glaseworke at Leith . . . together with thrie eight parts and thrie sevens of ane eight part of the haill stock debts and all made glasse and others belonging to the sd manufactorie and copartnershipe togeither with all contracts of copartnershipe and haill materialls and instruments belonging thereto . . .

He also assigned the yard next to the glassworks, which he had 'latlie purchased', together with the oak timber in it[37].

[30] The phrase 'new built glasshouses' tends to be repeated in the legal documents, so it is not clear whether they were the new buildings of 1688, referred to by ED Dunbar, or more recent ones.

[31] NAS RD12/39/839.

[32] NAS GD112/15/59/24; /62/5; GD305/1/162/64.

[33] NAS E70/4/10. Hearth Tax for North Leith. It is curious that glassmaking is not listed in the occupations of Edinburgh in the 1690s (Dingwall 1994).

[34] NAS RD14/39/863. Co-partnership agreement in cork-cutting business.

[35] NAS RD4/96/248.

[36] NAS RD2/85/816. Declaration [?] Gordon . . . to Balfour, 8 June 1699.

[37] NAS SC39/76/9. Disposition Balfour to Balfour, 21 Oct 1699.

THE BALFOUR FAMILY

It would be appropriate, at this point, to record something of the Balfours, who were of considerable importance in the mercantile circles of Scotland at the end of the 17th century. James Balfour senior is best known as one of the two men described by George Pratt Insh (1932, 35) as being 'the founders of the Company of Scotland'. Insh had earlier published papers, in the possession of the Balfour family, showing the 'depursements be Mr. Robert Blackwood and Ja. Balfour for promoving ane Act of parlement for careing one a tread to Africa and the Indes', between 1693 and 1695 (Insh 1928, 253). Balfour and Blackwood were very active in promoting the company, each of them subscribing £500 (sterling) in 1695 and are named by Insh as having lent considerable sums to the company while the expedition equipment was being prepared in 1698.

James Balfour is described as a man 'who knew intimately the small scale on which struggling Scottish industries were being conducted' (Insh 1932, 49). He had reason to be conversant with Scottish industry, since he was closely involved with several, besides the glassworks. Among the interests transferred to his son James in 1699 were a half share of a 'manufactorie and soap work at Leith', which he owned with Adolphus Durham, merchant there. He also had share in an alum works and an interest in processing tobacco; he owned a shipyard, and appears to have lent money, to judge by the number of debtors listed[38]. James Balfour had been made burgess and guild brother of Edinburgh in 1685, by right of his wife Helen, daughter of Robert Smyth of Southfield, and sister to Elizabeth, wife of Andrew Pourie, druggist, and Balfour's partner in the glassworks and the tobacco business (*Edin Burgs*, 1, 44). Balfour senior died in 1702 or 1703, in his mid-fifties (Balfour-Melville 1907, 60). James Balfour younger (1681-1737) continued to develop the family business interests. By 1706 he was treasurer of the Gun Powder Company, which had been established at Canonmills in 1696, having four shares, while 18 of the 21 directors owned only one each[39], and he became a director of the Bank of Scotland in 1726[40]. He bought the estate of Pilrig in 1718, using compensation for the losses sustained by shareholders in the Darien disaster, paid by the government. At least two of Balfour younger's thirteen surviving children married people with connections in glass manufacturing: in 1732, Helen married Gavin Hamilton, publisher and bookseller, one of the co-partners in the abortive attempt to set up a glassworks at Wemyss; in 1747, Margaret married James Russell, chirurgeon [surgeon] apothecary, son of Francis Russell apothecary, a partner in the Morison's Haven glassworks.

SHARE OWNERSHIP

It is interesting to examine briefly the range of companies in which these late 17th-century merchants invested, for they were often complementary to each

[38] NAS SC39/76/9. See n 35.
[39] NAS GD421/5/372.
[40] BOS BS1/1/1. List of Adventurers.

other. Alexander Ainslie, for example, was half partner in a cork-cutting business, which he set up with Robert Swinton, corkcutter, in October 1696. He put up capital of £100 (sterling) to purchase cork, and agreed not to buy any from elsewhere during the six years of their agreement. Robert Swinton agreed only to work for, and sell to, Ainslie, and to travel anywhere in the country, on Ainslie's orders, both to buy the raw material and to sell the cut corks. He was to make 'good and sufficient corks for bottles' for no more than two shillings Scots per gross[41]. The logic of Ainslie's investment is obvious, and is exemplified by a bill of lading in the Cromartie papers. The master of the *Elizabeth of Leith* received, in October 1698, 'Four hampers containing one gross muskine, two gross chapine bottles, six pynt botles, four chirnes of glass and six gr. of corks . . . for the use of the Viscount of Tarbet'[42].

James Balfour's 'portfolio' of shares was also more integrated than may at first appear. Potash was required in the manufacture of soap and alum, as well as glass, while soaper's ashes, the residue from soap production, was used in making bottle glass. Another, earlier, example of complementary investments is the shipping to Lisbon by Sir James Standsfield in 1674 of among other things, five chests of glasses of assorted sizes, to the value of £682 10s Scots[43].

PROBLEMS OF OPERATION

DISPUTE OVER SHORE DUES

Although Alexander Ainslie and his partners had obtained the status of a manufactory in 1689, they appear to have experienced problems persuading the Edinburgh council to grant them the privileges to which they were due. An 'Act anent the Manager of the Glasswork at Leith', recorded in the town council minutes in November 1695, set out Ainslie's case, which included the allegation that despite the glasswork having been declared a manufactory and therefore entitled to 'enjoy the Liberties, Privileges, and immunitie' granted to them, the town's tacksmen had tried to charge shore dues on imported raw materials, contrary to the 1681 Act[44]. Ainslie went on to assert that it was also in the interest of the town of Leith to support the glassworks, since it gave employment to 'many poor families who other ways would be necessitat to be burdensome to the publick'.

He also made the not unreasonable claim that the glassworks should, in any case, be immune from shore dues, because they actually owned the quay at which all the raw materials and finished goods were loaded and unloaded. Since the petitioners had themselves built the pier, and had spent £400 Scots on repairs in the current year 'so that the Key being their owne property maintained and

41 NAS RD14/39/863.
42 NAS GD305/1/162/64.
43 NAS RH15/102/8/1.
44 ECA SL1/1/35, p. 217, 27 Nov 1695.

repaired by them for the beautifying of the harbour as well as their owne conveniency, no imposition could be exacted in Law or conscience from them'. Despite the apparent logic of this argument, and the fact that the glassworks had always previously been exempt from shore dues, the petition was refused by the council.

COMPETITION

An additional problem for the owners of the Leith glassworks came three years later, when, in 1698, permission was granted for the erection of glassworks at Morison's Haven and Wemyss, discussed below (Chapters 9 and 10). In 1700 came yet another petition, that of James Montgomery, requesting permision from the Scottish parliament to establish a glassworks in Glasgow. In response, Viscount Tarbat wrote in 1700 'A Memorandum for the partners of the glasse work of Leith', which is still in the Cromartie papers. In it, he expressed concern about applications to set up rival glassworks and suggested steps which could be taken to limit the damage to the Leith works[45]. He pointed out that the proprietors of the Morison's Haven works had not 'performed in the termes of their act', and suggested that, since

> several others are now applying for erecting of manufactorys in other places of the kingdom, if it will not be fitt . . . for the pairtners of Leith Manufactory to aply [to] the parliament for ane liberty to make all sorts of glasses allowed to manufactorys already established And because the establishing of any more then what are already erected will be great discouragement to the first adventurers who have been at great trouble and expense to bring their workes to perfectione – to refuse all aplicatione for erecting of new manufactories . . . seeing they can doe more than furnish the whole natione And that for the space of [blank] years without which the whole glasse-works will be ruined.

He went on to suggest that they should apply for prohibition of imports of 'such goods as are wrought in the Leith manufactory'; confiscation of banned imported goods; the right to appoint their own waiters; and that appropriate officials should be obliged to assist with seizing prohibited goods.

Whether or not that particular petition was submitted, in March 1701 the Scottish Privy Council again declared the Leith glasswork to be a manufactory and reaffirmed the prohibition of imports of 'any green glass bottles, chymistry and apothecary glasses under pain of confiscation'. The declaration was in response to a particular violation, the culprits this time being not the Scottish merchants, but the tacksmen and collectors of the customs, who 'by connivance' had allowed a large number of bottles to be imported at Montrose. The bottles had been sent by 'the masters of the glass manufactories in England, thereupon of purpose to break the petitioners trade . . . and to undersell, to the ruine of their manufactory, resolving, if once they can constrain the petitioner to give over, not only to have

[45] NAS GD305/1/164/46. This was not mentioned by Clough.

the trade, but what price they please'[46]. The petitioners claimed to have 'upon their hands no less than a Thousand Pound Sterling worth of made bottles, and their work actually going', and asked that stringent measures should be taken to ensure that the prohibition was legally enforced. The Privy Council forbade the entry of any empty bottles whatsoever, and permitted the partners of the glassworks, or their agents, to search for and seize any that were illegally imported.

MONIES OWED

The glassworks was clearly struggling at this time, and continued to do so. In December 1702, Ainslie produced a 'List of Debts with the value of the accompts of Glass in Costodie and money and materialls belonging to the glasswork for the stock of the Copartinarie accompt att Leith'[47]. The stock of bottles, at that point, stood at £333 16s 1²/₃d, and Ainslie had over £60 in cash. There are 152 debtors in Ainslie's list, ranging from the Duke of Hamilton[48] to Patrick Chalmers, beltmaker. Money was owed from people throughout Scotland: from Aberdeen, Perth, Glasgow and Dundee to smaller places on the north-east coast – Buckie, Portsoy, Findhorn and Cromartie – and as far away as Kirkwall on Orkney as well as many closer to hand. Lord Elcho owed £61 16s 3d, a sizeable sum, perhaps connected to his own abortive attempt to set up a glassworks at the turn of the century. The large amount of £105 2s 2d was owed by Thomas Harwood in Dertford. As well as private customers, there were numerous merchants and vintners, and some apothecaries, owing amounts ranging from 16s 16d to £37 12s 0d. The list ended:

	£	s	d
Glasswork for materials	87	16	5⁵/₆
George Kemp Glassmaker	8	0	0
Isaack Dehine Glassmaker	7	7	2½
Robert Liptrap Glassmaker	1	14	9

Difficulty in obtaining payment for goods supplied was a common, and ever-present, experience for businesses, a point illustrated by a bond in the Register of Deeds. John Anderson, sheriff clerk depute of Aberdeen, owed the partners of the Leith glassworks £259 Scots 'for good and sufficient bottles *and other glassware* [author's italics]' in May 1705, which he agreed to pay after

[46] NAS GD305/1/158/23. 'Act of Favours of the Masters of the Glass-Work at Leith'. Irons says (1898, 143) that 2,600 dozen bottles were imported at Montrose in February 1700, but gives no source.

[47] NAS GD305/1/166. Ainslie specified on each page that the currency was sterling, so there is no doubt that it was, although Clough suggests (1982, 5) that 'the sums converted into the more usual merks or £Scots seems suspiciously large'.

[48] In 1708 the Duke of Hamilton paid Ainslie £8 (sterling) for bottles and corks. (NRA(S) 2177, Bundle 2815).

Martinmas[49]. Such a large amount of cash outstanding was bound to exacerbate any cash flow problems.

The total notional assets amounted to £1,495 16s 9 1/6d (sterling). The shares are actually divided into sevenths, not eighths, in Ainslie's account. James Balfour still owned most of the property but at that point seems to have only had a one-seventh share in the company, which he had bought from John Watson. The new name on the list, Robert Blackwood, was, of course, the co-founder of the Company of Scotland with James Balfour. The share ownership was as follows:

Viscount of Tarbat. . . 1/7	£25
Mr. Robt. Blackwood. . .2/7	£50
James Balfour for Andrew Pourie..2/7	£50
Do. Balfour his account. . .purchased of John Watson. . .1/7	£25
Alexdr. Ainslie. . .1/7	£25

The glassworks continued to operate despite the difficulties and the competition, which had been increased by the establishment of a glassworks on the west coast, at Glasgow, and despite the economic turmoil in the aftermath of the Darien disaster. On 18 May 1705, the owners again petitioned Edinburgh Burgh Council for exemption from shore dues (*Edin Recs 1701-1718*, 103), having been in dispute with them for several years. This petition also failed.

SUPPLIES OF RAW MATERIALS

In the normal course of events, it was inevitable that the glassworks fire had to be extinguished from time to time, although earlier references to large stocks at Leith imply that they would have had little difficulty in keeping up supplies of bottles. For whatever reason, however, it was considered necessary to advertise in August 1706, 'that Glass-bottles, and other sorts of Glasses are made (as good as ever was) at the Glass Manufactory in North Leith; where all Persons may be served with what Quantity soever they want, as formerly'[50], a statement which suggests some considerable lapse in production and perhaps other changes. This is borne out by the account of goods imported duty free for the use of manufactories in 1706, contained in the Treasury warrants. These show that 1,436 bushels of wood ashes and 1,536 bushels of 'ashes clay' were imported from London for the North Leith glassworks, representing a 'computed Duty' totalling £9 10s 0d (sterling) for customs. The equivalent imports for the Morison's Haven glass-works were given a computed duty of £36 3s 4d (sterling) (*Cal of Treasury Books*, 22, 128). This discrepancy may, of course, simply be due to Leith already owning large reserves of raw materials, but that seems unlikely to account for such a big difference over a year.

[49] NAS RD3/109/121.

[50] *Edinburgh Courant*, 19-21 Aug 1706.

AFTER THE ACT OF UNION: THE IMPORT BAN REMOVED

By 1708, the proprietors of the glassworks were George, now Earl, of Cromartie, James Balfour younger, James Blackwood and Alexander Ainslie, and there is evidence to show that the business had been experiencing severe difficulties for the previous two years. This is hardly surprising, of course, because the Act of Union of 1707 had removed the valuable ban on imports of bottles, while the exemptions from duty and other privileges, which had been granted to manufactories by the acts of the Scottish Parliament in 1661 and 1681, were also under threat (see Chapter 11 below). It is interesting to note, however, that George, Earl of Cromartie, who was Secretary of State under Queen Anne, was an ardent supporter of the Union of Parliaments.

Specific evidence of the difficulties now experienced by the glassworks' proprietors is contained in written 'Observes on Alexander Ainslie's Accompts' and his answers of 6 May 1708[51]. His accounts had obviously been critically received by his partners, who were attempting to obtain some redress from Ainslie. The first point made by the partners is that 'Seeing there hes been a great loss on the work these tuo years', Ainslie's salary should be reduced to the £40 a year he was formerly paid. Ainslie pointed out that 'in management of all Manufactories the trouble is greater when the profit is least – especially in Glassworks', claiming that the principal servants were 'under such indispositione as obleidged the Clerk almost wholly to that servants ducty And he is founded in ane express act of sederunt which cannot be restricted'.

The proprietors then went on to propose that Ainslie should not be paid at all 'since the fire went out and till the work begin again'. His reply was succinct:

> Since Alexander Ainslie when the fyre is out Is still at trouble and expence in the accompts of goods sold, brocken Glass bought for the company, persewing of Debts, provydeing Materialls at home and from abroad for the goeing of the work and seeking and secureing of servants, he presumes there can be alse litle ground for quarreling of this Article as the former . . .

He also quoted the employment contract, which set his salary and duties, arguing that his pay could not be reduced until he 'be discharged of his service'.

The third charge against him was that the price paid for coal during the previous two years was higher than if it had been 'providently bought', and that it should not cost above £4 Scots. Ainslie replied 'that every Coall is not propper for the work' and that he 'charges noe more then what he sold them for to others', which implies that he had been acting as middle-man in the purchase and sale of the coal. He went on to say that, as a partner in the business, he would 'think himself a gainer' if the company could find suitable coals at a cheaper price. The remaining points of disagreement are less clear cut, but in the same vein. Ainslie added a rider to his reply, on 18 May 1708, that

[51] NAS GD305/1/160/91.

> The Companies concerns at this Juncture requires speedy dispatch in provydeing servants and other necessaries for the work, and therefor there would be noe delay in the Consideration of the Companies observes of Alexander Ainslie's accompts and his answers thereto, that due measures may be followed for their publict intrest.

Monica Clough ends her discussion (1982, 7) of these Cromartie papers with the question 'Did Alex Ainslie ever get his fire relit?' The answer to her question is 'Yes, he did', and he continued to run the Leith glassworks until 1714.

The following year, 1709, Ainslie was summoned before the Admiralty Court to answer the charge that he owed Thomas Oswald, skipper of Kirkcaldy, £25 (sterling) for the freight of 2,115 bushels of ashes and nine casks of clay from London to Leith[52]. Ainslie claimed that the goods had been so damaged by seawater in transit, as to be virtually unusable. He had taken the precaution of going personally to the ship, accompanied by a notary and witnesses, to see 'that the samen were intirely damnified and spoilt'. The water bailie at Leith had also been called in to arbitrate in the case at the time. Oswald's claim was based, not on denial of the damage, but that it had been caused by a severe storm off Alnmouth, which had not only damaged the cargo, but had put the ship and crew 'in extreme hazard of their lives', and that in all bills of lading such hazard 'is excepted' (and presumably covered by insurance). The judgement went against Ainslie and his partners.

THE NEED FOR ADVERTISING

An interesting advertisement appeared in the *Edinburgh Courant* in 1710 (illus 38), indicative of the competition between the rival glassworks. Since it gives prices, it will be reproduced in full:

> These are to advertise that the Glass Bottles, made in the Glasswork in North Leith, are sold there at the Rates following viz. Plain Mutchkine Bottles at Eighteen Shillings per Dozen, plain Chopine Bottles at Twenty Six shillings Scots per Duzon, and all other sorts of Bottles at Reasonable Rates. Whoever pleases may have from the Clerk of the said Glasswork, a Testificat which will prevent the Buyers being imposed upon by getting other bottles, under the Name of Leith Bottles[53].

The same edition also carried an advertisement from a James Guthrie in Leith, who was selling 'all sorts of good and sufficient Glass Bottles Cheaper than anywhere else in North Britain, and good Encouragement to those that buy a quantity to sell again.' His stock may well have been imported from Newcastle or elsewhere, and could be the reason for Ainslie's advertisement – an example of the early exploitation of a brand name.

52 NAS AC9/330, Oswald v Ainslie.

53 *Edinburgh Courant*, 24-27 Feb 1710.

In 1712, however, the glassworks was put up for sale. An advertisement in the *Scots Courant* on 12-14 May, stated that anyone interested in buying or leasing it should speak to James Balfour at his lodgings in Leith, or Alexander Ainslie at the glassworks. Added inducements were a considerable stock of broken glass, 'a good number of excellent Clay Pots, and the Furnaces and Arches in Readiness for Use, with all Sorts of Work Tools for making of Window Glass, likewise to be sold.' Bottles were also available 'as formerly'[54]. This foray into window glass making is somewhat surprising, and may indicate that diversification was seen as essential to maintaining viable sales, in an increasingly competitive market. The fire was certainly out at that time, but the advertisement was repeated only twice, an unusually short run for one seeking a buyer or lessee.

PERSONNEL AND PRODUCTION

From 1700 occupations were recorded in the North Leith parish register of births and marriages, providing the names of some of the glassworkers (a complete list of whom is given below), and giving some indication of the stability of the workforce. George Kemp, for example, described in the Old Parish Register of January 1700 as 'Anglus, Vitri conflator', had the births of five children recorded there between September 1698 and January 1707. Isaac Dehew married Agnes Ewan, daughter to the late Alexander Ewan, sometime merchant in Stirling, in October 1700. They had a daughter in 1711, another in 1716, and witnessed a christening in August 1717.

New names also appeared: Lewis Brownhill in 1707, James Brash and William Smith in 1717, and ownership of the glassworks itself changed. On 6 October 1714 James Balfour, younger, and Alexander Ainslie sold the 'dwelling house with the office houses . . . the yard and Glasshouse built thereon . . . with the part of the peer and shoar belonging thereto' to James Nimmo, merchant in Edinburgh[55]. Only six months later, on 4 March 1715, James Nimmo sold it again – to Robert Wightman, merchant in Edinburgh, and, once again, to James Balfour of Pilrig[56], who were to remain joint owners until 1725. It is quite possible, however, that only the site and buildings were transferred to Nimmo, and that the business was run separately, as it had been earlier.

Robert Wightman's name does not appear in the list of Edinburgh burgesses, but he was clearly a man of some wealth and influence. In 1718 the city of Edinburgh cancelled a bond borrowing £550 (sterling) from him, describing him as a merchant 'and the present Treasurer of Edinburgh'[57]. He was also involved in overseas trade. In 1722, for example, Robert Wightman & Company, merchants in Edinburgh, chartered the ship *Thistle* of Leith, to take herrings to Stockholm, pick up iron and take it to London or Newcastle, James Balfour being a witness to

[54] *Scots Courant*, 12-14 May 1712.
[55] NAS RS27 110 f80-93.
[56] *ibid.*
[57] ECA *Edinburgh Charters*, ii, 601.

the charter party[58]. Wightman's testament, following his death in 1747, shows that in 1744, he also owned the lease of part of the lead mines at Wanlochhead[59]. Another of the part-owners of the *Thistle* in 1724, was Alexander Johnston, then clerk at the glassworks, who had a one-eighth share assigned to him for non-payment of a debt[60].

Table 8
Glassworkmen known to have operated at Leith 1688-1748.

Names	*Date of Reference*
John Dehew (Dehine, Dehen)	1688-1694
Robert Glasgow	1695
William Brotherstone, servant to Alexander Ainslie	1699
Isaac Dehew	1702-1717
Richard Townsend	1702
Hugh ?Meglye glassgrinder	1702
Lewis Price	1706
Lewis Brownhill	1707
David Philip	1707
George Kemp, master workman	1698-1707
Robert Liptrap (Liptwax, Liptrop)	1702, 1703
Jacob Visitell (Visitella)	1707
George Taylor	1709
James Brash	1717, 1722
William Smith	1717, 1726
John Thompson	1718
William Whyte	1719, 1726, 1730
Alexander Mckie	1722, 1726
William Black	1723
John Imrie	1720s
Thomas Lakeland	1746
John Marshall	1746
Jeremiah Stanford	1746, 1747
Thomas Summers, bottle maker manager and shareholder	1746, 1747
John Elliott	1747
James Gibson	1748
Peter Dods, blacksmith to the glassworks	1748
William Tyndal	1748

Men known to have worked in more than one glassworks are in bold

THE WIGHTMAN AND BALFOUR PERIOD

A useful description of the glassworks under the management of Wightman and Balfour was recorded by the first industrial spy from Sweden to visit Scotland, Henry Kalmeter, who wrote in some detail about the various industries he visited around the Forth in 1719-20, including those at Leith:

[58] NAS AC9/1013/41. Charter Partie, 14 Sept 1722.

[59] NAS CC8/8/112/1.

[60] AC9/1013/31.

> In the town is to see the custom house, the storehouses of deals, iron etc. and the glasswork belonging to Mr Weigtman and Befour, where they only make bottels, which are reckoned very good and strong, and are there sold for 20 pence a dozin. They take thereto 3/4 parts of woodashes, them they buy from London, 1/4 of the refusals of the ashes of soap-making, and as much sand as the ashes may require. The 'seawear' (a kind of wrack or big reed thrown up by the sea) burnt, till it comes to a very hard body, and broken glass of bottels, is likewise mixed with it. This is all warmed in a furnace before they put it in the pots, where it is smelted about 10 or 12 hours before they begin to draw the glass (Smout 1978, 24).

Coal for the Leith glass furnaces was regularly shipped from the Halkett of Pitfirrane colliery through the port at Limekilns. In the estate manuscripts there are records of shipments, listed under 'Coals exported within the kingdom', in 1723, (to the value of £224 14s 0d (sterling)), 1724, 1725, 1726, 1729 and 1730. In addition to Leith, the Pitfirrane coal was supplied to the Kirkcaldy, Port Seton and Morison's Haven glassworks during this period[61].

Between 1725 and 1733, ownership of the Leith glassworks was shuffled between Robert Wightman and James Balfour of Pilrig, in a manner difficult to understand without more information but, again, the property may have been bought and sold separately from the glass-making business. In May 1725, James Balfour became sole owner when Robert Wightman transferred his half of the property to him[62].

In 1731, a lengthy instrument of sasine was registered in Edinburgh by lawyers for James Balfour of Pilrig. Dated 30 October, it listed all the earlier dispositions and sasines relating to the glassworks site in North Leith, back to 1695[63]. It may have been considered advisable to consolidate all the previous changes of ownship in the one legal document, particularly as many of the earlier changes were in the form of dispositions recorded in the Register of Deeds, rather than actual instruments of sasine. Be that as it may, some 15 months later, on 17 March 1733, Robert Wightman again became the owner, when all the writs relating to the glassworks, going back to the initial charter from Edinburgh Burgh Council to Sir James Standsfield in 1673, were handed over to him[64].

In 1728, Balfour had finally obtained a charter for the glasshouse from the Edinburgh Burgh Council. The council had requested public right of access to an island which belonged to Balfour, in the Water of Leith near Bonnington mills. He agreed but asked for the charter in return, which was duly granted on 4 September 1728[65].

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61 NLS Ms6437 f31; 6439 f31, 35; 6440 f61, 62; 6441 f60; 6442 f79.

62 NAS GD69/126, 'Inventory of the Writs and Evidents belonging to the Dwelling house in North Leith, Yard and Glasshouse built thereon Disponed by James Balfour of Pilrig to Robert Wightman Mercht. in Edinr'.

63 NAS RS27/110/80-93.

64 NAS GD69/126.

65 ECA SL1/1/52, 20-2.

A LULL IN PRODUCTION

It is possible that the glassworks was not operational for several years during the 1730s. The register of shore dues at Leith lists regular imports of coal for the glassworks in 1726 and 1727, ashes from London in 1728, coal and kelp in 1729, and coal in 1730, when, in September, Robert Wightman received 14 tons[66]. There is, however, no mention of the glassworks between 1731 and 1738. During the same period, there was a large increase in the entries of glass imported from Newcastle. In 1736, for example, dues were paid on 29,081 dozen bottles (plus more for which numbers were not given), 105 chests of window glass, and 210 barrels, 34 packs and 2 casks of unspecified glass.

FURTHER CHANGES AND A NEW GLASSWORKS

JOHN SIME BUYS THE SITE

In 1738, after this apparent lull in production, the North Leith site changed hands yet again when it was bought by John Sime (Syme, Sim). In a sasine registered on 18 February 1738, Robert Wightman sold to him: 'the dwelling house high and laigh . . . the office house . . . with the yeard and Glass house built thereon . . .'[67]. This sasine raises some interesting questions about John Sime. He is described by Mowat as one of the ship carpenters of Leith, who, having married the widow of a leading ship-builder shortly after his death in 1733, took over his yard and began to pay Gold Penny[68]. Sime gradually bought up plots of land adjacent to the glassworks site, and his son eventually built the first dry dock in Leith, on the adjoining site. According to Mowat, he was 'apprenticed in Leith at some time around 1720'[69]. However, a John Sym worked as clerk to the Morison's Haven glassworks from at least 1718 to 1722, and featured regularly in the factor's account book for William Morison of Prestongrange[70]. He was paid for overseeing the delivery of ashes from Leith, 'for waiting upon ye potts in the glasswork & keeping in the fire under them' and for paying the wages of the servants at the glassworks, and was himself paid £1 10s a week for his services. The man who preceded him at the glassworks was 'Rd. Wightman'. Clearly John Sime knew a great deal about running a glassworks, and it appears likely that, having married well in 1733, he intended to put his knowledge to use when he bought the glassworks in 1738. It must surely be the same man. Robert, as well as Richard, Wightman appears in the same account book, further strengthening the connection. Despite his knowledge of glassmaking, however, it is unclear whether John Sime actually operated the glassworks between 1738 and 1746, since no evidence relating to that period has been found.

[66] RCA Register of Shore Dues at Leith.
[67] NAS RS27/120/85r.
[68] 'Gold Penny was duty paid to Edinburgh on all ships built or sold at Leith' (Mowat, 231).
[69] *ibid.* 233.
[70] NAS. CS96/4520.

A NEW COMPANY AND A NEW PARTNERSHIP

In 1746 several meetings were held with a view to setting up a new multiple co-partnership to fund and run the North Leith glassworks, but these do not appear to have involved Sime. An initial agreement was reached on 7 August and on 11 and 23 September a formal contract was signed by the 23 co-partners, all of whom were merchants in either Edinburgh or Leith, or wine coopers in Leith[71]. A merchant whose name had appeared regularly in the register of shore dues, George Miln, became one of the leading shareholders. He frequently bought bottles from Newcastle and appears to have been a wholesaler. Between May and September 1735, for example, Edward Burd, a wine merchant in Leith, paid £47 15s 9d (no doubt sterling) to George Miln for 467 dozen bottles[72].

The partnership agreement, which was signed on each of the eight pages by all the partners, is much more sophisticated than the earlier agreements which have been discussed. The objectives of the new company, the responsibilities of the partners, their voting rights, contingency plans in the event of the death of a partner, arbitration procedures and other contractual obligations, are clearly spelled out; the whole document is business-like and unambiguous.

The company was divided into fifteen shares of £150 (sterling) each, providing capital of £2,250, a larger sum than any previously recorded. Seven of the shares were jointly owned, while brothers George and James Miln owned two, as did Thomas Summers (Sommers, Somers), the glassmaker who was to provide the essential expertise. He was already owner of shares in the Glasgow bottleworks. Their objective was the production of glass bottles, for which, during the first year, the partners were to provide capital on demand 'for fitting up houses Purchasing Materials or otherways for Manufacturing and makeing the said Glass bottles'. If, at the end of the year, the venture was deemed to be viable, the partners were bound to the contract for a further nine years. Three of the partners were to be nominated managers, one of whom would go at the end of three months, to be replaced by another, and so on, creating a rolling programme. The first three managers nominated were Hugh Clerk, Thomas Hyde and John Jamieson, a timber merchant (Mowatt nd, 233). A clerk and cashier were to be appointed at the first general meeting after the contract was signed. All 'Regulations Orders and Appointments' were to be decided by a majority vote, every full share having only one vote, regardless of the number of owners. Although Thomas Summers, the glassmaker, and the Milns brothers owned two shares, they were also only to have one vote each (that is George and James Milns jointly). All decisions were to be recorded in a book of sederunt, kept by the clerk.

Meetings of the shareholders were to be held frequently, 'particularly one each third month', and an annual general meeting was to be convened on the last

[71] NAS RD14/87/1747.

[72] NAS RH15/54/18/40. Papers of Edward Burd.

Wednesday in September, at which the books were to be balanced and examined. If a partner died, his heirs were obliged to withdraw 'his share with Profit and Loss' at a rate of a quarter every three months. Provision was made in the case of any of the partners being pursued by creditors, to protect the company, and, in case of any dispute, arbitrators were to be appointed. No partner was to take a share in another glass bottle manufactory during the period of the contract, except Thomas Summers, who 'is hereby allowed to Continue his Concern and Share in the Glasgow Bottle house', nor were they to buy bottles elsewhere, under penalty of £50 (sterling). However, if any of the partners had taken his 'full share of the bottles to be made by the Company . . . according to his concern therein' he could take 'what more bottles he may have use of Occasion for where he pleases', although it was expected that he would buy them from Leith, in his own and the company's interest. Every partner, many of whom appear to have been consumers of bottles, was to provide an account of his dealings with the company every six months, and to settle any outstanding bills.

It is clear from one clause that the co-partners were part of a close-knit community of merchants, who were well acquainted with each other, both as individuals and as businessmen. The agreement stipulated that 'as one of the strongest motives for the several Persons above mentioned their Entering into this Contract is the Confidence they have of one another and the Support that the Manufactory will have by the Consumpt of the Partners', none of them should be able to sell their shares during the ten-year term of the contract. The symbiotic relationship between consumption and manufacture of the bottles was obviously a great strength, and a likely foundation for a successful company, which, indeed, it proved to be.

Share-holders in the North Leith glassworks 1746
(descriptions as in contract)

Archibald Stewart and company, merchants in Edinburgh		1 share
Laurence Dundas and John Inglis, merchants in Edinburgh		1
Hugh and Robert Clerks, merchants in Edinburgh		1
John and Robert Wilsons, merchants in Edinburgh		1
John Stephtian merchant in Edinburgh and Walter Scot, merchant in Leith		1
Thomas Allan, merchant in Edinburgh and Thomas Hyde, merchant in Leith,		1
Alexander Hunter, merchant in Edinburgh		1
William Macdougal, merchant in Edinburgh		1
John Jolly, merchant in Edinburgh		1
George and James Milns, merchants in Leith		2
John Jamieson, merchant in Leith*		1
James Cheap William Bell John Graham Peter McNab George Bell	all wine coupers in Leith	1
Thomas Summers glass maker		2

*probably the son of James Jamieson, whose yard John Sime bought in 1749 (Mowat nd, 233).

Table 9
List of co-partners and their shares in the glassworks at North Leith 1746.

THE LOCATION OF THE PROPOSED GLASSWORKS

Apart from the fact that it was at Leith, no site for the proposed glassworks is specified in the agreement. However, it is clear from an advertisement in the *Edinburgh Evening Courant* on 13 October 1746, that it was still in North Leith:

> That any Person who can furnish broken Glass, Wood, Soap, Fern, Whin, or Heather Ashes, will meet with due Encouragement, from James Miln at Leith, or the Glasshouse in North Leith, where, in a little Time, Glass Bottles of all Sorts will be manufactured, and sold at reasonable Rates.

This was followed by a further announcement on 10 November 1746 (illus 33):

> Whereas at the Glass-house in North Leith, Quantities of BOTTLES of all Sorts have been lately made, and have given entire Satisfaction on Trial, the Undertakers expect, that every Body will encourage a Manufacture which they have set up as well to advance the Country's benefit as their own, especially that the Bottles are as good in Quality, and to be sold as cheap as at Newcastle, at the Glasshouse aforesaid in Wholesale, and in Retail by George and James Milns South-Leith; at both which Places good Encouragement will be given for Soap, Wood, Heather, Fern and Whin Ashes, and broken Glass.

FIRE AT NORTH LEITH

Histories of Leith are consistent in their recording of subsequent events: that a fire in 1746 or 1747 caused the new glassworks to close and move to South Leith. Arnot, in his *History of Edinburgh*, wrote in 1779:

> The present bottle-house company was established A.D. 1746. They began work in the bottle-house at North Leith; but, it being burned down during the first year of the partnership, the company, in the year 1747, built a new brick-house on the sands of South Leith.' (Arnot 1779, 347)

WHEREAS at the Glaſs-houſe in North-Leith, Quantities of BOTTLES of all Sorts have been lately made, and have given entire Satisfaction on Trial, the Undertakers expect, that every Body will encourage a Manufacture which they have ſet up as well to advance the Country's Benefit as their own, eſpecially that the Bottles are as good in Quality, and to be ſold as cheap as at Newcaſtle, at the Glaſshouſe aforeſaid in Wholeſale, and in Retail by George and James Milns South-Leith; at both which Places good Encouragement will be given for Soap, Wood, Heather, Fern and Whin Aſhes, and broken Glaſs.

Later historians have tended to follow Arnot's statement that the glassworks burned down, but none of them offers any evidence (Hutchinson 1865, 206; Mowat nd, 234). Contemporary newspapers show that there was indeed a major fire near the glassworks, but there is no mention of the works itself being destroyed. An entry in the *Scots Magazine* for January 1747, stated that 'Early in the morning of the 20th, a fire broke out in the tenement in North Leith, built by James Sim, Ship-Carpenter, and in a few hours consumed it. Fourteen families were burnt out, but saved their lives with difficulty.'

The event was also recorded in the *Edinburgh Evening Courant*, on 20th January 1747:

> This morning about three o'clock, a fire broke out in a large new tenement in North Leith, near the Glass-work, belonging to a Ship Carpenter there, and burnt with great violence till the whole was consumed. No lives were lost, but great quantities of Household Furniture destroyed.

A similar notice was printed in the *Caledonian Mercury*, which followed it up on 22 January by stating: 'We are assured that the House belonging to John Syme, . . . burnt on Tuesday morning, is insured in the Sun Fire Office of London, to the value of 900l.'.

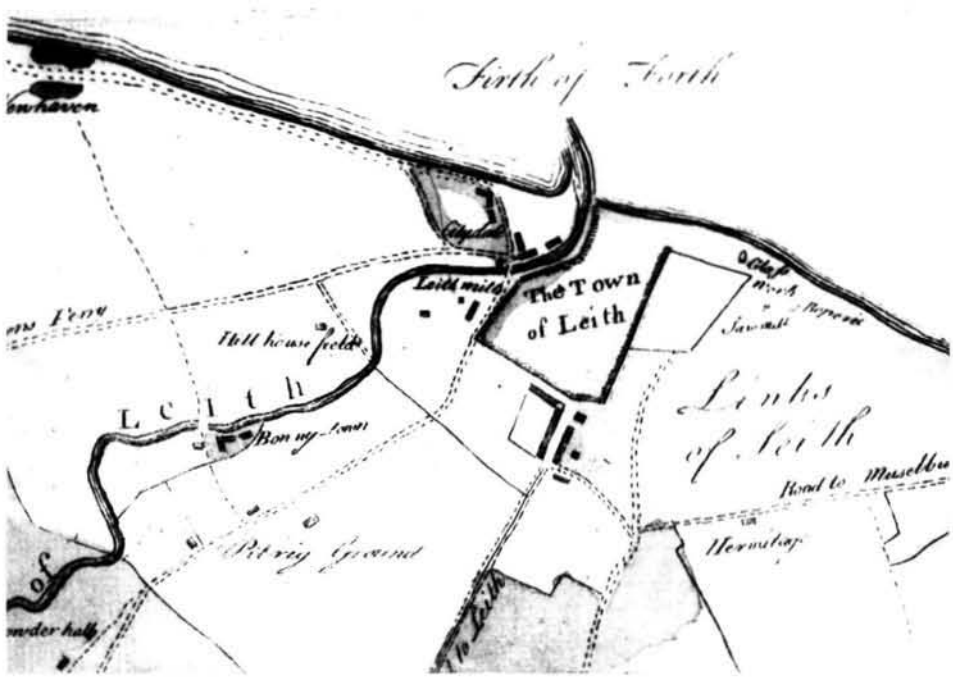
The event made a considerable impact locally. On 8 February 1747, the West Kirk session met to consider the recommendation of the 'Revd. Presbetry' of Edinburgh, for a collection to help the victims of the fire, who had 'lost their whole household furniture, wearing apparel and other effects, to the value of 1000 Pounds Sterling, according to estimates given in by said sufferers, some . . . having many children rescued from the flames in their shirts'[73]. None of these contemporary accounts associates the fire directly with the glasshouse, nor is there any newspaper reference to the sudden closure of the new glassworks, as one might expect.

There is, in fact, some evidence that the glasshouse did *not* burn down and was still in existence over two years later. On 6 September 1749, an agreement was registered between John Sime and his wife and their son, also John Sime, regarding their property in North Leith, including the site of the glassworks: 'all and haill the said dwelling house lately rebuilt and now burnt . . . with the office houses . . . yeard and Glasshouse . . . with that part of the peer and shore belonging thereto'[74]. It seems reasonable to deduce from this document and the newspaper reports that it was only the tenement which burned down; the glasshouse remained, and may well have continued to operate. A much later reference may also support the continued existence of the glassworks beyond the date of the fire: among the properties listed in his testament of 3 March 1789, John Sime included:

33 (opposite) An advertisement for bottles made at the glasshouse in North Leith. It also listed vegetable ashes and cullet required for use in the glass 'batch'. The appeal to buy Scottish 'for the Country's Benefit' is a reminder of the ever-present competition from Newcastle. (Edinburgh Evening Courant, 10 Nov 1746. *Reproduced by permission of the Trustees of the National Library of Scotland.*)

[73] NAS CH2/718/20 f42. Thanks to Sheila Forbes for the newspaper references.

[74] NAS RS27/136/58r.



34
Detail from 'A Plan of the City of Edinburgh with Adjacent Grounds', showing the glassworks built at South Leith in 1747. Richard Cooper 1759. (NLS Ms. 17602, f.187. *Reproduced by permission of the Trustees of the National Library of Scotland.*)

> the dwelling house . . . with the yard and glasshouse afterwards built thereon (afterwards pulled down) sometime possessed by the deceased Robert Wightman . . . all which subjects were sometime ago acquired . . . from . . . Robert Wightman . . . and which dwelling house was repaired and rebuilt by my said father and was afterwards burnt and demolished by fire together with the new square of dwelling houses afterwards built . . .[75]

Once again, no reference is made to the fire affecting the glasshouse.

It is, in fact, quite possible that the North Leith glassworks was so successful under the new co-partnership that an additional site at South Leith was chosen as suitable for expansion, something which would not have been possible on the original premises. Certainly a plot on an empty stretch of sand, away from densely populated tenements, would appear to be more suitable for a manufactory which inevitably produced both fire and a great volume of smoke (illus 34).

[75] NAS CC8/8/130/2. Thanks to Sue Mowat for this reference.

THE SOUTH LEITH SITE

LOCATION AND TERMS OF THE NEW GLASSWORKS

Whatever the exact sequence of events, the managers of the 'Edinburgh Glasshouse and Manufactory at Leith' presented a petition to the magistrates and town council of Edinburgh[76] for the feu of a piece of ground in South Leith, described in the later sasine as:

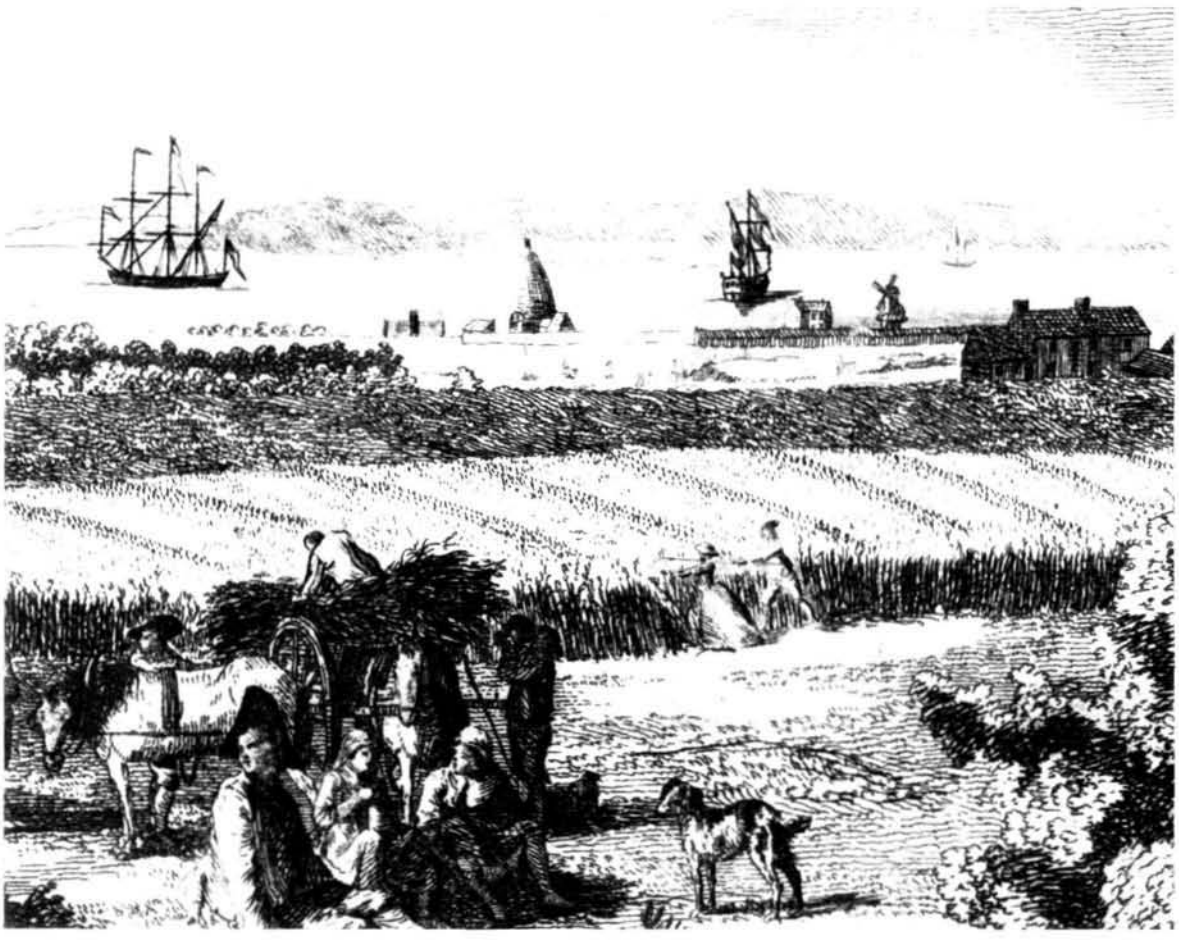
> on the sands adjacent to the Links of Leith which has hitherto been waste lying to the eastmost of the ground lately fewed by the City to William Adam Archeteck and bounded by the said few to the north west and by the high road which leads from the town of Leith towards Musselburgh upon the south west . . .[77]

A charter was granted to the company by the town council, on 21 March 1748, which retrospectively fixed the entry date to the site as Whit Sunday 1747, only a few months after the tenement fire. The terms of the charter show that the burgh was keen to encourage the company: as superiors, they required feu duty of only one merk Scots annually, so long as the site was used only as a glassworks; if the usage changed, the duty would be £10 Scots a year. Another significant clause, and one which was to be the subject of future disputes, was that all materials for the glasswork imported via the harbour at Leith, or the shore adjacent to the glassworks, 'shall in all time coming be free [of] payment of shoar dues', so long as the land was used for a glassworks[78]. James Miln and his heirs were forbidden to build a brewery on the site unless he paid 'one penny sterling for and upon each barell thereof.'

A sasine confirming the charter was registered on 28 March 1748, by which time the site was 'inclosed by a stone dyke and a Glass work built thereon possest by the partners of the said work and their servants'[79]. The dimensions of the site were stated: 229 feet on the south side, from east to west, 161 feet on the west, from south to north, 225 feet on the north and 161 feet on the east, almost exactly a rectangle. The feuing of this piece of waste ground was the start of the 'most important of the Leith glass-works' (Woodward 1984, 7), while the cone built there appears to be the first Scottish glassworks to be illustrated by a contemporary artist (illus 35).

On 1 August 1747, Thomas Summers, glassmaker and holder of two shares in the Edinburgh Glasshouse and Manufactory at Leith, took a 199 year tack, in his own right, of a piece of land at William Mitchell's sawmill in Leith. This land is later described as being part of the 'House and yeard at the Glass work of Leith'[80]. Summers himself achieved some fame in 1751, when an article in the

[76] NAS RD4/176/2/554.
[77] NAS RS29/134/107.
[78] NAS RD4/176/2/554.
[79] NAS RS29/134/107.
[80] NAS CS.232/640/2/308, 'Inventory of the Progress of Writs of the House and yeard at the Glass work of Leith . . .', 1763.



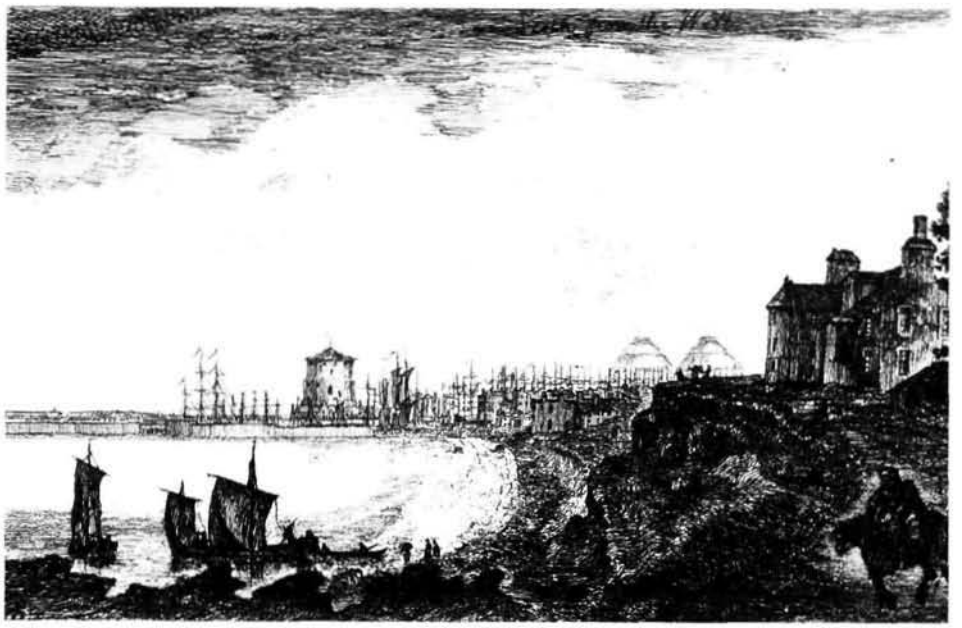
35 The glasshouse cone at South Leith, a much enlarged detail from a print by Paul Sandby, 1751. Sandby made the engraving from his watercolour *South Prospect of Leith* dated 1749, now in the Ashmolean Museum Oxford. (RCAHMS D33190. *Crown Copyright: Royal Commission on the Ancient and Historical Monuments of Scotland.*)

Manchester Magazine described a bottle blown by him, measuring 40 by 42 inches, as exceeding 'any thing ever done in any Glass Work in Britain'[81].

EXTRA LAND LEASED AT SOUTH LEITH

By 1750, James and George Miln had died, their heirs being their sisters, Helenora and Florence[82]. They disponed the land and the glassworks built on it to John Forrest, merchant in Edinburgh, as trustee for the other partners, on 17 December 1750[83]. John Forrest promptly applied to the Edinburgh council for a piece of ground to the east of the first site, 'whereupon the said John Forrest is to erect and build another glasswork'[84]. A sasine confirming the transfer of the second parcel of land was registered on 6 February 1752[85], the feu duty being

81 *Manchester Magazine*, 15 Jan 1751 (Manchester Central Library).
82 NAS RS27/137/1.
83 NAS RS27/137/406.
84 ECA, McLeod index, Bay D, bundle 119 (92).
85 NAS RS27/139/283.



36
Detail from 'Leith from the West', Clerk of Eldin nd, showing the two cones in existence by 1777. (RCAHMS D33189. *Crown Copyright: Royal Commission on the Ancient and Historical Monuments of Scotland.*)

£3 14s 0d Scots, so long as it was used for a glasswork, otherwise £16 a year. This second site measured 441 feet from west to east, and 162 feet from north to south. Artist Paul Sandby shows only one glasshouse cone in 1751 (illus 35), and the actual date of the erection of the second one (seen on illus 36) is, as yet, unknown[86].

Coal was brought to the glasshouse from Alloa (Clackmannanshire), Dysart and Limekilns (Fife) and Throsk (Stirlingshire), kelp came from Aberdour and Inverkeithing in Fife, Eyemouth (Berwickshire), Dunbar (East Lothian) and Holy Island (off the Northumberland coast), while ashes were obtained from London, Culross (Fife) and Fisherrow (near Musselburgh, Mid Lothian) and clay was shipped up from Bristol[87].

A FURTHER CO-PARTNERSHIP AGREEMENT

The success of the glassworks at South Leith is confirmed by a further co-partnership agreement, signed on 16 April 1756, in anticipation of the expiry of the original ten-year term. Since some of the original partners had died in the interim, with others taking their place, and since 'the said Manufactory and Bottle work has been, and may be still, carried on to advantage', it was necessary to agree a further contract, this time for 15 years, with a capital stock of £2,800 (sterling), divided into 14 shares of £200[88]. Once more, all the partners were

86 Arnot says (1986, 44) an additional glasshouse was built in 1764, a date reiterated by Marshall JS (1986, 44), but no evidence is presented.

87 ECA Register of Shores Dues at Leith.

88 NAS RD4/96/555. Thanks to Dr Hazel Horn for this reference.

either merchants or wine coopers, but this time one of the merchants had moved to London and another was in 'Bologne' (presumably Boulogne). Under the new contract, four of the partners were to be chosen as managers, to remain in post until the annual general meetings in September, when at least one would be changed each year, thus ensuring a more stable mangement structure than the three-monthly changes enshrined in the first agreement. James Thompson was declared to be clerk and cashier, but he had no vote, since share ownership was conditional on his employment.

The clerk's duties were varied slightly: he was obliged to balance the books 'at the Outgoing and Extinguishing of each Furnace or Fire at the sight of the Managers'. The value of the company's 'effects and stock' had to be assessed and recorded by the managers, when the books were balanced, provided two-thirds of the partners agreed with their valuation. In the case of joint share-holders, the one who voted on the company's affairs had to have the written agreement of his fellow joint-shareholders. The company already had an account with the Bank of Scotland for £1,000 (sterling), from which James Thompson was authorized to draw[89]. The remaining clauses are the same as those in the 1746 agreement.

Not only were the co-partnership agreements drawn up by the lawyers for the Edinburgh Glasshouse clear and comprehensive, but the partners appear to have been willing to co-operate with them. Such co-operation was not always the case in 18th-century businesses, and could lead to major difficulties. The problems of absentee decision-makers, lack of communication, and general mismanagement, will be explored in the chapters on the slightly earlier glassworks of William Morison of Prestongrange and the Port Seton glassworks.

SUCCESS OF THE SOUTH LEITH SITE

There are several factors which are likely to have contributed to the success of the later partnerships at South Leith: adequate capitalisation; the immediate availability of a sizeable current account, eliminating the cash-flow problems which bedevilled Port Seton, for example; concentration on production of bottles, a market for which was guaranteed through the partners, thus minimising risk; the virtually free feu of a site capable of future expansion; and, of course, the absence of non-productive payments to the Hay family, which had burdened the 17th-century licencees. Like Daniel Tittery during the early period of the Morison's Haven glassworks, and John Dehew at the North Leith works in the 1680s, the master glassmaker Thomas Summers was financially committed to the company in which he was a major shareholder; the subsequent allocation of a share in the company to James Thompson, the clerk, gave him too an incentive to succeed, and to remain in post.

89 Credit of £1,000 sterling was granted to the original company on 17 Sept 1746 (BOS, BS1/5/5, Minutes, 1742-62).

SUMMARY OF GLASS PRODUCTION AT LEITH

Although the first three glassworks on the Citadel and North Leith sites failed, glass production in Leith does appear to have been continuous from 1687 onwards, with a possible hiatus in the 1730s and early 1740s. Leith was, of course, particularly well situated for the distribution of goods to Edinburgh and elsewhere in eastern Scotland and for the export of bottles, in particular, to northern Europe. As the main Scottish entrepôt for wine, it was the ideal centre for bottle production, and it is no coincidence that wine coopers and merchant importers were shareholders, especially in the later companies. With its own quay, the glassworks in North Leith was also very well placed for importing the coal, sand, ashes, clay and other goods needed to produce the huge numbers of bottles required to make a furnace viable. Easy access for transporting heavy and bulky materials and the savings on shore dues were probable factors in the works' survival.

37
By the end of the 18th century seven glass cones dominated the Leith skyline. Four shown here form the vignette on a billhead of the Edinburgh Glass House Company, 1798. A further three cones belonged to the Leith Glasswork Company. (NAS GD160/399/72 Drummond Castle papers. *Reproduced by permission of Drummond Estates.*)

Although bottles, both plain and sealed, were the mainstay of all the Leith glassworks, window glass, apothecary wares, hour-glasses, beer, wine and mortar glasses, cruets and other less mundane items were also produced there at different times. Green glass, requiring cheaper raw materials and less expertise, was by far the most common product, but there was also a white-glasshouse on the North Leith site, where crystal was certainly made in the 1680s. It is even possible that such 'fancies' as opaque white glass could have been produced there for a short time. Lead glass was made at Leith in 1687, some thirteen years after Ravenscroft had obtained his patent in England, and before the untimely death of Sir James Standsfield put an end to that venture.

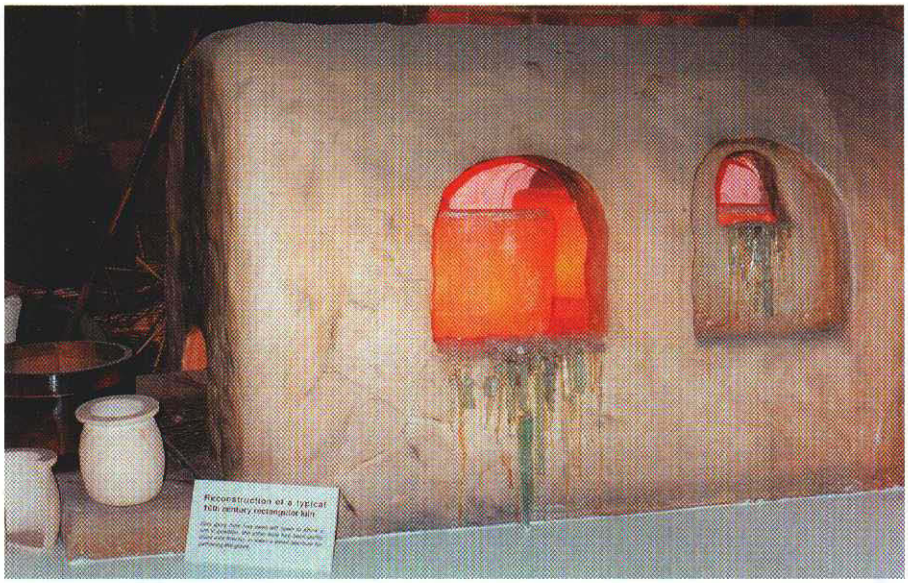
It is beyond the scope of this chapter to follow the fortunes of the various glasshouses at South Leith further into the second half of the 18th century, but there is no doubt that, having survived there for almost a hundred years, often with considerable difficulty, the Leith glass manufacturers went on to enjoy considerable success. They branched out into the production of crown and flint glass, and greatly expanded their export markets, becoming one of the major

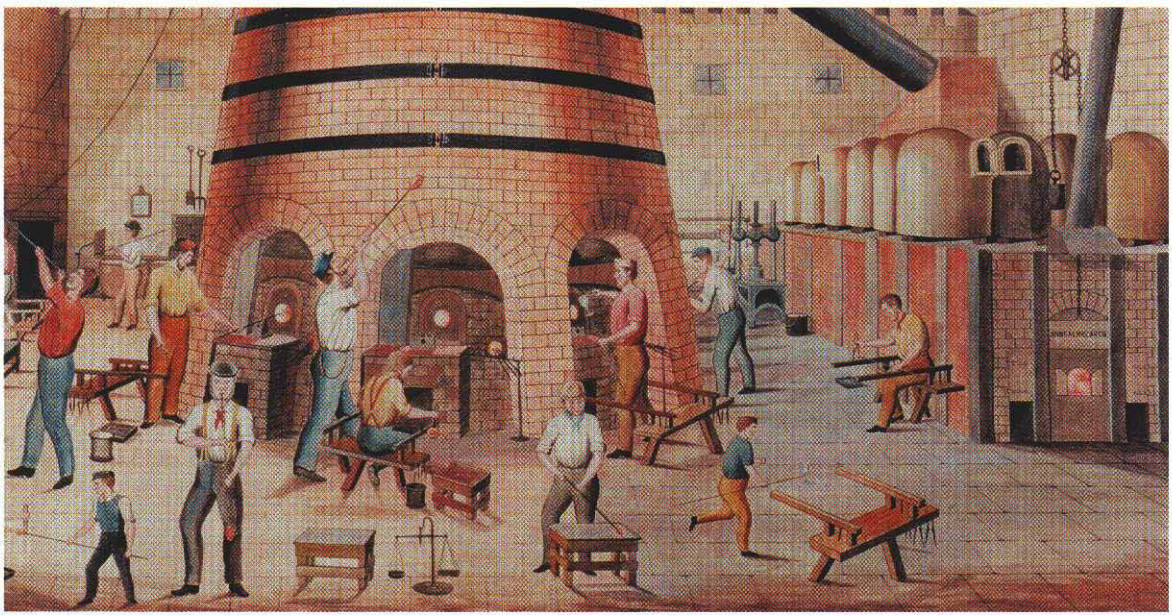
industries of Leith and fully justifying the move to the new site in 1747. The town was itself the subject of major expansion. Land reclamation and the development of large docks, new roads and bridges completely changed the shore-line. The town expanded to encompass completely the site of the South Leith glassworks, which, by the end of the 18th century, dominated the local skyline, as the Edinburgh Glass House Company bill-head of 1798 illustrates[90] (illus 37).

[90] NAS GD160/399/72. Bill to Earl of Perth, 1798.

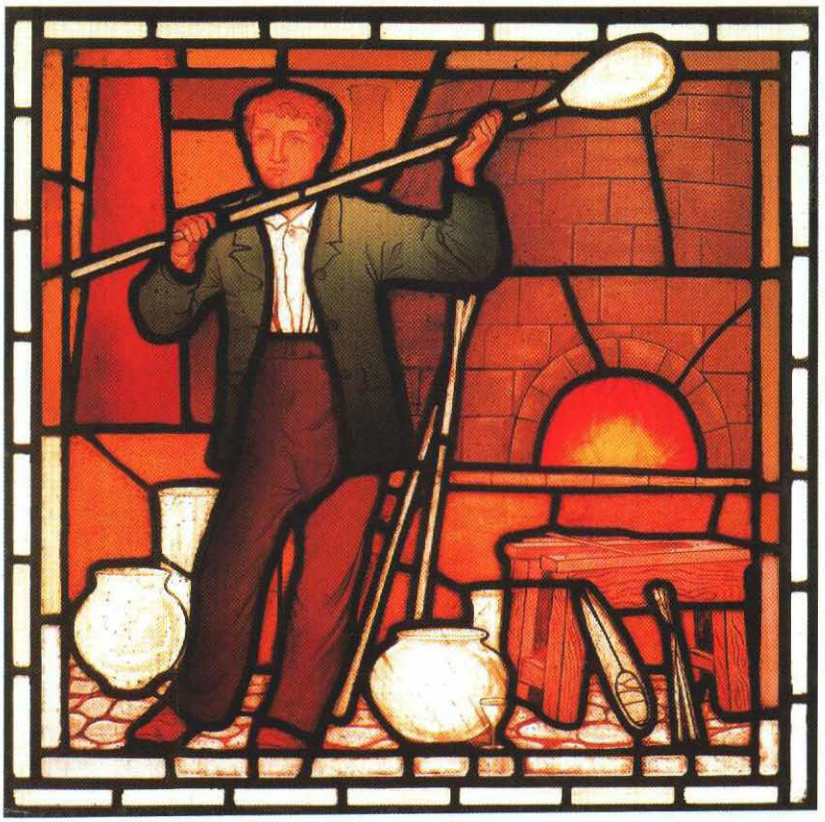
1 Portrait of Sir George Hay, first Earl of Kinnoull and founder of the Scottish glass industry, by Daniel Mytens the Elder, 1633. The painting hangs in Duff House, Banff, where it is on loan from the present Earl of Kinnoull. (*National Galleries of Scotland.*)

2
Reconstruction of a typical 16th-century wood-fired rectangular furnace with replica tools, formerly in the museum at Pilkington's, St Helen's, Lancashire.



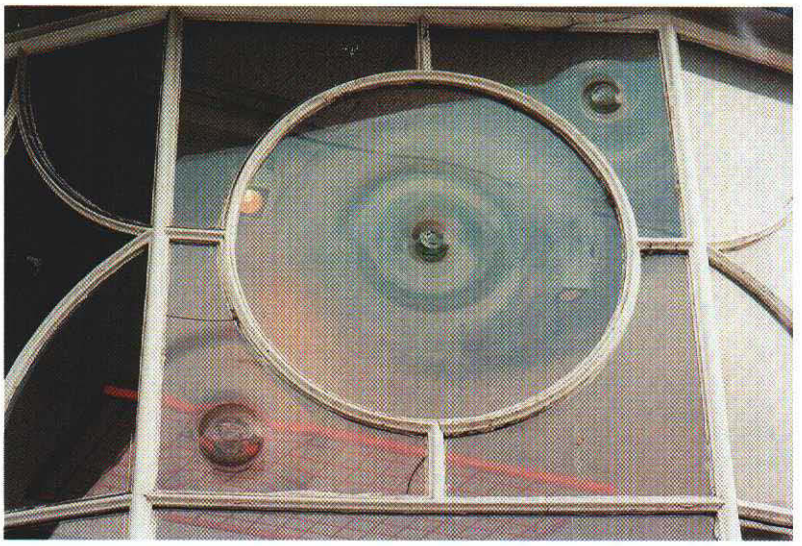


3 Detail from a 19th-century banner depicting Holyrood Glass Works, Edinburgh (built by William Ford in 1815), which produced fine crystal. It shows various stages in production: marvering, blowing the gather, working at the chair, finishing the rim at the furnace mouth and a boy running to place the finished wine glass in the annealing arch, on top of which crucibles are heating. Although of a much later period than this monograph–when furnaces and work area were very different–the banner shows that manual processes had not changed over time and bears witness to the eventual strength of the glass industry in Scotland. (T. 1946. 8. *Reproduced by courtesy of the Trustees of the National Museums of Scotland.*)



4
The Glassblower, a stained-glass panel by Stephen Adam, depicting the glass-maker, his chair and tools, in front of a furnace, with completed vessels in the foreground.
This was one of 20 panels designed to celebrate local industries created by Adam for Maryhill Burgh Hall, Glasgow, in 1878.

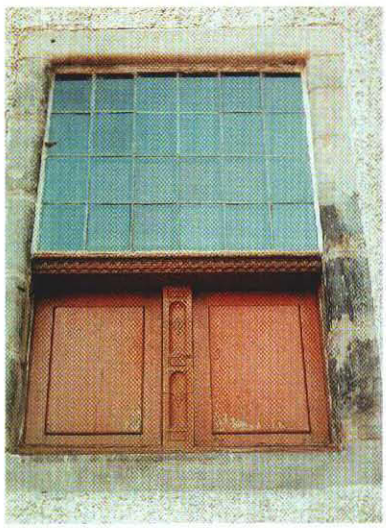
5
Headstone of Thomas Waugh, glazier, dated 1705, in Tranent churchyard, East Lothian.
The hand rising out of the clouds is holding a lozenge of window glass. To the right is a blowing iron, complete with a gather of glass.



6
Crown glass in the window of the Oxfam shop in St Andrews, Fife, 1998. Although modern moulded imitation 'bull's eyes' are common, it is unusual to see whole tables of actual crown glass used in this way.

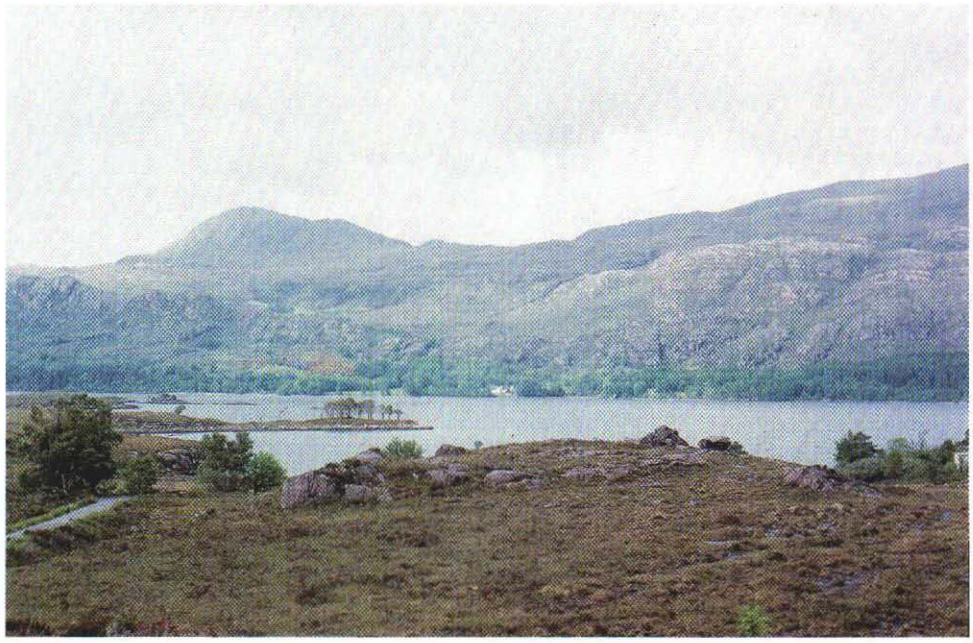
7
A 17th-century sand-glass from the Chapel Royal, Linlithgow. The join of the two vials is covered in leather and bound with twine. This sand-glass is timed to 40 minutes and is believed to have been made in Scotland. (T1978. 108. *Reproduced by courtesy of the Trustees of the National Museums of Scotland.*)

8 Detail from *The Trades of Edinburgh* by Roderick Chalmers, 1720, showing the glazier holding a fixed window, glazed with lozenges of glass. The seven tradesmen are depicted standing in front of Holyrood Palace and are placed in relation to the ranking of their trades, the glazier being of the middling rank, below the wright and mason. In the collection of the Trades Maiden Hospital, Edinburgh. (*Reproduced by courtesy of the Trustees of the National Museums of Scotland.*)

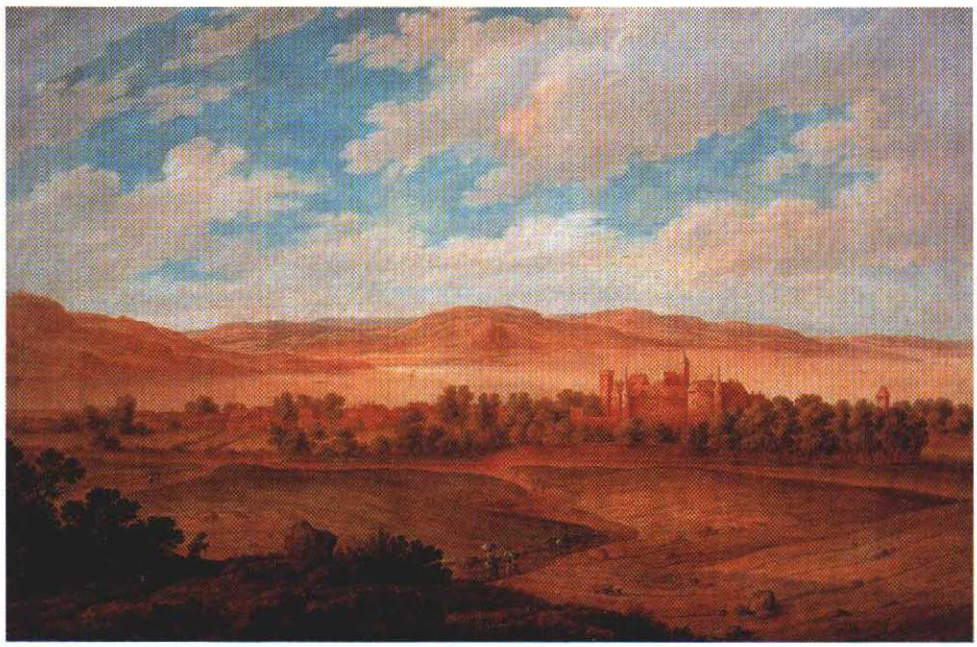


9
A window of Lamb's House, (North) Leith, built as home and warehouse for a merchant of the late 16th or early 17th century. It was renovated in the 18th century and the exterior was restored in 1979. It now belongs to the National Trust and is used as a day centre. The panes of glass would originally have been lozenge-shaped.

10
View of Letterewe across Loch Maree, showing some of the woodland which still lines the shore of the loch.



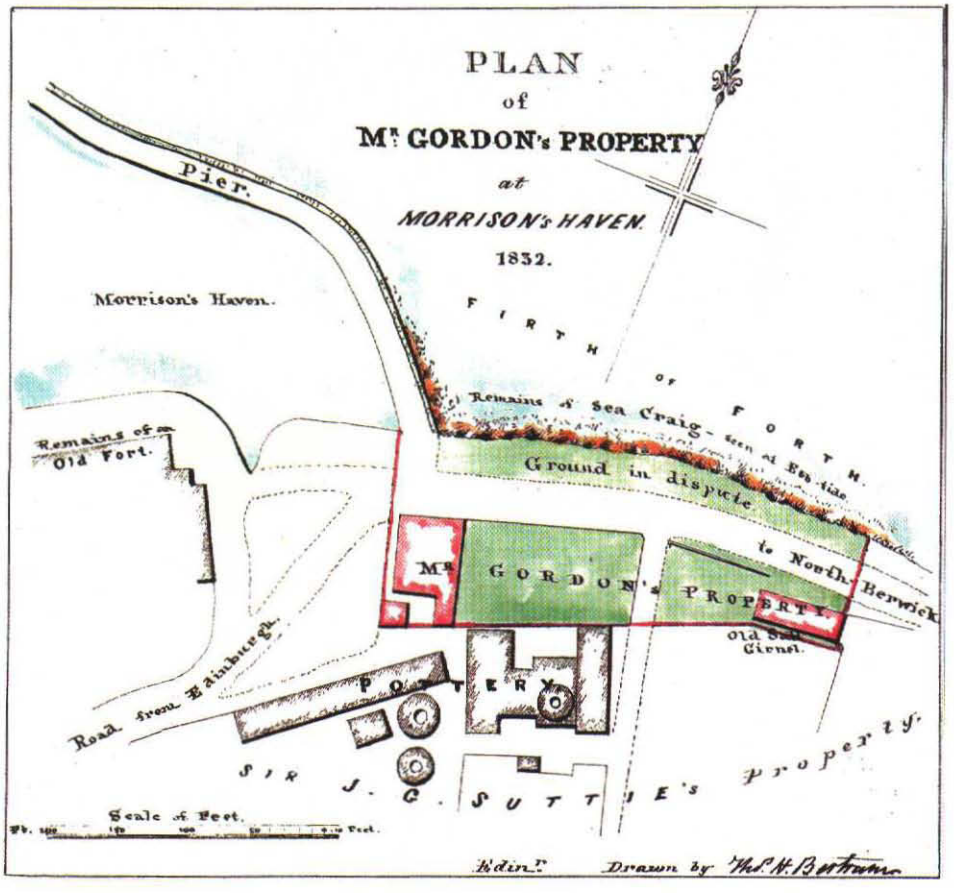
11
Seton House, 1636-7, Alexander Kierincx. One of two known landscapes by the artist, from a series commissioned by Charles I. It shows the seat of the Earl of Winton, where the Italian glassmakers working at Morison's Haven took mass in the 1630s, with the Firth of Forth in the background. *(Scottish National Portrait Gallery.)*



12 David Ayton, Butler of Wemyss Castle, Fife, holding a bottle decanter (Sir John de Medina, 1702). The portrait is a rare example of a painting depicting glass used in a Scottish household of the early 18th century. The bottle is well protected by its straw casing and appears to be of an earlier date than 1702. Private collection. (*Photograph by Joe Rock.*)

13
Prestongrange House, once home of William Morison of Prestongrange, now a golf club. Although the building has been extended at various times, its 17th-century origins remain in evidence. A remarkable painted ceiling dating from 1581 was removed from the house and reconstructed in Merchiston Castle, Edinburgh, in 1964.

14
Plan of Morison's Haven, 1832, prepared for use in a court case between the then owner of the Prestongrange estate, Sir George Grant Suttie, and potter George Gordon. The area labelled 'Mr. Gordon's Property' is referred to in the papers as having previously been the site of a glassworks, among other things. (NAS GD 357/49/27. Grant Suttie of Balgone papers. *Reproduced by permission of Sir James Grant Suttie.*)



8

THE ECONOMY AND THE UNION

It was argued in Chapter 2 that the commercial foundation on which the future expansion of manufacturing and trade was built was firmly laid during the 17th century. It was that period which saw the start of a formal banking system and the evolution of business methods suited to industrial growth. The economic background to the commercial activities of Scottish entrepreneurs at the turn of the century was far from smooth, however, culminating in the loss of up to a quarter of the country's liquid capital in the Darien scheme, which finally collapsed in 1700 (Whatley 1989, 152). Seven years later came the union of the Scottish and English parliaments with all the upheaval and uncertainty which that entailed. The issues surrounding the Union are too complex to rehearse fully here; instead, this chapter will be limited to examining briefly some aspects of the economic background, with particular reference to the glass and other 'introduced' industries, especially soap and sugar production.

EXPANSIONS AND RESTRICTIONS OF TRADE AND INDUSTRY ON THE EVE OF THE UNIION

THE UNFREE BURGHS GAIN TRADING RIGHTS

In his book *Scottish Trade on the Eve of the Union 1660-1707*, Smout (1963a, 17) examines the events of the last decades of the 17th century with regard to trade and commerce. One important change to which he draws attention was the 1672 legislation which removed many of the long-standing privileges of the royal burghs, enabling anyone to sell or export commodities or import raw materials, although a few imports, including wine, were still reserved to them. Although they regained control over foreign imports in 1690, the royal burghs were by then unable to enforce their rights, and the unfree burghs gained trading rights without having to contribute a commensurate share of taxes. The royal burghs were thus reluctantly forced to recognise changes which had been taking place unofficially for many years, resigning themselves to the removal of trade restrictions which would have severely constrained economic progress if they had remained in place.

Smout (1963a, 18) also shows that by the end of the century, partly because of events beyond their control, almost half of Scottish exports were going to England. As he points out, the absolute control of the monarch over Scottish foreign policy had a disastrous effect on Scotland's relations with two of her most important trading partners, the Dutch and French. The wars between England

and Holland from 1652-4, 1665-7 and 1672-4, and even more those with France from 1689-97 and 1701-13, disrupted Scottish trade, exposed the fleet to French privateers and caused the loss of the important wine trade. To balance these debits, peace with England enabled expansion of the inland trade (*ibid*), particularly in linen and cattle. Although increasingly dependent on this trade, Scottish merchants were faced with tariffs on coal and salt, a rise in the duty on linen in 1698, and the threat of the English Alien Act, which would have prevented exports of coal, linen and cattle from the end of 1705 (Whatley 1989, 151). Clearly these matters demanded resolution if Scottish trade were not to be devastated.

In addition to these difficulties, there were 'weaknesses *within* the Scottish economy' (Whatley 1989, 168), in particular, low grain prices, which had restricted agrarian improvements; a depressed local market, exacerbated both by low agricultural returns and stagnant urban wage levels; and a struggling industrial sector. One of the major problems for aspiring manufacturers was 'that low-grade raw materials and poor workmanship forced Scottish goods into the bottom corners of the market, which returned the lowest prices' (*ibid*), a comment which could be applied, at least as far as the raw materials are concerned, to the glass industry. Bottle production was the mainstay of the industry in Scotland, but it provided the lowest profit margins and was not a prestigious product.

THE NEW INDUSTRIES

Scottish economic policy in the 17th century has been criticised by Smout (1963, 21) for attempting to transplant industries into 'the very different economic climate of Scotland', without questioning whether it was sensible to do so. Moreover he suggests that the policy of encouraging small manufactories was a failure, quoting in evidence the continued importation of soap, glass, paper and cooking pots: only the sugar-makers experienced real commercial success,. It is necessary, however, to examine the statistics more closely before such a conclusion can be drawn. In the case of glass, the market for drinking-glasses and window glass appears to have been too small to support their production for long at Leith, which was the only glassworks operating in Scotland between 1661 and 1698. Bottles, however, were a much more successful product and self-sufficiency *was* possible, although not always encouraged by importers. It is, therefore, reasonable to expect that window glass and vessels other than bottles should have continued to be imported. Similarly, without being certain that the soap being imported was the same as that being produced at Leith and Glasgow, it is difficult to be certain that 'the new concerns did not make Scotland self-sufficient in their various products' (*ibid*, 22). In fact, James Montgomerie's application to make 'good white soap' (*APS*, 10, Appendix, 49a) implies that the existing product was inferior (which would support Whatley's point (1989, 168) about the 'bottom corner' of the market). It must be agreed, however, that the introduced industries' contribution to the economy was a small one.

The last 30 years before the Union and the following two to three decades are described as 'economically stagnant' (Whatley 1989, 168). By the 1730s, however, manufacturing was recovering, not so much thanks to the benefits of the Union *per se*, but because the Scots fought hard to make the most of those benefits it did afford and to manage the detrimental aspects of the Treaty (*ibid*, 174-5). In the case of the glass industry there is insufficient evidence to apportion the reasons for periods of trading difficulty and to say with any degree of certainty whether the Union caused specific problems. There is no doubt, for example, that the Leith glassworks was struggling during the early years of the 18th century, but that may have been due to the increased competition from newly established glassworks at Morison's Haven and Glasgow. The Swedish industrial spy who visited Leith in 1719 gave the impression of a flourishing concern (Chapter 7 above), but there is no evidence of any production there between 1733 and 1745. It was later in the century, under new management, that partnership agreements committed shareholders to buying Scottish bottles, and later still that full advantage of access to export markets began to be exploited. By then, Leith was the only survivor of the east-coast glassworks but bottles were also being produced at Alloa.

THE EFFECTS OF THE ENGLISH WAR TAX

Bearing in mind the spectacular failure of the Darien scheme, which itself followed on the heels of the 'lean years' when severe famine caused great hardship, the late 1690s seems an odd time for three different companies to apply to set up glassworks in Scotland, in addition to the one already established Leith. It seems likely, however, that this surge of interest was triggered, not by the economic climate in Scotland, but by fiscal policy in England, which was directly related to the war with France: the ironic spin-off from an event otherwise so detrimental to Scotland's economy.

In May 1695, to the great dismay of those involved, the English Parliament imposed excise duty on glass, stone and earthenwares, tobacco pipes, coal and culm, the money being earmarked to pay for the war with France. Bottles were rated at 1s (sterling) per dozen for quarts and 6d a dozen for pints, while looking glasses and flint glass were taxed at an even higher rate, up to 20% in some cases (Bowles 1926, 20; Newman 1987, 110; *J House Commons*, 11). The duty had an immediate effect on the English glass industry, as witnessed by numerous petitions from glassmakers all over the country. At the end of 1696, for example, a petition from the Stourbridge glassmakers stated that if the tax continued 'the Petitioners and their Families, must starve, or be maintained by their Parishes' (*J House Commons*, 11, 368). On the same day, 2 December, the London glassmakers presented a similar case for abolition, followed the next day by those from Newcastle upon Tyne, who said that the duty was 'a great Discouragement to the . . . Trade; and that if it continued, will tend to their utter Ruin, and all those employed under them' (*ibid*, 606-7). All the petitions were referred to a committee, which reported on 17 February 1697 that the duties had:

> lessened the Consumption of their Manufactures, to the Ruin of many hundreds of Familes. That the Cheapness only of those Manufactures will cause a Consumption of them. That, by reason of accidental Hazards and Losses, these Manufacturers are not capable of bearing such Duties; and that the Use of the greatest Part of them depends more upon Fancy than Necessity (*J House Commons*, 11, 707-10)

To justify their conclusion that the duty should be removed, the committee reported the evidence presented to them by the various petitioners mentioned above, and others. The comments of the hitherto well-established and successful English glass producers are interesting; they put into perspective the extra difficulties experienced by the more fragile Scottish industry. The London glassmakers, for example, said they normally worked for 44-45 weeks a year-twice the number regarded as necessary in 1687 at the Leith glasshouse. They, like all the other witnesses, reported that as a result of the duty, they had been unable to sell their bottles, which produced over two-thirds of the duty on glass, and now held huge stocks of them[1].

While their case was almost certainly exaggerated, the English glasshouses were clearly suffering considerably, and their problems offer a possible explanation for the sudden interest in setting up glasshouses in Scotland. Francis Jackson, from a London bottlehouse, told the House of Commons committee that the Dutch were offering him extremely favourable terms to go to work in Holland, including exclusive production rights to make bottles and exemption from military service for 25 years, as well as exemption from duty on raw materials for three years (*ibid*, 708). If the Dutch were well aware of the lack of employment for the skilled English workforce, it is highly likely that Scottish entrepreneurs had the same idea, and decided to take advantage of such an opportunity to recruit staff and set up new glasshouses. They may also have had in mind the chance to undercut English prices. Unfortunately for the Scottish adventurers, the English Parliament responded to the public outcry by halving the tax in 1698 and repealing it in 1699, the year after William Morison and David Lord Elcho were granted their patents.

COMMERCIAL ATTITUDES TO UNION

Given the economic and political uncertainties of the years preceding the Treaty of Union, it is not surprising that the glass manufacturers were concerned for the future of their industry. William Morison, owner of an agricultural estate on which were coal mines, salt pans, a harbour and a glassworks, was one of the 31 members of the Scottish parliamentary commission in London, which was charged with negotiating the union of the two countries. Morison claimed in 1714 that he had been so keen to ensure the Protestant succession he had laid aside 'all consideration of his own losses but was active in carrying on the Union' despite being aware that it would 'destroy' his glass manufactory[2]. Such altruism is not

[1] A further extract from their evidence has been discussed in Chapter 2.

[2] NAS RH9/17/174, Petition of Willian Morison Esq, 22 Nov 1714.

evident elsewhere in Morison's affairs, so it seems rather more likely that he had expected to gain overall from implementation of the Act of Union, although it is just possible that genuine abhorrence at the thought of a Catholic monarch motivated him in this case. The Union was also wholeheartedly supported by George, Earl of Cromartie, part-owner of the glassworks at Leith, although in 1698 he had been much less enthusiastic about local competition from new glassworks at Glasgow and Morison's Haven.

IMMEDIATE EFFECTS OF UNION

FREEDOM OF TRADE AND REMOVAL OF PRIVILEGES

Article IV of the Treaty of Union, which granted Scotland freedom of trade and navigation, passed through the Scottish Parliament on 19 November 1706, without amendment and by a majority of 156 to 19, 'presumably because even many opponents of incorporating Union saw no objection to freedom of trade by itself' (PH Scott 1994, 199). More controversial, and of immediate rather than long-term concern, however, was the threat to the privileges enjoyed by the manufactories under the 1681 Act, which the English Parliament wanted to remove at once, putting the two countries' industries on an equal footing. Article VI of the Treaty of Union, as presented to the Scottish Parliament for debate in October 1706, began:

> That all parts of the United Kingdom, for ever, from and after the Union shall have the same Allowances and Encouragements, and be under the same Prohibitions Restrictions and Regulations of Trade, and lyable to the same Customs and Dutys on Import and Export (PH Scott 1994, App C, 233).

The Scottish Parliament succeeded in softening the impact on the few established industries, however, by passing amendments to that and other articles dealing with trade. In Article VI they inserted:

> excepting and reserving the Duties upon Export and Import of such particular Commodities from which any persons the Subjects of either Kingdom are specially liberated and Exempted by their private Rights which after the union are to remain safe and entire to them in all respects as before the same (PH Scott 1994, 240).

This amendment was not of any political or long-term importance, but it was helpful to the maintenance of the small Scottish manufacturing base. William Morison referred to these rights being reserved in his petition, after claiming that the Union had rendered his profits 'ineffectual'.

As far as the glass industry was concerned, the Act of Union of 1707 removed the ban on imports of bottles. Open competition from Newcastle cannot fail to have adversely affected the glassworks at Leith and Morison's Haven, but thanks to the Article VI amendment, exemption from duty on raw materials, which had been

granted with the status of manufactory, remained at least in theory. From the point of view of government administration the result was messy. The whole issue of the piecemeal grants of privileges was the subject of much discussion and some frustration in Treasury papers, when officials were attempting to make sense of the various claims submitted after the Union and demanding documentary evidence of the status and ownership of businesses claiming special dispensation.

A report was produced for treasurer Godolphin by the customs commissioners in North Britain on 5 February 1708, which nicely illustrated Scottish business acumen. It pointed out that the Scots had 'industriously' bought all the goods they wanted from abroad before ratification of the treaty, which had created great difficulty for the officials charged with ascertaining the true extent of the exemption claims. The report went on to set out the legal basis for the Scottish exemptions from taxes. It explained that there were two categories of exemption: those given in perpetuity, 'as the lead mines to the Duke of Queensberry and Earl of Hopetoun and the coals of the Lady Halket of Pitfirrane'; and:

> Such as are granted for a term of years to the manufactories, the chief of which now subsisting are the Woollen Manufactories at Glasgow, New Milns & Musselburgh; the Sugar Works & Rope Works at Glasgow & Leith; the several glass works in the Kingdom and three Soap works at Leith . . . (*Cal of Treasury Books*, 22, 121, quoting *Out Letters (North Britain)* 1, 298, 302–05).

The report concluded that it would be best 'to bring all the subjects of the united monarchy to as exact an equality as possible', suggesting that the most acceptable way to sugar the pill for the Scots was to order the Scottish Privy Council to:

> require all pretenders to exemptions to produce their claims within a time prefixed, in order to the consideration of the value of the reversions with the reasons for the continuance or dissolution of them. We think the people of this country may be most easily managed & most peaceably determined in the abridgement of their pretensions by the same authority in appearance which granted them such favourable & extensive concessions (*Cal of Treasury Books*, 22, 121, quoting *Out Letters (North Britain)* 1, 298, 302–05).

The report also commented that if the Scottish manufacturers could not produce goods of equivalent quality and price to their English counterparts they must inevitably go to the wall. There was no inherent reason why Scottish glass products should not equal their competitors, since the manpower came from the same pool of skilled labour that was employed in England, and most of the raw materials were imported. Certainly, by 1707, the quality of Scottish bottles appears to have equalled those from Newcastle. This is borne out by the fact that the three glassworks in existence at the time of the Union, in Glasgow, Morison's Haven and Leith, all survived the removal of their monopoly, which the English glassmakers were undoubtedly eager to exploit. Records of the Leith and Morison's Haven glassworks show that they experienced considerable difficulties, but these were not necessarily due primarily to the effects of the Act of Union, despite William Morison's special pleading.

THE PERIOD OF TRANSITION

Both the report mentioned above and other extant documents indicate that there was (not surprisingly) considerable confusion during the period of transition immediately after 1707, which both sides exploited to the best of their ability. Although the excise privileges granted by the Scottish Parliament remained legally in place, at least for a time, some officials chose to ignore them, as two documents of 1708 in the Cromartie papers demonstrate. They show the proprietors of the Leith glassworks fighting to maintain their exemption from taxation and the quartering of soldiers on their property. In a representation to the Lords of Treasury and Exchequer, they claimed that, having previously enjoyed their immunities 'of late they are not only cessed and stented alse weell for their manufactorie houses and trade But also quartered upon by way of common billating without regard to their priveledges'[3].

DISPUTES

James Cowan, collector of the cess in North Leith had argued that stent was due for the years 1704, 1705 and 1707, claiming that under Acts of Parliament in those years, only the manufactory at Newmilns remained exempt. (It is unclear to which Acts he referred). The response of Cromartie, Balfour, Blackwood and Ainslie, is also extant. Their counter-argument was as before, a reiteration of the earlier acts granting privileges to manufactories. They pointed out that they were not claiming for any land, but only their 'workhouse and pertinents thereof', and that the local manufactories of soap and cards (all in Leith) enjoyed the same rights[4]. The outcome of the conflict is not known.

The question of exemption from taxes had still not been resolved in some cases as much as 22 years later. A petition on behalf of the owners of the Glasgow soapworks in 1730 pointed out that they had been granted manufactory status under Scottish law before the Act of Union and 'that by the Treaty of Union All such Private Rights and Grants were Reserved to the respective proprietors theirof'[5]. It complained that the proprietors

> thought it a very great Hardship that since the commencement of the Union they were obleiged to give Bonds at the Custome House to pay the Dutys of their Pott ashes &c In case the Barons of Exchequer should finde by a sentence or Decree of Court that we have noe right or priviledge of Exemption from these Dutys.

They went on to say that they would never have agreed to such an arrangement unless they had been convinced that the matter would be speedily settled in their favour, complaining that a considerable sum was tied up in the bonds, which they would like released. However the petition has a pragmatic (and rather cheeky)

3 SRO GD305/1/159/5.
4 SRO GD305/1/159/6.
5 NAS GD220/5/1132/6. Undated, but sent with a letter of 10 Feb 1730 from John Graham of Douglas to Mungo Grahame of Guthrie.

ending: 'That if the Barrons of Exchequer think it reasonable for the equality of trade that his Majestie purchase these gifts and priviledges of the Manufactories we are willing to agree thereto upon a Reasonable Consideration.'

The soap manufacturers were not alone, either in their disputes with the tacksmen or in maintaining their privileges long after the Union. Smout has described the long-running battle between the Scottish sugar producers and the tacksmen and exchequer during the last three decades of the 17th century. After the Union a further legal struggle lasted until 1728, when all the rights which had been granted to the sugar-houses under Scottish law were nullified, although they did not have to pay the outstanding amounts due for 1707 to 1722. After 1728 they were subject to the same excise payments and customs dues as English manufacturers but, by then, as Smout points out, the industry 'was strong enough to dispense with their former privileges without apparent prejudice' (Smout 1961, 247).

The cases cited above imply that Scottish manufacturers took an essentially pragmatic approach to post-Union uncertainty about their tax position, continuing to operate under the terms of the Scottish Acts wherever they could and fighting to maintain their privileges until forced to relinquish them, gaining much-needed commercial advantage in the process. Such minor matters are of little importance in the wider discussions about the merits or otherwise of the Union, but they were probably of some significance to the individual companies concerned.

THE DOMESTIC MARKET

Discussions about the economic aspects of the Union naturally focus much attention on the removal of the trading restrictions imposed under the English Navigation Acts. Opinions are divided on the real value of that concession in the short term (see Whatley 1987b), but there is no question that it was vital to Scottish economic expansion during the second half of the 18th century. Until the middle years of the century, the glass, soap and sugar industries depended on domestic demand for their survival. In the longer term, freedom to trade with the English colonies was crucial to the glass industry, as the export figures discussed in the concluding chapter will illustrate.

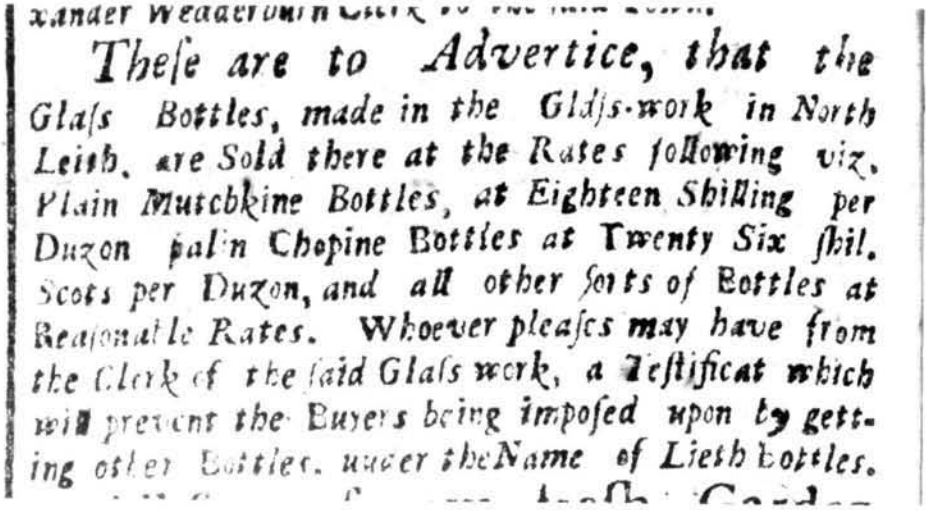
The list of industries operating in Scotland at the time of the Union is small, but among the survivors of the open competition it heralded were those introduced into Scotland for the first time during the 17th century, under the acts specifically designed to encourage them (those criticised by Smout): the sugar-houses, soapworks and glassworks. Whatley has shown that the much larger and longer established Scottish salt industry survived after 1707 thanks, not to the newly extended external trade, but to the domestic market, which was consuming between two-thirds and three-quarters of production in the early 18th century (Whatley 1987b, 30). Smout makes the same point about the sugar-houses, which were situated in both Glasgow and Leith, and therefore able to supply the local markets (Smout 1961, 251). He shows that John Corse, of the Easter House

at Glasgow, kept a close eye on Dutch prices, ensuring that the domestic product remained competitive. Despite being of inferior quality to the Dutch, the Scottish product sold – as goods of lesser quality often do – provided the price is right.

The Scottish glass industry was probably in a similar position. Details of customers are lacking, but most of the market in the early 18th century was almost certainly domestic Although production figures for the glass industry are not available for the immediate post-Union period, the introduction of an excise tax on glass in 1745 enables an assessment to be made of both the increase in overall production of glass and the relative proportions of the domestic and export markets after that date (Table 10). Exports can be gauged thanks to the drawback on tax paid on glass which was subsequently exported. A ledger in the Excise archives[6], listing tax collected in Scotland from 1707-1770, shows that the glass tax (which remained at the same rate until 1777) increased from £135 9s 4½d (sterling) in 1746 to £2,593 17s 7d (sterling) in 1770, a 19-fold increase in 24 years. During the same period, the export drawback went from

Table 10
The glasss excise collected in Scotland between 1746 and 1770, showing a steady increase in levels of production and the relative proportion of glass which was exported. Source NAS E554/1, Exchequer records.

6 NAS E554/1 Gross and Neat Produce . . . Commissioners of Excise in Scotland, 1 May 1707 to 5 July 1770.


xander Weaderburn Clerk to the said Work.

These are to Advertice, that the Glaſs Bottles, made in the Glaſs-work in North Leith, are Sold there at the Rates following viz. Plain Mutchkine Bottles, at Eighteen Shilling per Duzon, Gallin Chopine Bottles at Twenty Six ſhil. Scots per Duzon, and all other ſorts of Bottles at Reaſonable Rates. Whoever pleaſes may have from the Clerk of the ſaid Glaſs work, a Teſtificat which will prevent the Buyers being impoſed upon by getting other Bottles, under the Name of Lieth Bottles.

38 Advertisement from the *Edinburgh Courant*, 15-17 March 1710, offering a certificate to confirm that any bottles purchased were actually produced at the North Leith glasshouse. *(Reproduced by permission of the Trustees of the National Library of Scotland.)*

nothing to £912 7s 6¼d (sterling). The export drawback figures fluctuate considerably, but the chart shows that until the end of the 1750s most of the glass was sold to the domestic market, with a clear increase in the proportion of glass exported after 1758.

Despite the pre-Union ban on imports, Newcastle was so close that it had been a continual threat to the domestic market, and Scottish prices had always had to be in line with those in England. Three years after the removal of import restrictions, in 1710, bottles made at Leith glassworks were being advertised with a certificate to prove their origin (illus 38), while in the same edition of the *Edinburgh Courant* a wholesaler advertised bottles – probably imported – cheaper than anywhere else in North Britain[7]. Whether the Leith advertisement was relying on customers' patriotism or the quality of their bottles is, of course, an open question, but there can be little doubt that after 1707 it was even more important that glass products were as good as those made in England – and only bottles were competitive on that score. They had to be strong, consistent, and generally fit for their purpose: no vintner or laird was going to transfer his expensive wine to fragile or unsuitable containers.

THE IMPORTANCE OF BOTTLE PRODUCTION

The glassworks were in a reasonably good position to cope with the changes, at least so far as their products were concerned. The glasshouse in Glasgow had been established from the first to manufacture bottles. At Morison's Haven, after failing to produce plate glass and other more ambitious items, the bulk of production was also bottles, especially after 1707. At Leith, window glass,

[7] *Edinburgh Courant*, 24-27 Feb 1710.

39
An onion-shaped bottle of dark green glass, partially encrusted with worm tubes, which was drawn up in a fishing net in the Minch, between Orkney and mainland Scotland. This shape was produced at the end of the 17th and in the early 18th centuries. (*Reproduced by courtesy of the Trustees of the National Museum of Scotland.*)

hour-glasses and drinking-glasses had been made during the 17th century, but by the time of the Union, bottles were the main product (illus 39). Certainly the Swedish industrial spy Henry Kalmeter who visited the works in 1719, described it as a 'glassworck . . . where they only make bottels, which are reckoned very good and strong' (Smout 1978, 24).

It is clear that so long as they stuck to bottle production, the Scottish manufacturers could survive in the open market. What is not clear is whether there was room for all three of them. The Glasgow bottleworks had the advantage of having no local competition on the west coast and their strongest English competitors at the time of the Union were in Bristol. On the east coast, however, Leith and Morison's Haven were in competition and Newcastle was much nearer. The reasons for the apparent closure of the Leith glassworks between 1733 and

1745 are unknown, and the demise of Morison's Haven in the mid-1720s was due to a variety of causes not directly connected with the national econonomy, so it is impossible to draw any conclusions from their circumstances.

All that can be said is that the industry did survive and although the immediate post-Union period was certainly a difficult one, it eventually prospered, becoming a major player in the industrial expansion of the last half of the 18th century. There can be no doubt that unfettered access to the colonial market had enormous long-term benefits, whatever the short-term difficulties created by the Union. Although the Morison's Haven glassworks closed in the 1720s, and there was a hiatus in the 1730s and early 40s at Leith, the Glasgow bottleworks continued throughout and large numbers of bottles were produced there, at Leith, and elsewhere in Scotland throughout the rest of the century. Glassmaking may not have rivalled the sugar industry as 'the most important lasting creation of this seventeenth-century movement to bring manufactories to Scotland' (Smout 1961, 240), but it surely deserves more recognition than it has received in the past.

9

MORISON'S HAVEN: THE LATER GLASSWORKS, 1698–1720s

The final period of glassmaking at Morison's Haven is quite well documented from 1698 until the 1720s, under the ownership of William Morison of Prestongrange (1663-1739).

RATIFICATION OF THE GLASS MANUFACTORY OF 1698

An 'Act and Ratification in favors of the Glass Manufactory at Morisons haven' passed by the Scottish Parliament on 1 September 1698, confirmed an Act of the Privy Council of 27 April 1697, allowing William Morison to set up a glassworks at Morison's Haven, and granting him the privileges and immunities inherent in the status of 'manufactory' (*APS* 10, 180). The Act implies that the glassworks was already operational under Morison and his partners, and states that they were supplying bottles and 'severall other sorts and species of glasses which were never heretofore manufactured within this Kingdome such as mirror or looking glass plates coatch glasses moulded glasses and window glasses.' It goes on to say that the adventurers had built one glasshouse and furnaces and had brought from abroad expert workmen, maintaining them in the country for the previous two years 'or thereby' at great expense. Morison and his partners were, therefore, granted a monopoly of production of the items, other than bottles, listed above, for nine years 'unless that others shall set up and make the said species of glass within two years after the date hereof'. Importation of these items was prohibited after 'the first nine months nixt to come', provided the sale price and quality of the Morison's Haven wares were as good and cheap as those sold in London, or previously imported. Finally, the Act stipulated that the privileges of the existing glass manufactory at Leith should not be prejudiced, and that 'the Lord Elcho haveing obtained an Act for his Glass Manufactory of the same tenor and date this present Act shall no wayes be prejudiciall thereto.' The Act in favour of David Lord Elcho's glass manufactory at Wemyss was couched in the same terms, and included the same types of glass, as the one for Morison's Haven.

There is, in fact, another printed 'Act and Ratification in Favours of the Glass-Manufactory at Morisons Haven'[1] (illus 40), which pre-dates by three weeks the one published in the *Acts of the Parliament of Scotland* quoted above. It

1 NAS GD109/3954 (Bargany muniments) 'Act and Ratification in Favours of the Glass-Manufactory at Morisons Haven', 5 Aug 1698. There is no clue in the index to these papers to indicate why this document is there.

40
'Act of Ratification in Favours of the Glass Manufactory at Morison's Haven', a printed – but unpublished – version, which differs in detail from that published in *The Acts of the Parliament of Scotland*. (NAS GD109/3945. *Reproduced by permission of John Dalrymple Hamilton.*)

ACT

And RATIFICATION in Favours of the Glass-Manufactory at Morisons Haven.

Edinburgh, Auguſt 5. 1698.

OUR SOVERAIN LORD, With Advice and Conſent of the Eſtates of Parliament; For the better Improvement of the Manufactory of the Glaſs-Work, Firſt ſet up, and Erected by *William Moriſon* of *Preſtoun-Grange*, within his own Bounds at *Atcheſons Haven*, *Alias Moriſons Haven*, and now Carried on by him and his Partners, whom he hath aſſumed, Doth hereby Ratifie and Aprove an Act of His Majeſties Privy Council in his favours, of the date, the Twenty ſeventh day of *April*, 1697 Years. Whereby the ſaids Lords did allow the ſaid *William Moriſon* to ſet up a Manufactory at the ſaid Place, for making of Glaſſes, and Declared, that the ſaid Manufactory and Glaſs Work, with the Perſons to be Employed therein, and Stock employed thereon, ſhould have and enjoy the whole Priviledges, Liberties and Immunities granted by the former Acts of Parliament or Council in favours of Manufactories at any time bygone, as the Act of Council at length bears: And further Conſidering, that the ſaid Manufactory is now ſet agoing by the ſaid *William Moriſon*, and his ſaid Partners, whereby the Countrey about is not only furniſhed with Bottles, which are ſold at very moderat and eaſie Rates; But likewayes there are made ſeveral other Sorts and Species of Glaſſes, which were never heretofore Manufactured within this Kingdom, ſuch as Mirror or Looking Glaſs Plates, Coach-Glaſſes, Spectacle Glaſſes, Watch Glaſſes, Moulded Glaſſes, and Window Glaſſes, whereof ſome Samples has been ſhown to the Eſtates of Parliament. And in regard the Adventurers have been at great Expences and Trouble, in Building an Glaſſe Houſe, and Furnaces fit for the ſaid Manufactorie, and in bringing home from abroad expert Workmen for the ſaid Work, and in maintaining them in the Countrey theſe two years bypaſt, or thereby, *Therefore His Majeſty*, with Advice and Conſent of the Eſtates of Parliament, hereby Diſcharges and Prohibits all Perſons whatſomever (except the ſaid *William Moriſon* of *Preſtoun Grange*, and his Co-partners) from making any of theſe New Species of Glaſſes, above and after-mentioned, which were never made before in this Kingdom, *viz.* Mirror or Looking Glaſſe Plates, Coach Glaſſes, Spectacle Glaſſes, Watch Glaſſes, Moulded Glaſſes and Window Glaſſes, and alſo for the ſpace of Nyne years, after the date hereof, unleſs that others ſhall ſet up and make the ſaid Species of Glaſſe within two years after the date hereof; And likewayes does Prohibite and Diſcharge all Perſons whatſomever to Import any of theſe Species of Glaſſes above mentioned, under the pain of Confiſcation, of what ſhal be ſo Imported after the firſt Nyne Moneths next to come, the one half to be Applyed for the uſe of the ſaid Manufactory, and the other half to the Diſcoverer. The ſaid *William Moriſon*, and his Co-partners, alwayes Furniſhing to the Kingdom as good, or better, and as Cheap and Cheaper the foreſaid Species of Glaſs, as has been Imported any time heretofore, and finding ſufficient Caution before the Lords of His Majeſties Privy Council for that effect: *And ſicklike*, doth hereby grant to, and Endue the ſaid Manufactory, with all the Priviledges, Immunities and Exemptions granted formerly to any other Manufactory within this Kingdom, and particularly to the Woolen Manufactory at *New miln*, within the ſame Shire of Eaſt *Lothian*, where the ſaid Glaſs Work is Erected.

also differs from the published version in several minor details. Dated 5 August 1698, the list of wares produced, in addition to those already mentioned, included 'Spectacle Glasses' and 'Watch Glasses' and concluded that: 'some Samples has been shown to the Estates of Parliament'. In this version no mention was made of the glassworks at Leith or Wemyss. The products were to be 'as good, or better, and as Cheap or Cheaper the foresaid Species of Glass, as has been Imported any time heretofore'; London was not specifically mentioned. This version of the Act concluded that it:

> doth hereby grant to, and Endue the said Manufactory, with all the Priviledges, Immunities and Exemptions granted formerly to any other Manufactory within this Kingdom, and particularly to the Woolen Manufactory at *New milns*, within the same Shire of East *Lothian*, where the said Glass Work is Erected.

The parliamentary act was important to William Morison and his co-partners for the grant of the status of a manufactory, as well as for the conditional ban on imports and the rather limited protection from competition. The second act emphasised the manufacture of mirrors and coach glass, both of which were made of plate glass, as explained in Chapter 1. Certainly that was the intention and there is some evidence that it was indeed made during the period of the nine-year monopoly, although by 1705 rough plate glass was being imported and finished in Edinburgh, as discussed below. An excise bullion book from the end of the 17th century shows that no less than 20,700 pounds of barrilla were imported from Amsterdam to Morison's Haven in October 1700, indicating that high quality glass, in considerable quantities, was being produced at that time[2]. It is unclear what was meant by 'moulded' glasses in the 1698 Act, as both drinking-glasses and bottles were often blown into moulds. However, bottles are also specifically mentioned, so it is possible that Morison was keen to cover all possible types of production. While there is evidence that some drinking-glasses were made at Morison's Haven, for most of the glasswork's existence bottles were the staple product. They were, of course, the easiest glass item to produce, and had the most assured local market, as was illustrated by the inventories quoted in Chapter 3. Catherine Ross, in her thesis on the development of the glass industry on the rivers Tyne and Wear, makes the point (1982, 188) that the equipment for bottle-houses was simple, coarse materials were cheap and easily available and, although there was still keen demand for workmen, the skills required were less than those for making flat or flint glass.

MIRROR-MAKERS AND EDINBURGH CUSTOMERS FOR PLATE-GLASS

Before looking in detail at the records relating to the Morison's Haven glassworks, however, it is necessary to examine briefly material concerning the personnel at

2 EUL, La. 491/12, 'Manufactorie Book', starting Nov 1696.

the works published by Fleming, and repeated by other writers. In his description of the Morison's Haven glassworks, Fleming states (1938, 104) that William Morison employed 'Paul le Blanc', a mirror-maker. He goes on to say that 'Le Blanc removed his workshop to Preston-Grange, whither he also took his family including his son Paul and William Scott, both expert mirror makers' (*ibid*). He also mentions their application for exemption from tax on imported rough glass plates, which was opposed by a Sarah Dalrymple. Fleming, as usual, based his information on Chambers *Domestic Annals of Scotland* and although the people certainly existed, many of the details are incorrect. It would seem worthwhile, therefore, to attempt to present a more accurate account.

WILLIAM SCOTT CABINET-MAKER AND ENTREPRENEUR

William Scott, who described himself as a cabinet-maker (RK Marshall 1973, 46), was one of the more enterprising Edinburgh entrepreneurs at the end of the 17th century. He set up a number of businesses, the first in 1690, when he obtained a patent of monopoly to make cane chairs[3]. This was followed by a coach-making manufactory, for which he obtained privileges in 1693 (*APS* 9, 321). In 1695, he and his partners obtained the status of manufactory for a saw-mill at Leith, with a grant that no rival mill should be set up within a 15-mile radius for 19 years (*APS* 9, 490). The Leith customs accounts show that in August 1696, he imported, free of duty, English window glass and 19 dozen 'plates and sights of glass' for his coach and [sedan] chair work[4].

An undated contract between 'Captain William Scott cabinet maker, glass grinder and burgess of Edinburgh' and Anna, Duchess of Buccleuch shows the extent to which Scott worked with glass. He agreed to 'cut as much French glass for panes, lozenges or squares as shall furnish all windows presently in the castle of Dalkeith, and fix them in frames thereof', before martinmas 1705. The Duchess was to provide all the materials[5].

Scott was also in partnership with James Leblanc, a mirror-maker, the two men being described as 'Masters of the Glass Manufactories' in a dispute before Parliament in 1705. James Leblanc was a French protestant, who made mirrors in a workshop in the Canongate, and had been admitted burgess and guild brother gratis, in Edinburgh on 2 December 1698 (*Edin Burgs* 1406-1700, 304). In a petition to Parliament in 1705, Leblanc stated that he had served in King William's army, at the conclusion of the peace being a lieutenant in the Duke of Atholl's regiment, and had married 'a gentlewoman of this countrey of good relations', whom he persuaded to sell their estate to Sir John Houston. He then:

> imployed the price thereof and his haill other stock and credite in erecting and setting up a glass work and bringing home expert artists for grinding, cutting,

[3] NAS PA7 21/171, Petition of William Scott, cabinet-maker in Edinburgh.

[4] NAS E73/119/1.

[5] NAS GD124/1130/33/7.

> polishing & silvering all manner of glasses. And whyle there was any plate made in the kingdom [presumably at Morison's Haven] he wholly made use of the same and has advanced the polishing or finishing of mirrours & sconces of all kinds to the same perfection as in any other countrey[6].

Leblanc claimed that he was employing 'many hands' and keeping within the country 'vast soums of money, in use to be exported'. The object of his petition was to be able to import rough plate glass, and other essential material, free of duty so long as there was no plate glass produced in Scotland.

OPPOSITION FROM SARAH DALRYMPLE, JAPANNER

Leblanc and Scott had a rival, however, in the person of Sarah Dalrymple, daughter of the deceased Charles Dalrymple 'last Keeper of the Registers of the Shire of Air', who lodged a petition to Parliament in 1705.[7] She claimed to have perfected the 'art of making japan [a form of lacquer used to decorate wood, in this case mirror frames]' and asked for power and warrant to enter into indentures with apprentices, and to prevent anyone trained by her from setting up on their own. She also requested permission to import finished mirrors and foreign japan free of duty[8].

Her petition was vigourously opposed by Leblanc and Scott, who said that not only was it directly contrary to the Act of Parliament relating to the glass manufactories, but that such imports would be detrimental to any future glass-works. Since they wanted themselves to import rough plate glass, they then set out to prove that 'there is a great difference betwixt the importing of rough and polished Glass':

> For the first sets a World of People to work at home, it being known and if need beis can be proven, that Mr. Le Blance and Scot has sometimes no less than twenty four Persons at work, in Grinding, Cutting, Polishing, and Silvering of Glass, which has cost great Charge, and long Labour to bring their work to this Perfection. 2. Rough Glass tho bought abroad does not cost the sixth part of the Rate of the finished . . . so it would occasion the export of a Vast Deal of money.

Their main anxiety, though, was that if Sarah Dalrymple were able to import duty-free foreign mirrors, too many people 'having an itch and desire after what comes from abroad, tho no better than what is made amongst ourselves . . . the whole Nation would be served by her, and so that Manufacturies of Mirror Glass . . . will come to nought.' They endeavoured to pre-empt the counter-argument that William Scott had himself imported finished plate glass for his chairs and coaches duty free, by insisting that the circumstances were quite different, since there were many other japaners, but Scott had been the first in Scotland to make

6 NAS PA7/19/110. Petition of James le Blanc, merchant in Edinburgh, Aug 1705.

7 The documents are undated, but the index says 1705.

8 NAS GD124/10/444/13.

coaches and chairs, and that when he set up his business, no polished glass was obtainable in the country.

Sarah Dalrymple poured scorn on their arguments, saying she only wanted sufficient mirrors for her own use, she was not seeking a monopoly of japanning; there would still be 'place enough for Mrs. Le Blanc and Scot to inclose Mirrours finished by them'. She continued, with considerable irony, that, although they made

> a great noise of great numbers of People imployed . . . and of a great Manufactorie, and great Charges, and long labour, to bring the same to perfection, all these are great stories, for this mightie Manufactorie employes two Prentices, and a Journey man, and is so far from being brought to perfection that there are several Diamond Cutts, that they are utterly incapable to cut, neither is there the least Vestige of Charges, or Labour in the matter, and indeed this pretence of a Manufactorie is better to cover the Importation of great quantities of finished Glass by Mrs. Le Blanc and Scot everie day, which is hoped they will not deny, and can be abundantly proven.

Whatever the truth, both sides appear to have continued in business. Some 20 years later, Sarah Dalrymple supplied 'Baron Clark' at Penicuik with mirrors and sconces costing £65 16s 0d[9], while in 1707 James Leblanc provided two glasses with glass slip for a chimney piece to the Earl of Breadalbane, for the price of £3 15s (sterling)[10]. William Morison was undoubtedly well aware of the demand for plate glass for mirrors, coach and chair windows (illus 41) and he clearly hoped to supply Scott and Leblanc. There is, however, no evidence of any partnership with either man, although a Leblanc appears to have been working at Morison's Haven in 1698[11].

WILLIAM MORISON OF PRESTONGRANGE

We should now turn to William Morison, the chief instigator of the Morison's Haven works. He had inherited the Prestongrange estate from his father Alexander on 31 December 1684, the instrument of sasine being registered in Edinburgh on 15 July 1685[12]. The baptism of William Morison, son of Sir Alexander Morison of Prestongrange, is recorded on 19 April 1663, one of the witnesses being John Jossie, bailie of Edinburgh, who had briefly owned a glassworks[13].

9 NAS GD18/1767 3.4, Account, 18 May 1726, currency not specified.

10 NAS GD112/15/118/25, Letter from Edinburgh, 2 April 1707.

11 Payments to 'le blanc' were listed in 1698, Two, for unspecified services totalling £56 4s 0d, another for collecting goods from Kirkcaldy (NAS RD14/41/1437).

12 NAS GD247/114.

13 NAS CH2/307/28.

41
This billhead of 1748 gives some idea of the products being advertised by glass grinders at the time. Bill for Brodie's Looking Glass and Cabinet Warehouse, sent to John Sivewright by Francis Brodie Wright and Glass Grinder. (NAS GD237/16/66/30. *Reproduced by permission of Messrs Tods Murray WS.*)

HIS EARLY LIFE AND FIRST MARRIAGE

William Morison married twice, on both occasions clandestinely. On the first occasion in 1677 he was just fourteen years old, while his bride Janet Rucheid was only twelve. She was the daughter of Katherine Trotter and John Rucheid (Roughhead) of Craigleith, and niece of James Rucheid, the town clerk of Edinburgh. The wedding took place secretly in England, and was arranged by Katherine Trotter, in order to pre-empt the death-bed insertion in her recently deceased husband's will, that Janet should marry her cousin James, then aged nine, son of James Rucheid the town clerk (*RPC*, 3rd Ser, 5, 621-3). The young couple began their married life facing a fine of 3,000 merks imposed by the Privy Council of Scotland for their secret marriage, although £1,000 of it had to be paid by Janet's maternal grandfather the laird of Mortonhall, who had helped them (*ibid*, 5, 129). Janet died in 1716 (*Edin Tests 1701-1800*, 231). They had eight children, four of whom died young (Young 1993, 510). The three daughters married well and took with them considerable tochers (dowries) totalling 170,000 merks, a heavy burden on Morison's estate.

MORISON'S SECOND MARRIAGE

In 1718 William Morison married for the second time, again a somewhat unconventional event, graphically described in a letter to the manager of the glassworks. His bride was 'the daughter of Sir John Jermayn (by one who calls herself Mrs. Jermayne) own'd generally to be the bastard of Sir John Jermayne'[14]. William Morison met her through the auspices of a matchmaker, courted her in secret, and married her without the knowledge of his heirs. The letter describing the marriage alleged that the new Mrs Morison had been apprenticed to a 'cheyna house', but was thought to be the likely heiress to the £8000 (sterling) fortune of

14 NAS GD1/576/8, Joseph Blake in London, to Mr Andrew Hutchinson, 1 May 1718.

her unmarried uncle, a sea captain 'much more mentioned for his substance than his valour'. Shortly after her wedding to William, the bride's wealthy uncle married and had a son although, as the letter puts it, 'it was insinuated the Capt wou'd never marry, and that if he did he cou'd not have any children, which seems to me an uncertain presumption when women who can bear children may have them, whether the husbands pipe is in tune or no'. The writer of this gossipy letter clearly regarded William Morison as foolish and gullible – to put it mildly – to have relied on expectations of his new wife's uncle. The event does, perhaps, illustrate his constant need for cash, and could imply rather poor judgement, but a letter from Morison's grandson, the Earl of Sutherland, written some 17 years later, appears to vindicate his choice. He wrote: 'I don't doubt but your lady and her relations will get you out of your difficultys, being you are so very fond of that family'[15].

WILLIAM MORISON'S SUPPORT FOR THE UNION

William Morison had a lengthy parliamentary career, both before and after the Union. He was a commissioner to the Scottish Parliament from 1690 to 1702 for Haddington Constabulary, and from 1703 to 1707 he represented Peebleshire (Young 1993, 510). He was one of the Scottish commissioners sent to London to negotiate the Treaty of Union, and after 1707 continued to represent Peebleshire at the British Parliament until 1714. In 1707 he was appointed to the Privy Council of Scotland[16]. Morison was a self-avowed ardent supporter of the Protestant succession, claiming that he had suffered financial hardship as a result of refusing to provide coal to the 'enemy' during the siege of the Bass Rock, and by raising and maintaining with others, a regiment for King William's service[17]. In a petition to the Lords Commissioners of His Majesty's Treasury dated 22 November 1714, Morison also claimed that after the Act of Parliament of 1698 in favour of his glass manufactory, he 'was at vast charges in erecting the same and before the Union of the two Kingdoms made very considerable profit thereby which by the Union is rendered ineffectuall.' He went on to assert that he had laid aside 'all consideration of his own losses' in order to support the Protestant succession, despite being 'very sensible that the Union would not only destroy the said manufactory but also bring him under a tax of £1300 a year as a considerable salt master.' He ended the petition by requesting 'relief for the damage which your petitioner suffers by a treaty that has been so happy in its consequences to these kingdoms'[18]. Whatever the truth of his plea, the operation of his glassworks was erratic and its profitability very variable after 1707, although some of the problems appear to have been due at least in part to his own mismanagement, as this chapter will attempt to demonstrate. By 1707, of course, Morison's nine-year privileges had run their course and since his glass business

15 NAS RH9/17/174/5, Earl of Sutherland in London to William Morison of Prestongrange, 18 March 1735.

16 Draft ms, *History of Parliament 1688-1714*, History of Parliament Trust, Wedgwood House, London. My thanks to Andrew Hallam for enabling me to have access to this material.

17 NAS RH9/17/174.

18 *ibid.*

relied on local markets, he had nothing to gain and potentially much to lose, by the freeing of trade with England.

THE PROGRESS OF THE GLASSWORKS

Frequent recourse to litigation appears to have been a feature of Morison's life, as it was for many of his contemporaries, and it is from legal documents that much of the material relating to the glassworks is drawn. One long-running dispute ended in the House of Lords in 1719[19]. The case is also summarised in the extracted decreets of the Court of Sessions and many of the warrants are extant. Together they provide a useful insight into the pre-Union years of the Morison's Haven glassworks.

THE CO-PARTNERSHIP AGREEMENT

The original agreement of co-partnership, which was signed between 18 and 30 March 1698, shows that having built and set up the glassworks himself, William Morison then formed a co-partnership with other local people to rent and run the whole concern. The occupations of the partners provide an interesting insight into the range of men owning sufficient surplus capital to risk becoming involved in such a venture at the close of the 17th century[20]. The signatories were:

William Morison
Sir William Binning
Patrick Steill, vintner, Edinburgh
George Livingstone, 'taylier'
John Mathie, skipper
Daniel Tittery [glassmaker]
Peter Simpson, 'slatter', burgess in Cannongate
Gideon Eliot, chirurgeon apothecary
Janet Trotter, Lady Craigleith
James Smith of Whitehill
David Burton, glazier
George Livingstone, wright
Alexander Smith
Edward Hawkes [glassmaker]
William Monypenny, advocat

Each co-partner committed himself to a £50 (sterling) share. George Livingstone (almost certainly the tailor) was named as cashier, and one of their number was to be appointed overseer. Smith, Burton and Livingstone (the tailor) were all burgesses of Edinburgh.

LEASE OF THE GLASSHOUSES

The co-partnership agreed to take a tack of the glasshouses and the village of Morison's Haven comprising:

> the whole dwelling houses, vaults, two girnels and the Ducat Girnell (excepting the Dow house alleanderly above it) Milns . . . and that Aiker of

19 House of Lords, Printed Appeal Cases and Writs of Error, 1716-20, no 74.

20 NAS CS21/447. None of the papers in the box or bundle is individually numbered.

> ground lyand without the park dyke which belongs to the said Milns, and likewise the Oven, Maltkiln, Barn, and Harbour with the park and that piece of ground next the Ducat and the Glasshouse furnished and completed that is Windtight and Wattertight And also the liberty of fishing with the Boats and Netts and of Brewing, selling vending and ?tapeing Ale, Bear and all sorts of liquers and of selling all kindes of merchand goods as freely as he [William Morison] might have done himself before the setting of these presents. . .[21].

William Morison agreed only to carry on any trade as a co-partner, with the exception of his coal and salt works and the agricultural produce of his estate. He assigned to the company the rights granted to him by the Act of the Privy Council, and to an agreement he had made with Alexander Henderson, who owned some of the houses and yards at Morison's Haven. The tack was extensive, and appears to have included the whole park of Prestongrange, bounded by dykes on the south and west, a dyke and the highway on the east, and the sea on the north. It was to start on Whitsunday 1698 for the usual 'three nineteen years'[22], for a rental of 1,000 merks annually, plus 200 merks from their yearly profit. William Morison was to be exempt from shore dues, and he offered to waive his rights to the 200 merks if they were put towards the repair of the harbour. The partnership had permission 'to win what clay and sand may be proper for the glasswork', provided they paid the costs and made good any damage.

CONTRACT WITH DANIEL TITTERY, GLASSMAKER, FROM NEWCASTLE

A month later, and clearly part of a pre-arranged plan, there was a further agreement between the co-partners and one of their number, Daniel Tittery a glassmaker from Newcastle, and his two sons, Daniel younger, and Nathaniel[23]. In a contract dated 28 and 29 April 1698, the co-partners set in tack:

> the glass house with the furnaces working tools and others, conform to ane inventar to be subscribed . . . and reserving alwayes to the said copartnery the little furnace in the said glass house called the collcall? house for makeing of mirrere glass and others together with sufficient ware houses for holding of all sort of materialls and requisites and necessar for the said glasswork and glass and bottles that should be made thereof . . .[24]

This second tack was also to start on Whitsunday 1698, and was to run for nine years, ending on 5 September 1707. The co-partners were to advance to Daniel Tittery £500 (sterling), under the supervision of someone to be appointed by them, to be used for 'furnishing and buying all sort of materials for makeing of broad window glass and glass bottles in the said manufactory' and for paying the workmens' wages. Daniel Tittery was to have a house, brew house, stable, coal

[21] NAS CS21/447.

[22] Many tacks of land and property were for 'three nineteen years', meaning 57 years.

[23] In 1679 a 31-year lease of the old glasshouses in Newcastle was granted to 'Jacob Henrey, William Tizacke and Daniell Titery', and was renewed at a reduced rent in 1710 (Tyne and Wear Archives, Calendar of Common Council Book, Newcastle 1656-1722).

[24] NAS CS18/188. Pages are not numbered.

cellar and yard, with two fishing boats, 'with freedome and leave to keep any sallary there for brewing and vending ale bear and all other liquers . . .' For the first year it was to be rent free, after that he was to pay £25 (sterling) a year.

The Titterys agreed to make 'as good and sufficient broad window glass and glass bottles as any that were made in Newcastle', to pack the window glass into chests for sale and deposit them in the warehouse. They were to pay to the co-partnership 'twenty pound sterling and yearly profit for each one hundred pound sterling of the said five hundred pound sterling so to have been advanced . . .' so long as any of the £500 should remain outstanding, or the debt could be paid in bottles or window glass. The glass products were to be offered for sale under the supervision of the company and the proceeds were to be used to repay the inital £500 and the 20% interest.

It is not clear why Daniel Tittery and his sons should have taken a share in, and tack of, a Scottish glasshouse, but obtaining their services must have been of considerable importance in attracting venture capital. The fact that they were to make broad glass, which, when of high quality and made very thick, could be ground and polished to form plate glass, confirms Morison's intention to make mirrors, but nothing in the extant records explains why the little furnace was kept apart from the Tittery's tack. It is possible that the co-partners had a separate agreement for the supply of plate glass, for which they paid as required, but that must remain speculation at present.

WILLIAM MORISON BUYS BACK SHARES IN THE COMPANY

In 1699, William Morison began buying back some of the shares in the co-partnership. On 8 August, Morison, William Monypenny and Gideon Elliott borrowed £300 (sterling), on their conjunct personal bond, from the newly established Bank of Scotland[25]. On 5 September, Sir William Binning and Patrick Steill renounced their shares in the glassworks and on 21 October, Gideon Elliott followed suit. Morison agreed to pay each of them £10 (sterling) a year during the term of the Tittery's lease and to clear any remainder when the lease expired.

Two other shareholders, who later instigated the legal proceedings from which this information has been obtained, paid into the co-partnership more than the £50 (sterling) agreed; David Burton paying a total of £76 (sterling), while James Smith of Whitehill paid £100 (sterling) (the co-partnership is described as consisting of 16 shares, but there are only fifteen signatories, so perhaps Smith bought two). They resigned their shares in favour of William Morison on 21 October 1699, on the same terms as the other former shareholders[26]. Morison eventually also took over the three shares of Lady Craigleith (his mother-in-law) after her death.

[25] BOS BS/1/5/3, Minutes, 1696-1726.

[26] NAS CS18/188.

ACCOUNTS FOR 1699

George Livingstone, the treasurer, prepared a balance sheet on 6 September 1699, which showed a deficit at that point of £1,275 16s 8d Scots from a total budget of £18,934 16s 8d[27]. His statement actually shows the cost of the 16 original shares to have been £76 (sterling) each, in contrast to the £50 (sterling) stated in the co-partnership agreement. Among the credit entries are cash received from the bank £1,333 6s 8d and 'cash received from Mr. Lasagette to acct of glass delivered to him £168'. There is a brief mention elsewhere in the legal summary of a contract between the company and Mr Leblanc and Mr Lasagette, who were almost certainly partners in the Edinburgh firm of mirror manufacturers discussed above. This would, therefore, appear to confirm that plate glass was being made in the early years.

The debit entries of Livingstone's accounts also contain some relevant information, including the acquisition of Alexander Smith's and Peter Simpson's shares, which were bought by Lady Craigleith, who also borrowed from the company. Coal for 'the use of Daniel Tittory and Ed. Hawkes' was bought from Falsyde (inland from Prestonpans, see illus 47) and Prestongrange, the bill for five months in 1698 amounting to £160. The accounts were countersigned by John Brown, clerk to the company.

In addition to the balance sheet in the Court of Session papers, on 16 December 1701, a three-page list of the expenses of the glassworks during 1698 and 1699 was entered in the Register of Deeds[28]. This account is also dated 6 September 1699, and was originally made to accompany the balance sheet mentioned above, since the total expenditure of £17,236 17s 2d Scots is listed there. It was audited and signed by William Morison, John Brown and George Livingstone, one of the witnesses being Robert Jossy, son of John Jossy (Jossie) of Westpans. By far the largest item of expenditure was a total of £4,166 4s 0d for timber, while 2,000 bricks cost £28. This must imply that the working area around the furnace was of timber. Livingstone's account covers everything from 'dinner at Morison's Haven £11 11[s] 0[d]' and frequent charges by the 'Cross Keys', to a quair of paper and books for the clerk. Edward Hawks appears to have been one of the glassblowers, since a delivery of barilla was divided between him and Tittory. He features on a number of occasions in the account, the most intriguing items being entries suggesting that he had been working in Kirkcaldy: 'to Starbie for goeing over twice to Kirkcaldy for Hawks tools £3; to Le Blanc when he went over for Hawks goods £6;' but the final reference to him reads: 'for makeing Mr. Hawks Coffine pr recept £25'. There is also an entry: 'To instrumenting Baillie Reston at the Wemyss to give up the ashes £10 12[s] 0[d]'. The accounts were agreed by the auditors, except for two items: £150 paid to Collector Seaton, and clothes for Jacob Visitella and Thomas Sweet, costing a total of £78 3s 0d.

[27] NAS CS21/447.

[28] NAS RD4/89/933 and RD14/41/1437. 'Accompt of dispursements be George Livingston Theasurer to the Glass Company' The currency is Scots.

A CHANGE OF MANAGEMENT: MORISON ASSUMES CONTROL

Until roughly the end of 1699, according to witness statements, it appears that, with John Brown acting as clerk, decisions about the management of the glassworks were made by shareholders at sederunts under different chairmen, with George Livingstone acting as treasurer. However, after taking over half the shares in the company, William Morison appointed James Smith, described as 'Clark of the Barronie of Prestoun', to be 'principle Clark Inspector Overseer & accomptant of the manufactory att Morison's Haven for glasswork and of all my coall workes & saltworks', in a contract registered at the Commisary Court in Edinburgh on 1 March 1700[29]. Smith was contracted to take overall responsibility for supervising the grieves and other employees, inspecting their accounts, collecting debts and hiring and firing workmen, acting at all times as Morison would himself. All the proceeds were to go to Morison, who, to all intents and purposes, had taken over the running of the glassworks.

A prolonged legal dispute was mentioned above which concerned William Morison's alleged failure to pay the annual sum of £10 (sterling) to former shareholders David Burton and James Smith, as he had agreed. William Morison strongly denied having agreed to buy David Burton's share and that he had taken over the management of the glassworks for his own benefit in 1700. Burton, Smith *et al* brought their case before the Edinburgh sheriff court in 1700, and judgement was made against Morison. However, he appealed against it on several occasions and the case dragged on until the final arbiters, the House of Lords, again found against him on 8 April 1719 and he was, once more, ordered to pay up, together with £20 (sterling) costs[30].

ALLEGATIONS OF FAILURE AT THE MORISON'S HAVEN WORKS

It was alleged at the end of 1700, that the Morison's Haven glassworks had failed to produce the wares listed in the 1698 Act for more than a short period.

In a petition of 12 November 1700, James Montgomery younger, merchant in Glasgow, and his partners, set out the case for granting them the right to set up a glassworks and soapworks in Glasgow, citing among other reasons that:

> Preston-Grange hath clearly failed as to the foresaid condition [that of supplying glass as good and cheap as in London], it being notour, that he neither hath furnished the Kingdom with as good and as cheap: nor indeed hath or can furnish it at all, and as to the insufficiency of his glass, it is notourly known specially as to his Mirrors and Watch-Glass.

29 NAS CC8/17/22.

30 House of Lords Record Office, Appeal Cases and Writs of Error, William Morison of Prestongrange v James Smith, David Burton and others.

The petition goes on to cite accompanying statements, one from the glaziers, another from 'these that deal in drinkinge glasses', and a third from 'Scot, who deals in mirror and watch-glasses', all taken within the previous six months, 'whereby it plainly appears, that Preston-Grange could not furnish them at all, having indeed none of the saids glasses for their use and service' (*APS* 10, Appendix, 49). Montgomery was, of course, making the case in his own favour and cannot, therefore, be regarded as objective, although there is probably at least some truth in his allegations. The petition ended with the statement that Prestongrange 'neither has performed nor can perform in the terms of his Act, or in effect hath done any thing to good purpose, his work, as is informed, being also deserted and never like to thrive in his manadgement.' The outcome of this and the granting of Montgomery's petition will be discussed in Chapter 12.

One of the Court of Session witnesses in the dispute with the former shareholders, whose signed depositions still exist, was Robert Liptrax (Liptrop) aged 32, a glassmaker, whose name will appear again later in this chapter. He stated that after 1700, he sometimes received his wages from Prestongrange, sometimes from James Smith or Alexander Herriot, both clerks, and that the latter was responsible for selling the glass. Listed among the items held at the Court, (but not now among the warrants), is a paper, mentioned by Liptrax, giving William Morison's consent for him and Jacob Visitall, with their boys and servants, to go to Leith 'and use their calling and trade in makeing of bottles only in that manufactory'[31]. Liptwax had requested such permission because the fire was out at Morison's Haven, so there was no work for them there. The permission is dated 19 August 1707, a few weeks before Daniel Tittery's tack was due to expire.

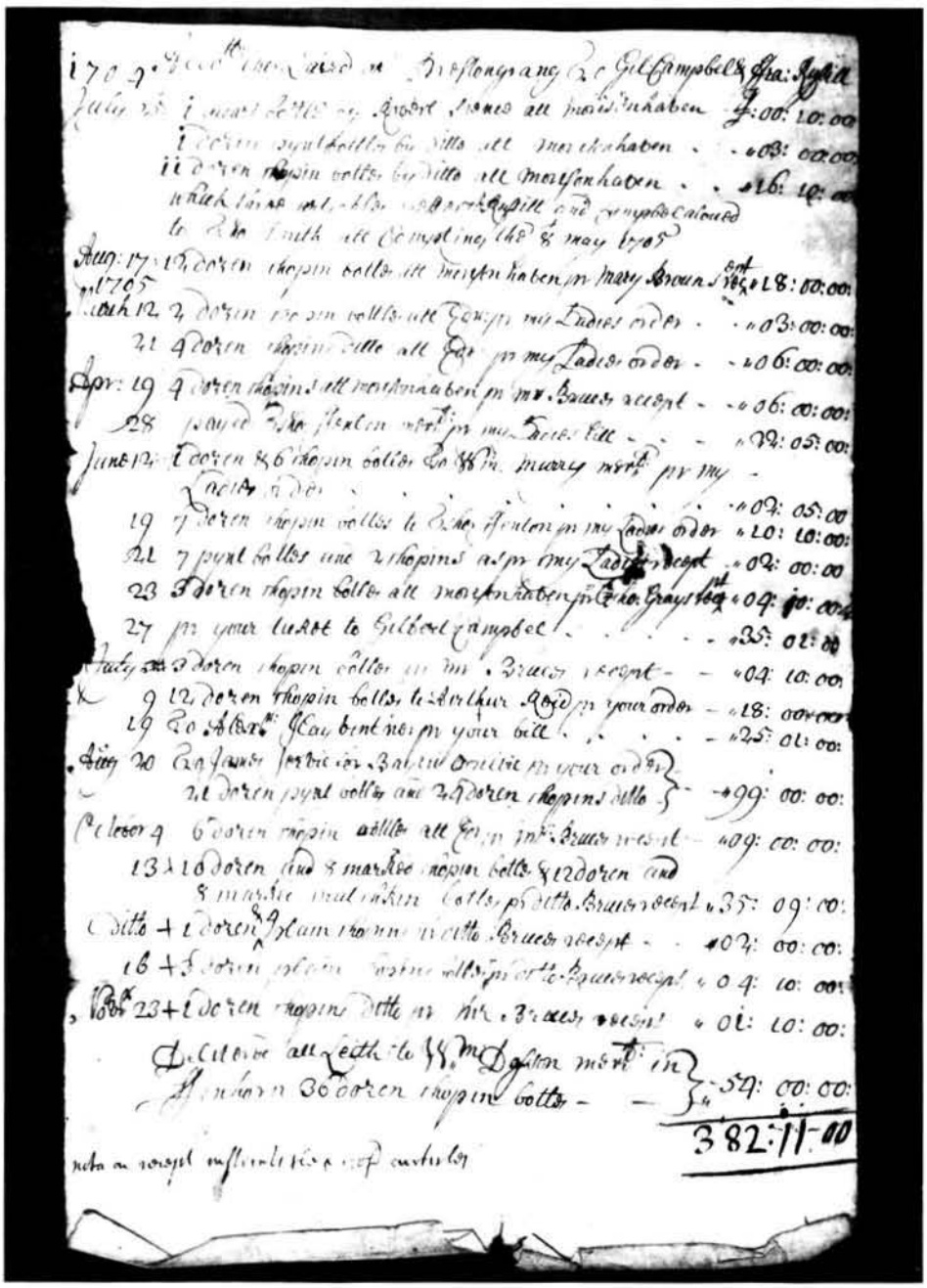
A PERIOD OF MIXED FORTUNES

PRODUCTION AT MORISON'S HAVEN *c* 1704–1706

In spite of the vicissitudes, records show continuity of production. Material in the Admiralty Court indicates that other local people took shares in the glassworks during the period of Tittery's lease, and gives some indication of the wares being produced. In 1706 William Morison took action against Gilbert Campbell, merchant in Edinburgh, and Francis Russell, druggist (of whom more later), described as co-partners in the glassworks, for money owed for coal and kelp supplied by them at the request of Thomas (*sic*) Smith 'master and overseer to the glasswork at Morison's Haven'[32]. Morison showed that he had supplied five tons of kelp and 576 carts of coal to Smith and that Campbell and Russel were liable for payment. In addition to the kelp, which provided the potash required to produce bottles, two loads of wood ashes, and some 'soap ashes and light ashes',

31 NAS CS18/188.

32 NAS AC9/219. My thanks to Sue Mowat for this and other Admiralty Court references.



42
'Account of the Laird of Prestongrange' for bottles made at Morison's Haven, dated 1704-5. The list includes plain and marked (sealed) chopin and mutchkin bottles. (WRH AC9/186/3, Admiralty Court Records. *Reproduced with the permission of the Keeper of Records of Scotland.*)

amounting to a total of 219 tons, were also imported for use at the glassworks in 1706 (*Cal of Treasury Books*, 22 (1950), 128.).

The papers also show that Thomas Smith had supplied Campbell and Russell with 'six gross and five dozen of viall glasses and eleven dozen and eight chopin botells' on 20 February 1704, and a further two gross of vials, fourteen dozen and ten chopin bottles, four dozen and four pint bottles, and twenty-four dozen tumblers, on 18 February the same year. This is significant as the only known reference to drinking-glasses being made at Morison's Haven.

Equally interesting is a list of the bottles supplied during 1704 and 1705. It includes quart, pint, chopin and mutchkin bottles supplied to 'my lady' (presumably Lady Craigleith), William Murray, merchant, Alexander Hay, vintner, and on 13 October 1705, '10 dozen and 8 marked chopin bottles, & 12 dozen and 8 marked mutchkin bottles pr. Mr. Bruces recept £35 9[s] 0[d]'. Mr Bruce later bought four dozen and nine plain chopin bottles. This reference to *marked* bottles, and another to be mentioned later, provides evidence that the Morison's Haven glassworks was supplying sealed bottles to their customers (illus 42).

THE FEARN PAPERS

By 1708 there had been a considerable change at the glassworks, and there are numerous documents relating to the chequered history of the next few years among the papers of David Fearn, a well-known Edinburgh writer to the signet, and at one time part-owner of the *Scots Post-man*[33]. Despite providing much useful information, the papers also pose problems in that many are rough drafts, unsigned, often undated and frequently duplicated, and some are in very poor condition. David Fearn acted for William Morison from about 1710 for a number of years, reluctantly becoming his bailie at Prestongrange for five years while Morison was in London, and thereby creating for himself 'a laberinth of trouble', for which he was never recompensed. Fearn summarised his dealings with William Morison, whom he met in London in 1688, in a memorial dated 1730, in which he claimed he was owed £50 (sterling) for his work at Prestongrange, and £513 12s 0d Scots for money he had been forced to borrow while in Morison's service[34]. The memorial again points to Morison's reluctance or inability, over a long period of time, to pay his debts.

THE CASE OF ANDREW HUTCHINSON, TACKSMAN OF THE GLASSWORK

The first dated document in the Fearn archive is an 'account of what ashes & the [?] Andrew Hutchinson glass maker had at Morisons-haven the time he did contract with Clerk & Russell' of 16 July 1708[35]. Andrew Hutchinson is described

[33] NLS *The Scots Post-Man or The New Edinburgh Gazette*, 8-10 March 1709; Arnot 1779, 349.

[34] NAS GD1/576/8, 'Memoriall for Mr. David Fearn Advocat Against The Laird of Prestongrange', 1730.

[35] NAS GD1/576/15. None of the papers in GD1/576 is individually numbered.

in Fearn's memorial as an Englishman, who had a tack of the glassworks, described elsewhere as being for 13 years, but no starting date is given. He appears to have been a man of many parts, not only describing himself as a 'master of the airt and mystrie of all sorts and manner of glass makeing'[36], but in an unrelated contract, as 'Andrew Hutchinson of London Cloathworker, arts master to her Majestie Queen Ann now Tacksman . . . of the glasswork at Morisons Haven, and operative in glass and glazed ware. . .'[37]. His reason for coming to Scotland is unknown[38].

Whatever brought Hutchinson to Morison's Haven, it was not long before he fell foul of Scots law. In 1711 David Fearn was asked by William Morison to help Hutchinson, as he was subject to three *captions of horning* (part of the process of prosecuting for debt – see glossary), one of which had been instigated by Alexander Ainslie of the Leith glassworks[39]. At Morison's request Fearn hired a room in which Hutchinson could take refuge, and then dealt with his creditors, leaving behind numerous papers dealing with the episode. These will be discussed in some detail, in chronological sequence. They are significant in that they confirm that the original glassworks was a large one, consisting of two furnaces, described again as large and small, which when running at capacity would have been capable of a considerable output. Both furnaces appear to have been in a state of disrepair by 1708, and it is unclear whether, during the ensuing 14 years of certain operation, they functioned simultaneously.

There are several drafts within the Fearn archive containing details of the events leading up to Hutchinson's financial difficulties, one of which appears to be in his own words. Labelled 'Petition', the document describes, with more than usually eccentric spelling, how Prestongrange (Morison) needed someone to carry on his glassworks 'as he had in former times'. He had engaged a Thomas Smith who, 'being a bottel maker only', had no experience as a founder, or maker of metal, although he could produce a batch when everything was straightforward, he 'has no other knolige'[40]. Hutchinson claimed that he was recommended to Prestongrange and was involved in negotations for a year, but did not want to agree to take over until he had seen the works, which he had been told were valued at £100 (sterling) a year, but he claimed that when he came to the premises 'I found only a heape of rubbish'. In reality, although the furnace appears to have ceased to function before Hutchinson took over the lease, glass-making materials were still *in situ*, presumably left there by Daniel Tittery, and were bought by him from William Morison. They are listed[41] as follows:

36 *ibid.*
37 NAS GD1/576/16.
38 An Andrew Hutchinson was 'Admitted to the Freedom [of the Clothworkers' Company] by Servitude' in London, on 20 Dec 1681, aged at least 21, on payment of the usual fee of 5/-, after being apprenticed to Charles Pough (DE Wickham, archivist, The Clothworkers' Company, pers comm 3.11.97).
39 NAS GD1/576/15.
40 *ibid.*
41 *ibid.*

Soapey ashes 160 Tunn at 14s. per Tun	112	00	00
Light Wood Ashes 300 Bushels at 9d.	14	5	00
Kelp 10 Tunne at [?] pr. [?]	16	5	00
Asnech [?arsenic] 250 pounds at 6s pr [?]	7	10	00
Manganese & other ingredieance from London	13	7	00
Working tooles and convenience	137	00	00
Red led 66¼ at 14s. pr C	4	7	6
Burily [?barilla] on the place not used to [?]	150	00	00
Broken glass & [?cullet] mettle about the house	100	00	00
Sifting of ashes of former [?] dugg up an in the yeard 100 tunn at 10s.	50	00	00

The large quantities of soaper's ash (a form of potash left over after the soap-making process, often used in bottle-making) and kelp, confirm that bottles had been the main product. However, arsenic and manganese were used as de-colourisers in finer glass and the presence of £150 of barilla and red lead also confirms the production of the better quality glass required for tumblers and vials.

Despite his reservations, Hutchinson entered into a tack, and operated 'the bigg furnes . . . which went on verey well for proffet untill the sayde Prestongrainge his coale was oute then the work was forst to stop for aboute three months'. Such a stoppage was a serious matter because, as Hutchinson explained, he still had to pay his team of glassmakers even if they were idle, the cost on this occasion having been £72 (presumably sterling). He could not carry on a large work 'meting with these difficoltes' on his own and applied to Mr Francis Russell, a druggist in Edinburgh, who, with a merchant there, Alexander Clerk of Glendorch, agreed to provide capital for the glassworks 'that the glass manufactorey with a thousand pounds stock might furnish this part of north britain to prevent the English bottels to be brought in', Hutchinson having a workforce capable of such an undertaking. There is no mention in the Fearn papers of Francis Russell's earlier involvement with the glassworks. Nor is the Leith glassworks referred to in the documents, although it was operating throughout the duration of the Morison's Haven works.

HUTCHINSON'S AGREEMENT TO PRODUCE BOTTLES

An agreement between Clerk, Russell, and Andrew Hutchinson, was consequently signed at Edinburgh on 26 August 1709[42]. This stated that Hutchinson had taken a tack of the glassworks at Morison's Haven, (described in another paper as being for 13 years from 18 August 1709), and that Clerk and Russell would advance £25 (sterling) for repairing the office houses and the large glass furnace and provide Hutchinson with money or credit to buy a stock of ashes and other materials, to the value of £100 (sterling). The agreement bound them to provide further capital 'from time to time as is necessar for carrying on the

42 NAS GD1/576/15.

work . . . not exceeding the sd soume of one hundred pounds sterling at a time', and to advance £6 (sterling) a week to pay the workmen while the big furnace was operating. They also agreed to take all the bottles and vials made at the works at listed prices. These were:

> [four?] pint bottles at two shillings and eight pence sterling per dozen
> chopin bottles at sixteen pence per dozen
> mutchkin bottles at twelve pence per dozen
> half mutchkins at ten pence per dozen
> all glasses of all sorts and sizes at three shillings & sixpence sterling per gross

Hutchinson was also free to make 'whatever other glasses [he] . . . has materialls to work and the sd Alexander Clerk and Francis Russell shall think needfull', to be sold as cheaply as the wholesale price in South Britain. Hutchinson was to allow them 'twenty per cent of their advance and prompt payment', while they were to account for the bottles every six months and to pay to Hutchinson any balance due after deduction of their weekly advances. While the big furnace was operating, each bottle should weigh

> ane pound ten ounces of good and sufficient metall in every way well finished garbled [selected] and sorted in three sorts viz. the larger measure the exact measure and short measure all delivered in separatly and the pynt bottles & others which all make to be delivered in the same manner.

The rest of the agreement is missing, but there are other papers in the Fearn archive which reiterate the terms outlined above, and add more details. In a list of items required for the arbitrators of the subsequent dispute, the contract between Clerk, Russell and Hutchinson is said to have been for five years. In another paper, Hutchinson claims to have agreed to deliver to Leith, Edinburgh or anywhere within six miles of the glassworks, at least 300 dozen chopin bottles every week while the big furnace was going[43].

According to another note by Andrew Hutchinson, Francis Russell and Alexander Clerk agreed to lay in the following stock:

Ashes value	200	00	00
Kelp value	20	00	00
Iron and clay value	30	00	00
Saltpeter value	150	00	00
Lethrige value	19	00	00
?Bureled do	50	00	00
	469	00	00[44]

43 *ibid.* The currency is generally not specified but there is the occasional reference to sterling, and that seems likely to apply to all figures.

44 *ibid.* Litharge was lead monoxide, used to replace some of the alkali in the batch, to improve the quality of the metal (Newman 1987, 186). Saltpetre (potassium nitrate) was used as a flux (Vose 1980, 113).

Hutchinson calculated the maximum cost of coal and the ingredients for the batch to be £20 a week. He also gave estimates of the amount of glass which could have been produced but appears to have worked on the basis of a 52 week year which, although obviously designed to maximise his loss for the benefit of the arbitrators, is a very dubious assumption, since no glass furnace could work for a year non-stop. Indeed no furnace was expected to last that long before needing structural repairs. Hutchinson also claimed that his aim was to work the two furnaces simultaneously, which would increase profitability.

THE PROBLEMS

Things appear to have gone wrong fairly rapidly, culminating in the captions of horning against Andrew Hutchinson and a complete breakdown of the co-partnership. Among the complaints lodged by Hutchinson against Clerk and Russell were that they failed to provide enough money to stock the glassworks with ashes, a component of the batch without which he could not operate; that they did not provide sufficient money to complete the necessary repairs; and that they interfered with his management of the glassworks. Hutchinson was so desperate for cash at one point that he entered into another agreement with a 'Theodore Marine in June 1710, granting him a quarter share in the co-partnership[45]. It seems that the original partners had also wanted another injection of capital, since in a deed of 27 May 1710 they admitted Alexander Herriot, merchant in Edinburgh (already mentioned as purchaser of bottles made at Morison's Haven in 1705) to the co-partnership, for payment of a mere £20 (sterling). This deed also confirms that there were actually three original partners – William Menzies of Gladstanes being named as the third[46].

THE WORKMEN AND LINKS WITH GLASGOW; PROBLEMS OF EMPLOYMENT

Hutchinson provided Fearn with lists of the workmen employed at Morison's Haven and their wages. He claimed that, before the agreement with Clerk and Russell, William Morison 'did send a set of workmen from London which was with oute my order & derection'[47]. Since the furnace was not working, and he had to pay the men £3 (sterling) a week, he went to Glasgow and found employment for them there 'which I did agree for to be pd 6d for 22 bottels which is a glass makers dozen'. He also became a 'quarter partner . . . of the work'.

This does not, however, appear to be the whole story, since a note added to a memorial states:

[45] NAS GD1/576/15.

[46] NAS RD3/145/358. The deed was registered on 10 June 1715. This confirms a copy contract dated 1711, in the Fearn papers, which names Menzies, Clerk, and Russell as the co-partners but his name is not subsequently mentioned in them.

[47] NAS GD1/576/15, 'Petition Andrew Hutchinson'.

> Note that Mr. Hutchinson had two setts of workmen [?] before his little furness went to work the latter end of December 1709 his workmen were all imployed at Glasgow which worke he was master off and designed to carrie on, which was an advantage to his work at Morison's Haven, which had no stock . . . he had designed to carrie on both the works till such time that a sufficient stock of materialls should be laid in at Morisons Haven, yett Mr. Francis Russell went to Glasgow & forced all the forsd workmen away against the will of the owners of the Glasgow glasswork, to the great loss of Andrew Hutchinson and ruin of his work[48].

THE COLNEY FAMILY OF GLASSMAKERS

Hutchinson provided lists of the workmen. Those 'forced' from Glasgow, he names as Michel Stringer, the head of the team, Rob Colney, James Love, James Colney, Isaac Colnoy and Rob Spence. The name Colney is of particular interest, since glassmakers called Emanuel and James Culney had been summoned before the English Privy Council in 1626, during a dispute between Sir Robert Mansell and Sir William Clavell (Crossley 1987, 345). They were members of the Colnet family, one of the best known Flemish glass-making families, whose involvement with the industry can be traced back to 1378 at Chimay, an area now on the Belgian side of the present border with France. They inter-married with other leading glass-making families and owned numerous furnaces in Belgium and France until the early 17th century, when their industry declined 'and a number of masters emigrated overseas' (Verlinden & Crossley 1981, 181). A descendant of the family, John Colnett, has already been mentioned in connection with the development of the 'English' bottle (Chapter 1 above). Of the three Colneys listed above, however, only one, Rob, was paid the rate for a 'finisher' (bottle-maker): 10s (sterling) a week. James Colney was paid 7s (sterling), probably as a blower, while Isaac received only 5s (sterling).

Isaac's pay is something of a puzzle, because he (or someone of the same name) had been to Scotland before and on that occasion had claimed to have possessed a particularly desirable skill. In the Scottish parliamentary papers is a 'Petition of Isaac Culney Glassworkman for himself and in behalf of William Hynd his Prentice now Prisoners in the Tolbooth of Edinburgh', dated 18 August 1703[49]. The petition describes how Isaac Culney had been under indentures to a Mr Sawyer, master of a glasshouse at 'Foxhall' [Vauxhall] in Surrey, who had ceased working and transferred him to another glasshouse. Culney claimed to 'having a certain secret in the making of big glasses beyond any other man of his calling in England', which Mr Sawyer had allowed him to protect by working in a private room. His new employers wanted him to work in their sight 'threatning to extinguish their fire and to come upon your petitioner for damages' if he refused, at which point Culney decided to abscond. He met a man called Benson, the

48 *ibid.* 'Memoriall for Mr. Andrew Hutchinsone maister of the glass manufactory att Morisons Haven anent the dammadges sustained by him related to the glassworks of Glassgow and Morisons Haven'.

49 NAS PA7/18/55. His name is spelt 'Culnott' elsewhere in the paper.

former clerk to Mr Sawyer, who was intending to come to Scotland, and who offered to pay the travelling expenses of Culney and his apprentice 'as not doubting of getting encouragement in his art here, to which your petitioner very readily assented as being formerly invited to work in a glass house here'. Unfortunately they were arrested shortly after their arrival on a charge of running away with money, books and papers belonging to Mr Sawyer. Culney pleaded that he could neither read nor write, but that Benson, who had contrived to escape, had previously been in charge of the missing items. This case provides further evidence of ongoing recruitment of glassmakers in London[50].

The list of Andrew Hutchinson's workmen gives more details of the manpower required and their weekly rates of pay:

Thomas Smith	£1	0	0 (sterling)
John Tomson		10	0
James Brass		10	0
2 boyes		4	0
A packer		3	0
To tesors [furnace men]		12	0
To ashburners		10	0
One corkerman [?caulkerman]		5	0
A caneman		5	0
A spare man		4	0
myself	1	17	0
total	£6	0	0

In addition to these lists, Hutchinson has added 'Rob Liptrot his waiges as has ben useless to the work' £36, and 'James Thomson paid waiges & no use for him' £10. Both these 'useless' gentlemen will be mentioned below. The reason for the provision of such details was Hutchinson's claim that he had to pay the wages of all the glassmakers, whether they worked or not, and since the furnace was idle for several months, through no fault of his, he should be recompensed by Clerk and Russell.

The custom of paying bound glassworkers 'dead' or 'play' wages, at half the normal rate, when the glass furnace was not operating for whatever reason created considerable difficulties for glasshouse owners. Some insight into the dilemma of whether to bind the workmen, and be liable for the high costs if there were problems with the furnace, or not to bind them and risk their defection to a rival glassworks, is given in the correspondence of Newcastle glass manufacturer

[50] At a later period Leith glassworks were renowned for their production of very large bottles.

[51] NRO 2ED11/3/27, George Allen, glassworks manager, to John Delavel, 27 Jan 1784: 'There are some of the glassmen and teazers out of their time. I should be glad to know whether it be your lordship's desire to have them articled as they are good workmen. In my opinion it would be better to have all these men bound that cannot be awanting, in case of an incouragement from other factoreys'.

John Delavel, some 70 years later[51]. In a business which was dependent on a limited pool of skilled workmen, the decision was a difficult one, particularly when cash flow was a constant problem, as it clearly was at Morison's Haven.

CONFLICT BETWEEN HUTCHINSON AND THE SHAREHOLDERS

At one point in this sorry saga, Andrew Hutchinson appears to have lost control of the management of the glassworks. He complained that Clerk and Russell did not trust him and listened to 'false and idle reports, of some envyeous and spitefull workemen (who never matters what mischief they cause for their own ends)'[52]. They appear to have placed James Thomson in charge and to have ordered that work should start on repairing the large furnace, against the wishes of Andrew Hutchinson, 'which occasioned all the servants in and about the sd glass house to ly idle for four monthes till the sd furnace was gott in a working condition by the said Mr. Hutchinson as maister', leaving him to pay the dead wages[53].

In addition to the difficulties caused by the conflicts between Andrew Hutchinson and Clerk and Russell, the works at Morison's Haven appear to have been affected at one point by the defection of part of the workforce, since one of Fearn's papers refers to the action of the undertakers against Mr Dick, merchant in Edinburgh, 'who by advice of one Degneay [Dagnia] at Newcastle first invyted severall workemen from the glasswork of morisonhaven, which stopt the said worke considerablie'[54]. The Dagnia family were leading Newcastle glassmakers, who founded their first glasshouse there in 1684 (Buckley 1926, 26-52). They were almost certainly the sons of Edward Dagnia, who had worked with Jacob Visitella at Westpans, and for Robert Pape at Leith in 1664. This poaching of workmen, so much a feature of the Mansell era, continued until the late 18th century, and recurs on a number of occasions in the affairs of the Scottish glassworks.

By 1711 matters had come to a head: the glassworks had closed down, Andrew Hutchinson was in hiding – probably in the debtor's sanctuary at Holyrood (see Glossary under *horning*) – and David Fearn was trying to sort things out in the best interests of all concerned, which meant finding a means of continuing to operate the glassworks in order to generate income. Fearn's papers include a proposal from Andrew Hutchinson that arbitrators should be appointed in order to resolve the difficulties, and that while the arbitration was in process he should be allowed to re-open the glassworks, 'seeing there are workmen who ly now at great charges and idle would carry on the work who otherwayes may be gone and so the works lost'[55]. Four abitrators were duly appointed.

52 NAS GD1/576/15.
53 *ibid.* Memorial.
54 *ibid.* See Chapter 6 for more details of the Dagnias.
55 NAS GD1/576/15, 'Proposals by Andrew Hutchinson glass worker and master of the glass work at Morisons haven to the gentlemen undertakers of the said work'.

FINANCIAL BACKING FROM LONDON MERCHANTS

Fortunately, alternative financial backing for Andrew Hutchinson was forthcoming from fellow Englishman John Scarlett, a London merchant, who in 1711 was trustee and manager of the sail-duck manufactory at Leith[56]. There are two unsigned and undated drafts of agreement between Hutchinson and the undertakers, the gist of which is that all parties should abide by the decision of the arbitrators; that Hutchinson should continue to make glass without hindrance, the necessary capital being provided by John Scarlett; and that Hutchinson should repay the undertakers at an agreed rate over a period of 12 years. The tone of these two drafts is very different from Hutchinson's irate insistance that Clerk and Russell were entirely at fault and owed him substantial damages, in his memorial and other papers[57].

Hutchinson calculated the cost of the stock necessary to operate the glassworks for three months to be £200 (currency unspecified, but presumably sterling), made up as follows:

Kelp 20 tunnes at 4lb per tun	£80
Ashes	20
Cullet	10
Iron work to the hole	22
Boards and other timber	12
Clay and potts	6
Massons smith and workmens waiges	20
for unseen incedinces	16
for 2 work horses	14
	200

The wages would cost a further £12 a week, which would seem to indicate a sizeable workforce, and coal £4. His plan was to work one furnace making bottles at a rate of twenty gross per week, 'the waite of bottel to be 2lb' (four ounces heavier than those mentioned earlier). There is also a paper, dated 1711, listing repairs to the premises. This includes 'building of the little glass house' £16; 'building of two ffurnisses and six arches' £50; building a stair case £1 10s 0d and building and repairing the south wall and repairing the south room £2.

It is clear from David Fearn's memorial of 1730 that in addition to John Scarlett, two other men were originally intending to enter into the agreement with Andrew Hutchinson. They are named as Mr John Ward 'the great merchant at London & Esqr. Isaacson, then one of the Commissioners of the Customs here'[58], who were to take a tack of the glassworks. William Morison wrote to John Stoddart of Comiston, elsewhere described as bailie of Prestongrange, on 7 May 1711,

[56] In 1710 'a terrible fire' was reported in Leith 'which has consumed that large tenement where the sail duck manufacture was' (*Scots Post-Man* 26 October 1710).

[57] NAS GD1/576/15.

[58] NAS GD1/576/8.

authorising him to take an exact inventory of all tools, ashes, coals, goods and other materials on the premises and to assess the state of the houses, furnaces and other buildings for the 'worthy gentlemen' to examine before they signed the agreement. David Fearn was also to visit the glassworks on their behalf[59]. Sadly the inventory does not appear to have survived.

ADDITIONAL COMPLICATIONS: MORISON ENCOURAGES ANOTHER GLASSHOUSE AT DOLPHINSTONE

To the annoyance of David Fearn, who had the tack ready to sign, William Morison sabotaged the plan by allowing another glass furnace to be built on his land, at Dolphinstone, a hamlet about half a mile inland from Morison's Haven. This hitherto unrecorded furnace was, according to Fearn, seen by Mr Ward who promptly withdrew from the agreement, as did Mr Isaacson who went to London. David Fearn recorded that Morison had breached the conditions of the bargain which was 'that Morisons haven should be the only glass work upon any ground belonging to him in Scotland'[60]. In fact, the furnace had probably been seen by Mr Ward's brother, Ralph, during a visit to the Morison's Haven glassworks arranged by John Scarlett on 13 August 1711[61].

The Dolphinstone glass furnace was set up by Robert Liptrap (Liptrax, Liptwaz, Liptwax), one of the 'useless' glassmakers mentioned earlier, who had previously worked at Morison's Haven and at the Leith glassworks (Clough 1982, 5)[62]. A note dated 3 October 1711, but unsigned and with no addressee, refers to items removed from the Morison's Haven glasshouse by an order dated 12 May 1711: 'taken out of the glass-house be Robt Liptrax all the iron werk there except what is locked up.' Since that order was given only five days after the request for an inventory mentioned above, it raises the question of whether William Morison was deliberately siphoning off some of the assets of the original glassworks, for the benefit of a rival furnace.

There is no doubting the anger of John Scarlett, who wrote to William Morison on 7 September 1711, having just heard from Mr Ward:

> I am informed that yr Honour has incuriged Mr. Villan Liptwaz to sett up a furnace, at Dolphiston, and this very thing is the only discouregement he finds as to his proceeding . . . wherefore he hopes that rather then the project with him and me should not succeed, your Honour will be soe far true to your own interests [to] incourage no other glassworks within yr territorys . . . to which I must adde . . . that I think yr Honoure will be very mutch to blame if you doe not either yourself punish such a vilain according to his merits or else abandon him to law and justes. . . [63]

[59] NAS GD1/576/15.
[60] NAS GD1/576/8.
[61] NAS GD1/576/15.
[62] Robert Liptrap and his wife Margaret Cochran had a son, Robert, born on 12 July 1703 (North Leith OPR).
[63] NAS GD1/576/15.

Following the withdrawal of Ward and Isaacson from the Morison's Haven deal, however, John Scarlett, Andrew Hutchinson and John Ward promptly switched their attention to an alternative glassworks – that set up by David Lord Elcho in the cave at Wemyss, which they had obviously been considering for some time (see Chapter 10). The day before writing the above letter to Morison, Scarlett wrote to Hutchinson that 'having considered what was discovered last night, I have resolved to proceed and without delay, I would therefore have the lease with the earl of Weemys immediately concluded, and the men sett to work and other preparations to be made'[64]. The agreement was eventually concluded, but by early March 1712, John Scarlett was dead and Andrew Hutchinson was anxiously attempting to ensure that his executors would honour it[65].

The Dolphinstone furnace appears to have continued in operation for at least 18 months, since the archive contains a list of tools, headed 'Inventory of what tools taken out of the easter wall at Morisons haven & delivered to James Tomson for the use of Andrew Hutchinson sole man'ger of the Glass house at Dolphinston the 2nd day of Decr. 1712'. The list includes blowing pipes and tools used by the founder, as well as iron work for the furnace, such as 9 furnace bars, 13 arch bars, and 2 arch doors. There were also 30 pot boards 'in John Thomsons hands'.

The reference to Andrew Hutchinson as 'sole manager' of the Dolphinstone glasshouse is interesting, and raises the question of whether he had been able to continue to operate the furnace at Wemyss, or had been forced to withdraw from there and return to the service of William Morison, who in 1712 was himself subject to a caption of horning for payment of the money owing to David Burton and George Livingstone discussed earlier[66]. Hutchinson may, on the other hand, have been peripatetic, since there are minutes of a tack, dated 1711, between Andrew Hutchinson 'cloathworker' of London and the Honourable Elizabeth Graham, for a house, stable, orchard and grounds, called the Inns, situated on the shore of Fife, to the south west of Inverkeithing, with the right and privilege to dig and carry away 'all stone clay sand and the sea ware' on the premises for a period of 'three nineteen years'[67]. There is also a copy contract between Hutchinson, clothworker and tacksman of the glasswork at Morison's Haven, and the wool and linen weavers of Dunfermline in which he undertook to improve their production of linen and woollen cloth[68]. Either he did not intend to devote himself entirely to the one enterprise, or he was seeking an alternative to the difficult job of making glass at Morison's Haven. These papers, like many others in the Fearn archive, are copies or drafts and there is no way of knowing whether the proposals were ever taken up, so they can only be taken as indicative of courses of action being considered.

64 NAS GD1/576/15. The glassworks at Wemyss is discussed in more detail in Chapter 10.

65 *ibid.* Signed and witnessed notice from Andrew Hutchinson to David Fearn for Rymer Intervall, trustie and manager of the sail cloth manufactory at Leith, 7 March 1712.

66 NAS RH9/17/174. Petition of William Morison of Prestongrange, 20 Nov 1712.

67 ie 57 years (Bell 1870).

68 NAS GD1/576/16.

THE CONTINUING MANAGEMENT OF THE MORISON'S HAVEN WORKS

PROBLEMS OF SUPERVISION

There is no information about who eventually funded and managed the glassworks at Morison's Haven, although it clearly continued to operate. Material concerning events between 1711 and 1716 is limited to two papers in the Fearn archive, written phonetically in Scots, by men sent by William Morison to check what was happening on the estate during his absence in London. They tell a sorry tale of widespread cheating and loss. The first is headed 'Ane Treue Informatione of the Lord of prestongraing Losses in his absence 1714 and 15', which the writer estimates to have amounted to more than 20,000 merks. Much of the paper consists of complaints about the coal grieves, but there are also allegations about the glassworks. The author claims that he saw 38 dozen and 4 bottles made in one day, but only 34 dozen were recorded in the accounts, at which point he was prevented from seeing any more. He accuses John Thomson, [?] Cani, and the wife of the clerk of the glassworks, of taking many cart-loads of bottles illicitly to Haddington, where they were sold for 30d a dozen. He was also prevented from recording when the men were working and when they were not, so they might make false claims[69].

The second paper cites a commission given by the laird of Prestongrange on 15 February 1714, to a James Reeth, portioner of Dunblane, to oversee the whole works, to receive written accounts for the coal, salt, brick and glass works on the estate, the grain mills, the barns and the fishing and to report weekly to William Morison in London. Then follows a graphic description of the problems he faced in trying to carry out his instructions. Firstly, when Reith went to the glassworks, a Thomas Bruce told him not to notice anything and tried to bribe him 'to liff be'. When that failed, the coal grieves were told Reith was going to take some action that would prevent them obtaining their due of coal and were encouraged to stone him. When this too failed to stop him, Bruce got some of the young colliers 'mad drunk', told them where Reith could be found and that they should 'fell' him'. 'And hed no Mr. Canie the od man and his wyff and Mr. Graham the wright hinderd them they hed obeyed the comand'. The grieves beat the old man and his wife to the ground, took Reeth's cane and beat him, and threatened his landlady and her husband. Recourse to the bailie led to advice to bide his time until the laird returned home himself, which appears sensible under the circumstances!

No doubt William Morison received graphic reports of the situation but there appears to have been little he could do from London. However, he seems to have been looking there for a new partner, because negotiations were again under way 'immediately after the rebellion', this time with a Richard Soame (Somes) 'ane English projector' in London[70]. Once again David Fearn's advice was called

69 NAS GD1/576/15.

70 NAS GD1/576/8. Fearn Memorial. The rebellion would have been the Jacobite uprising of 1715.

upon, and once again he questioned Morison's judgement. Morison was, according to Fearn, planning to grant Soames a tack 'to search and digg all or any of his grounds in Scotland, or mynes, mineralls, coalls &c. with the Glass:work, not reserving the digging under any of his gates'[71]. Describing the proposed tack as 'extravagent', he advised Morison against signing it, told Soames that it would cause the 'utter ruine' of the whole estate and suggested that he should take a tack of just the glassworks, in co-partnership with Morison. His plan was that Morison should provide all the utensils and half the materials for making glass 'of severall sorts', while Soames provided the rest. It was not long, however, before Soames, who 'was but a mere projector, and had noe substance to performe' defaulted and the project was abandoned. Richard Soames did, however, become involved with the Kirkcaldy glassworks shortly afterwards (see Chapter 10 below).

A copy of the proposed tack is extant and confirms the description of the site of the glassworks[72]. It included the whole glasswork at Morison's Haven 'with all the houses and vault or celler under the pigeon house and all the other houses belonging to the same And allso the utensills belonging to the sd glass worke . . . sicklike the sea mills att the sd haven and the parke called Morrisons Haven Parke with the lack and houses belonging thereto', the same area that was leased to the founding co-partnership. The proposed agreement was to make glass of several, unspecified, sorts, one significant condition being that Morison 'shall not sett up any other glassworke within any place of the Shire of East Lowthen'.

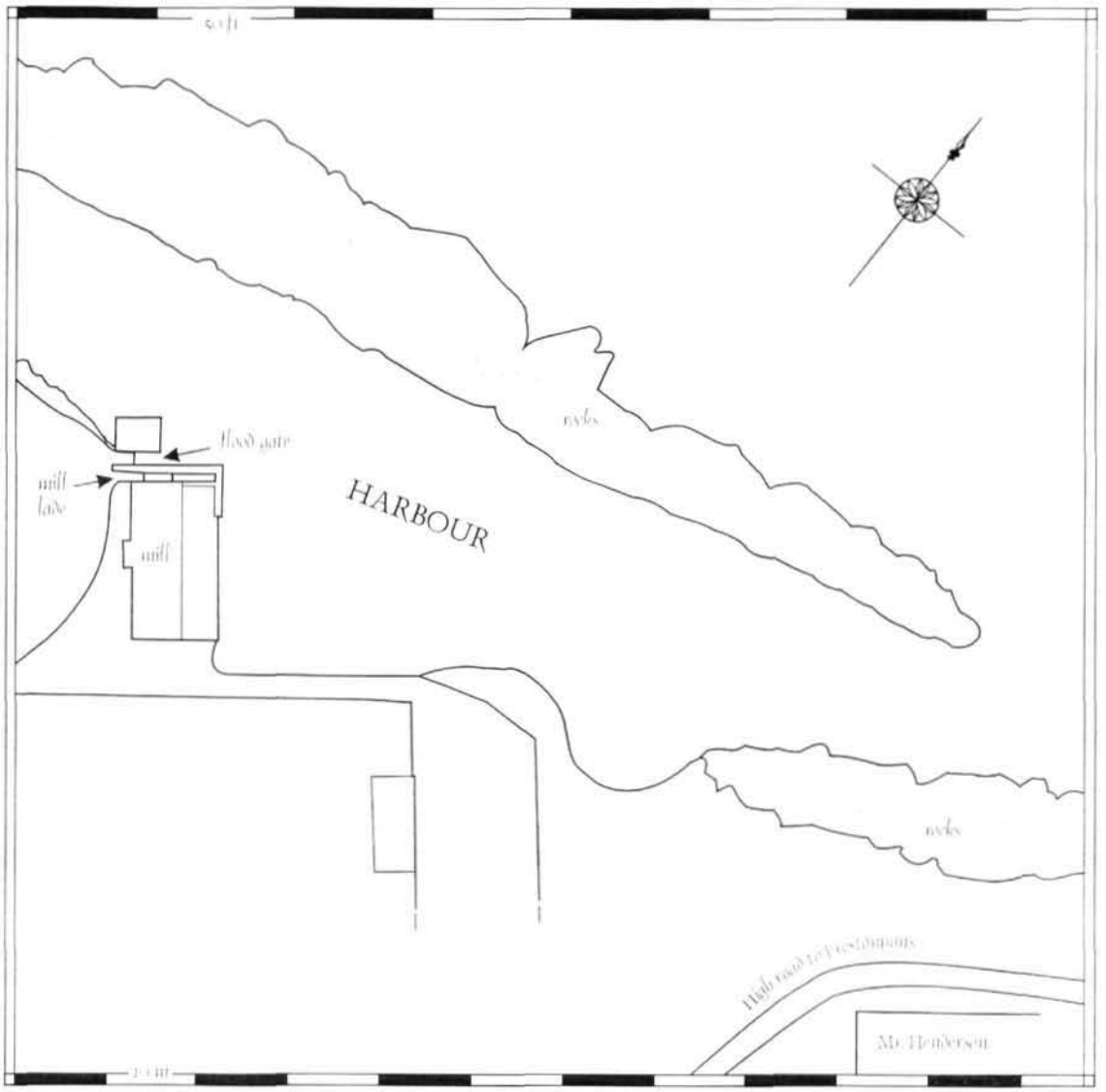
THE LOCATION OF THE GLASSWORKS AT MORISON'S HAVEN

It is possible to be reasonably certain of the site occupied by the glassworks at Morison's Haven. The location was described in the tack to Daniel Tittery, and litigation between a later owner of the Prestongrange estate, Sir James Grant Suttie, and potter George Gordon in 1832, gives more precise details. The lawsuit centred on the ownership of a strip of waste ground between the feu owned by Gordon and the sea, shown in a contemporary plan (col illus 14). To support his case Gordon quoted from the original feu charter of 1649, and the progressive titles, which describe it as:

> All and Haill, that tenement of land, back and fore, under and above, with houses, biggings, brew-houses, and yeard of the same, with the pertinents lying over against the harbour of Milnhaven, now called Morrison's Haven, betwixt the said harbour on the north and west, the common highway on the south, and the Links of Prestongrange on the east parts, containing forty ells in length and twenty ells in breadth; as also the salt-girnal, with the lofts above the same, and close thereof . . .'[73]

Later in the petition is the statement, significant for this monograph, that the feu 'has been long occupied as a pottery, a glass-work, and salt-work &c.'

[71] NAS GD1 576/8.
[72] NAS GD1 576/15, 'Coppy Tack and Copartnership betwixt Prestongrange and Ricd Soame Febr 1716'.
[73] NAS, GD351/49/26, Printed Petition, 10.



Two major changes had taken place between the date of the original feu and 1832. The highway had been moved from the south to the north side (Morrison 1837, 1037), and the harbour had been altered, shifting its boundary slightly west, to the position shown in the 1832 plan. The change is described in paper relating to the Suttie v. Gordon case: 'Morison's Haven is not now the north boundary of either [feu] which is accounted for by its removal westward since the date of the old titles, as it is said, in consequence of an Act of Parliament'[74]. A plan of 1753 shows that,

43
Plan of the harbour of Morison's Haven, after one dated 1753, showing the gap between the rocks (built up to form the harbour wall) and the shore at that time. (*Drawing by Jan Dunbar Aberdeen City Council Archaeology Unit.*)

[74] NAS GD357/49/25, 16 Dec 1834.

at that time, the harbour's outer rock wall did not extend to the land but stopped off-shore, opposite the feu in question (illus 43)[75]. Later a new harbour wall was built, closing the gap. The description 'over against the harbour' was, therefore, more accurate than it later appeared, although it is difficult to understand how the harbour could have defined the western boundary of the feu. The explanation given by a representative of Sir James Grant Suttie that the feu was *near* the harbour, not bounded by it, may be the correct one[76]. Unfortunately, the 1753 plan is the earliest to have come to light showing the area in any detail.

THE HARBOUR AT MORISON'S HAVEN AND A PROPOSED TAX ON BEER

Morison's Haven harbour had a long history, but it was often in poor repair, despite schemes to improve it. In 1700 William Morison craved 'an imposition for building an harbour at Morison' Haven' in the Scottish Parliament (*APS*, 10, 231). His tactics are illuminating. On 10 December 1700, he presented to the Parliament a petition signed 'by masters of ships, mariners, merchants, brewers, bakers, labourers of the ground and other inhabitants within the baronie of Prestonpans, Dolphinston and parish of Prestonpans', saying that the harbour had been badly damaged in a storm in 1655 and was, despite efforts to repair it, deteriorating[77]. It goes on to say that 'the Laird of Prestongrange hath been at exceeding great expense about the erecting and establishing of an Glass manufactorie' there, and could, if 'encouraged' not only provide all the local needs but export glass as well. He then attempted to find other, more altruistic, reasons to justify expenditure on the harbour. The response was swift. An undated, printed reply, together with a written counter-petition signed by far *more* local people, dated January 1701, are also extant[78]. Sir James Oswald of Fingleton, a local landowner, alleged that, far from most of the local population supporting Morison, the majority knew nothing about his plan and those who did thought subscriptions would be voluntary. In fact, Morison had applied for a 15-year imposition of a tax of 2d on every pint of ale and beer made and sold in Prestonpans, to pay for the harbour. Oswald continued that 'the said harbour is principally designed for Prestongrange's own particular profit Viz for the better carrying on his Glasswork, with a Trade for his coal and salt'. He pressed the point home by suggesting that they might just as well be asked to pay to sink his pits and repair his 'ruinous saltpans'. Oswald effectively and acerbically demolished Morison's other arguments, pointing out that there was a perfectly adequate harbour at Port Seton, a short distance away, and that such a draconian tax would be disastrous to the local brewers. The matter was dropped.

Morison fared slightly better after the Act of Union. On 16 March 1709 an 'Act for repairing and improving of Morison's Haven and the Fort there in the Shire of East Lothian. . .' was passed by the Parliament in London, but only in a form which gave Morison far fewer powers than he had originally claimed. He had

[75] NAS RHP.41329/1. 'A Plan of the harbour of Morison's Haven, as it now stands, 8th August, 1753.'

[76] NAS GD357/49/20.

[77] NAS PA7/17/1/58.

[78] *ibid.*

intended that the money should be raised by 'a duty upon ships comeing into his harbour and upon land carriages passing the adjacent parishes'[79], but he was out-manoeuvred by opponents to the land charges, and obtained rights only to the levy of harbour dues[80]. Some repairs were carried out, however, and an advertisement in the *Scots Post-Man* on 27 January 1711 declared 'That Morisons Haven . . . is Cleansed, where is safe Anchoring of Ships; at present Ships of good Burden are Loading with Coals, Salt, Bottles, and other Merchandise: And new Beacons are set up, at the West Entrie'. It ended: 'There are also Quart, pint, Chopin, and Mutchkine Bottles made there Marked' [sealed]. A later advertisement, of January 1725, stated that the harbour 'is now finished, and will receive ships of 200 tun'[81] (illus 44). And there was a grand celebration, on 11 October 1727, attended by William Morison, commissioners 'appoynted by Act of parliament for repairing Morisons haven the fort and lighthouse' and the 'gentillmen that had contributed for the repairing the new peer'. That event included the crowning of a king 'with great huraes ringing of bells, fireing of guns, drinking to his majesteis health . . . after ther was a splended entertainment with illuminations and bonfires'[82].

44
Morison's Haven harbour. An undated photograph taken at high tide, showing the harbour wall extending to the shore. (*Reproduced by permission of George Haggarty.*)

WILLIAM HENDERSON APPOINTED AS CHAMBERLAIN

William Morison was clearly forced to rely on others to manage the estate during his prolonged absences in London and he appears to have experienced some difficulty in finding suitable appointees. At some point (no date is given), he asked David Fearn to act as his chamberlain, as he could find no-one to replace James (sic) Bruce, who had left. Fearn accepted, under certain conditions, but the position was, in fact, given to William Henderson. At Morison's request, Fearn stayed at Morison's Haven, with Alexander Henderson, for five or six weeks 'to putt [William] in the way to mannage his estate reall & casuall', following William Morison's departure for London. It was several months after this that Fearn reluctantly took over as bailie from John Stoddart of Comiston[83]. The Henderson

79 NLS Ms 14415 f170.

80 Morison's parliamentary career appears to have been largely devoted to matters of self-interest. 'He seem to have been almost entirely engrossed in trying to ensure the passage of his various business-related bills, and showed very little interest in anything else . . . It seems, too, that the only reason he went out of his way to obtain re-election in 1713 was to continue to enjoy the privileged status MPs had in proceedings for debt' (Andrew Hanham, History of Parliament Trust, pers comm, 29 May 1997).

81 *Edinburgh Evening Courant*, 25 Jan 1725.

82 NAS GD1/557/0/8.

83 NAS GD1/576/8, Memorial.

family owned feus of saltpans and other land in Prestongrange, and by William Morison's death in 1739, the tack of the glasswork site also belonged to Alexander Henderson[84].

It seems reasonable to assume that the appointment of William Henderson as chamberlain, and the arrival of David Fearn as bailie, gave some much needed stability and order to the Prestongrange estate. Certainly the glassworks continued to operate, and Andrew Hutchinson seems to have still been involved in 1718[85]. Useful information about estate matters, including some relating to the glassworks, is contained in a ledger headed 'Cash Accompts Betwixt William Morison of Prestongrange and William Henderson his Factor commencing March 25 1716', the solitary survivor of a Court of Session process[86].

THE FACTOR'S ACCOUNT BOOK: INSIGHTS INTO THE DAY-TO-DAY RUNNING OF THE WORKS

Henderson's accounts, which run from 1716 to 1722, cover many aspects of the estate finances, listing rents paid in cash and kind and some personal expenses, as well as the cost of blasting a sink at the colliery and the purchase of butter and tar for smearing Morison's sheep. Entries relating to the glassworks are irregular and indicate that Henderson dealt with occasional receipts and expenditure, rather than the day-to-day running costs of the works, which would have been controlled by the glasshouse clerk[87]. They do, however, touch on many aspects of the business, and give some insight into areas about which there is no other source of information, such as the delivery of raw material, the wages costs, and the names of some personnel. By 1723, the relationship between Henderson and his employer William Morison appears to have soured. The last entry in the credit column is on 6 March 1723 and the final note in the ledger is dated 25 February 1725. It reads: 'This is the accompt of charge & discharge . . . given in by me William Henderson late Factor to the Laird of Prestongrange in obedience to the Lord Justice Clerk in the accompt & reckoning betwixt Prestongrange and me.'

Whether due to the condition of the harbour or because it could not handle larger ships, it is clear from Henderson's accounts that some of the raw materials for the use of the glassworks were shipped into Leith and then transported to Morison's Haven. In 1716, for example, ashes from London costing £114 were shipped to Leith by skipper Jolly (member of a well-known Prestonpans family of seamen), and transferred to a barque 'to bring them to the work'[88]. There are several

84 NAS CS229/P/1/30. Executory mss for the estate of William Morison of Prestongrange.

85 NAS GD1/576/8. Joseph Blake in London, to Mr Andrew Hutchinson, 1 May 1718.

86 NAS CS96/4520. The currency is not specified but appears to be Scots.

87 Whatley (1987, 35) uses Henderson's account book in calculating the value of various products of the estate. This appears to assume that the entries for glass sales represent the total volume of production, but this seems very unlikely. The wide variation in the number of entries is more likely to indicate Henderson's occasional involvement with the glasshouse administration, possibly in the temporary absence of the clerk.

88 NAS CS96/4520, 3 Aug 1716.

shipments of ashes paid for by William Henderson, as well as cart loads of clay and one shipment of clay from Newcastle. Cullet seems to have been bought from John Morison, merchant in Edinburgh, and relative of William, but it was also received in part payment for bottles. An entry for 31 October 1716 reads 'from Mr. Alan for one Doz. qrt bottles (the rest being paid in collet)' £3 8s 0d. Kelp, on the other hand, appears in both the 'charge' (credit) and 'discharge' (debit) columns. In July 1721 is an entry 'to 4 workmen who burnt 3 tun kelp for the use of the glasswork' £48 12s 0d, while there are four entries in 1717 of payments received for two carts of kelp sent to Cockenzie – the names Port Seton and Cockenzie were sometimes used synonomously – at 12s a cart[89].

THE WORKFORCE AT MORISON'S HAVEN

In the entries covering 1716, William Henderson recorded payments to Richard Wightman to pay the glasshouse workforce, which implies that he was acting as clerk at the time. The post of clerk was later filled by John Sym (Syme), who was paid £1 10s 0d a week. Sym appears to have performed roles other than that of clerk, since there are payments to him for 'puting on the potts on the killn' in 1719 and 'waiting upon the potts in the glasswork & keeping in the fire under them' in 1720. The weekly wage bill for the glassworks in 1717 was £71 8s 0d, but no breakdown is given. This sum equates very closely to the £6 (sterling) required by Andrew Hutchinson for his team of glassmakers and anciliary workers in 1710-11.

During almost 30 years of glassmaking at Morison's Haven there were, of course, many changes to the workforce, not least of which was the departure of the Tittery family at the end of their contract. A payment by Henderson to John Thomson 'blower' on 16 May 1722 confirms that he was still working at Morison's Haven, some 13 years after he was first mentioned, as was James Love. The arrival of several Colneys and the presence of a third generation Visitella had ensured continuity of inherited immigrant expertise, but there were also, of course, periodic additions to the glassmakers. An advertisement in the *Edinburgh Evening Courant* in January 1719, promoted glass bottles 'of all sorts' being sold in Leith, 'made by *English* (sic) Workmen (lately come from London) at Morison's Haven . . .'[90]. The new recruits may have been part of the expansion at the glassworks discussed below; certainly there had been a sufficiently large influx of English workmen by 1721 to justify it being dubbed 'little England', by a regular visitor[91].

89 These latter entries are puzzling, since the earliest reference to Port Seton glassworks is possibly 1720, although the partnership agreement is not until 1728-9. It is not impossible, however, that the glassworks there was established even earlier, or that the kelp was intended for Kirkcaldy glassworks, which was operating at that time.

90 NLS, *Edinburgh Evening Courant*, 15-19 Jan 1719.

91 NAS GD1/170/1. Reported letter from Robert Hackett, Jan 1721.

Table 11 Glassworkmen known to have operated at Morison's Haven, 1698-c1728

Names	*Date of reference*
Daniel Tittery	1698-1707
Daniel Tittery younger	1698
Nathaniel Tittery	1698
Jacob Visitella	1698, 1707
John Brown, clerk	1698
Edward Hawkes (also a shareholder)	1698, 1699
Thomas Sweet	1699
Robert Liptrap	1700, 1707, 1711
James Smith	1700, 1711
Isaac Colney	1703, 1709
Thomas Smith 'master and overseer', bottlemaker	1706, 1709
Michael Stringer	1709
Rob Colney, blower	1709, 1711
James Love	1709, 1717,1722
James Colney	1709
Rob Spence	1709
James Brass, finisher	1709, 1711
James Thomson	1709, 1712, 1714 1722
Michael Colney	1711
? Gardner	c1711
? Young	c1711
Matthew Comb	1715
Richard Wightman	1716
John Sym, clerk	1716
John Colnott (Culney), blower	1721, 1722
James McClaren	1722

Men known to have worked in more than one glassworks are in bold

William Henderson recorded payments for bottles produced at the glassworks, but the number of transactions varies greatly from year to year. In 1718 he was paid for 8,420 chap (?chopin) bottles, 212 pints, 146 mutchkins and a dozen wide-mouthed bottles of unspecified size. An account for 33 dozen vials was also settled. The number of recorded bottle sales reduced each successive year, only three gross being sold in 1721 and none at all in 1722. This does not necessarily imply any falling off in trade, or closure of the works, but probably simply reflects that all the usual transactions were under the control of the glasshouse clerk, or perhaps that the change of management, discussed below, had resulted in a different system of marketing.

FINANCE AND INVESTMENTS

INVOLVEMENT OF THE YORK BUILDINGS COMPANY: AN INJECTION OF CAPITAL

Henderson's account book also contains some small indications of a major change in the running of the glassworks, which took place in about 1720, when William Morison finally succeeded in his attempts to lease the glassworks and possibly more of his estate, thanks to one of the more bizarre episodes of Scottish economic history – the arrival on the scene of the York Buildings Company. This will be discussed more fully in Chapter 11, but the involvement of men with access to large amounts of capital transformed the glassworks for the final few years of its existence. The works were leased to Robert Hackett of London, the man who acted for the York Buildings Company in the purchase of the Winton, Panmure, and other forfeited estates in 1719 (Cummings 1981, 325)[92]. In 1721, the account book records a payment of £138 18s 0d from Messrs Fordyce and Campbell for 102 carts of great coal and 19 carts of panwood (small coal) 'furnished to the glass works'. Thomas Fordyce, writer in Edinburgh, and Archibald Campbell, writer to the signet, were agents of the York Buildings Company, owners of the adjacent Winton estate and were subsequently involved with the Port Seton glassworks. There is no doubt that members of the York Buildings Company were involved with the Morison's Haven glassworks, but how much of the business was on their own account is difficult to estimate. There is also a hint that company personnel may have been concerned with other aspects of management of the Prestongrange estate. In November 1720, Henderson recorded payment of £6 'To PG younger who came out in coach with Mrs. [messrs.] More [Archibald More, Morison's lawyer], Hackett, Campbell & Fordice to quell the mob pr. colliers & to pay the coach hyre', while an entry for 10 July 1721 records the expenditure of £3 12s 0d on ale for the salters, when Messrs. Fordyce, Campbell, Dickson, Peck the elder[93] and William Henderson, inspected the salt pans. Also in 1721, William Morison gave instructions that the sum of £1,200 should be paid to Fordyce and Campbell, but the reason was not specified.

LINKS WITH PORT SETON

The Port Seton glassworks will be discussed below in Chapter 11, but it seems possible that there may have been a glass furnace on the Winton estate earlier than previously thought, and that its operation and that of the Morison's Haven glassworks were closely linked at this period. In a summary of material relating to Robert Hackett, which is unsigned and undated, but which lists extracts from documents written between September 1720 and June 1721, a letter of 13 June

[92] He suggests the date of 1720 but Hackett may have become involved by 1719.

[93] Probably Daniel Peck, described by Cummings as a known speculator who, with his son Philip, was operating in Scotland at the time.

1721 is recorded as containing the line 'Morrisson & Winton are to be joyned together for glass works, bottles, etc'[94]. York Buildings Company documents in the PRO appear to relate only to the Morison's Haven works but, in view of this letter, Hackett and his partners, or their employees, may have actually been operating the two works in the early 1720s.

There is ample evidence that Hackett, Campbell and Fordyce were regarded with grave suspicion by other members of the York Buildings Company. A series of letters from one of the directors, John Cockburn of Ormiston MP, written in 1721 from England to an unknown recipient in Scotland, made it clear that he considered Hackett a cheat and that the company's agents, Fordyce and Campbell, 'were Mr. Hackett's servants more than they thought themselves ours'[95]. He went on 'they certainly connived at his cheating of the company in hopes of haveing a share in the plunder . . . Had they been faithfull to the company Mr. Hacketts tricks might have been known to every body a long time ago.' One of the accusations levelled at Hackett was that he issued bills drawn on the glassworks.

A receipt for coal 'upon Mr Fordyce's acct', of 29 December 1721, further indicates the active involvement of Thomas Fordyce. Interestingly, the writer from Morison's Haven was John Colnott, who went on to say: 'I shall see you paid att meeting wch I hope won't be long for I expect you'll doe me the honour to come and see our works, and I begg you wont faill in loading two or 3 more boats as soon as possible'[96]. John Colnott appears to have achieved a position of some authority at the glassworks, and the tone of his letter implies a certain pride in the developments there. Colnott was also involved with a glassworks which operated at Kirkcaldy from *c*1717 to *c*1726, which will be discussed in Chapter 10.

MAJOR INVESTMENT IN THE MORISON'S HAVEN GLASSWORKS

As usual, information about the new regime at the Morison's Haven glassworks is fragmentary, but it appears that the intention was to produce window and plate glass. Certainly there was a large injection of new capital. Hackett and his un-named partners spent considerable sums on the works, amounting by October 1723 to at least £6,040 (sterling). £3,040 of the total came from the York Buildings Company, the remainder from Hackett himself[97]. There is also a remarkable statement in *The Daily Journal* of September 1723, that 'We are assured that the York Building Company have appropriated the sum of 10000 l. for carrying on and rendering effectual a glass work for crown and plate glass in Scotland'[98]. The York Buildings Company was, of course, adept at appropriating

94 NAS GD1/170/1.
95 NAS GD1 170/1, 23 Sept 1721.
96 NLS Ms.6437 f.43.
97 PRO T 1/258/99. Treasury Board papers. Narrative and Account of several Proceedings relating to the Affairs of York Building Company Extracted from the Minute Books of the General Courts.
98 NLS Mf. 83/84. *The Daily Journal*, London, 7 Sept 1723.

funds but the newspaper statement implies an even greater commitment than seems to have been the case. It does, however, confirm the intention to produce plate glass. The only evidence that it was actually made is a single entry in Henderson's account book, which records the receipt of £6 for '7 pice black plate glass' on 19 June 1722[99].

CASH PROBLEMS AND CONFLICT

By 1723 the glassworks was apparently in difficulties and in October Hackett suggested that the York Buildings Company should accept £1,000 in cash to settle his debt of £3,040, with the glassworks as security. The materials on site were valued at £1,980 (sterling) (Cummings 1981, 326). The proposal was accepted but on 16 May 1724, a company court (which was convened on a Saturday instead of the usual Wednesday) decided that Hackett and his unnamed partners could continue to operate the glassworks at their own expense, although the company should retain ownership of the works and the materials there. They were to receive half the profits of the glassworks, until the £1,000 had been repaid[100]. This arrangement was bitterly criticised in a complaint submitted to the Treasury on 3 February 1727, which alleged that Sir John Meres, then governor of the York Buildings Company, had manipulated the directors 'in order to have the Glass Works for himself for little or nothing'[101]. Dismay was expressed that 'the Company cannot retain the materials, nor demand of Mr. Hackett any more than One half of the Profit arising by the said Glass Works; and if they are not set to Work as is very likely they will not, the Company can have nothing for their £3,040'[102]. Sir John Meres also refused to hand over the deeds of the glassworks, which he claimed had been destroyed 'by vermin'[103].

THE AIMS OF PRODUCTION: A HIGH QUALITY PLATE GLASS

Whatever the problems, it does appear that, during the early 1720s, the glassworks had been much improved and had been producing high quality glass. An anonymous pamphlet *A Letter from a Gentleman at Edinburgh, to his friend at London*, which is undated but which the cataloguer states was probably printed in 1727, described the Morison's Haven glass-house as 'the best perhaps in Britain'[104]. Although this hyperbole almost certainly owes more to polemic than accuracy, it must surely indicate some status, at least locally. The writer goes on to state that, at the glassworks 'there lies a very great quantity of Barrila with English sand fit for making plat glass. . .'. Cummings comments (1981, 326) that, although there was a demand for plate glass, the difficulties and costs of casting it should have warned the company to avoid such an enterprise. It would, indeed, be surprising if the intention had been to cast glass, since even the highly successful Vauxhall glasshouse abandoned casting during the 18th century, until

99 NAS CS96/4520.
100 PRO T/1/258/99.
101 ibid.
102 PRO T/1/258/100.
103 PRO C/11/378/149.
104 NLS Mf.134, reel 260, no 8.

its revival in the 1770s. Unless evidence is found that the plate glass was to be made by the casting process, it must be assumed that Hackett's intention was to produce it by the broad-glass method, as it was in the early days of the glasshouse. Nevertheless, the supplies of barilla and English sand indicate that a high quality product was intended, on a considerable scale, and was presumably produced, at least for a time. Certainly the valuation of the materials on site in 1723 at £1,980 (sterling) implies a sizeable concern. The glassworks does appear to have restarted operations, since the Pitfirrane accounts show payments for coal by John Colnott at the Morison's Haven glassworks in 1725 and 1726[105].

THE END OF THE WORKS AND OF WILLIAM MORISON

PRODUCTION CEASES AT MORISON'S HAVEN

However impressive the glassworks, the business appears to have stopped operating by the date of the pamphlet, probably 1727, when the York Buildings Company personnel turned to the idea of building a new glasshouse at Port Seton, on land owned by the company and leased to local entrepreneurs. Why production should have stopped at this point, particularly after such expensive investment, is open to speculation. The reason may be related to William Morison's worsening financial situation; Hackett's lease may have expired; or the operators may have decided that there was a possibility of greater profit if the workforce (and materials?) were switched to a new glassworks on their own property. It is also possible, in view of Hackett's apparent dishonesty, and his control of the company agents, that the Morison's Haven works, which were the security for his debt to the York Buildings Company, had been gradually run down in favour of the Port Seton enterprise. As was pointed out in the report to the Treasury in 1727, 'if the [Morison's Haven] Glass Works should be set to work, and there should be no profit, the Company can demand nothing'[106].

An advertisement in the *Caledonian Mercury*, on 13 July 1727, for the voluntary roup of the lease of the Morison's Haven coal and salt pans, may indicate a last-ditch bid to improve matters. It proposed that the main coal seam should again be worked, only the small seams having been mined for several years, adding 'There is also a Glass Manufactory at Morison's Haven near the said Coal, which will add to the consumption of the same.' Only three of the eleven salt pans were in good condition.

SEQUESTRATION OF WILLIAM MORISON

Meanwhile William Morison appears to have slid inexorably towards bankruptcy, culminating in sequestration by 1730. In his autobiography, the minister of Inveresk, Alexander Carlyle, attributed Morison's downfall to gambling:

[105] NLS Ms 6440 f 62; Ms 6441 f60.

[106] PRO T 1 258.100.

> Morison had been very rich, but had suffered himself to be stripped by the famous gambler of those times, Colonel Charteris, whom I once saw with him in church. . . . This simple gentleman's estate soon went under sequestration for the payment of his debts (Carlyle 1910, 7).

Whatever the truth of Carlyle's allegation, Morison certainly had massive financial problems and his largest debts were indeed to Colonel Charteris[107]. 'A 'Memoriall anent the Ranking & Sale of Prestongrange' of 1736, in the Saltoun papers[108] lists debts of £382,011 12s 0d Scots, (£31,834 6s 0d sterling) of which some £245,825 was in heritable bonds payable to Colonel Charteris. He had died in 1732, and the debts were being pursued by his heirs. Morison's highest ranking creditor was the Viscount of Arbuthnot, his son-in-law, who was still owed £9,500 Scots of his wife's dowry. The memorial adds that 'there is no proof yet of the value of the lands', but an earlier paper had valued the Prestongrange estate at about £26,000 (sterling) (£312,000 Scots)[109] (col illus 13). By 1730 Morison was in prison and was faced with the added humiliation of being pursued in the courts by his own son. William Morison younger was feuar of Craigleith as heir to his mother. His father had a life rent, but had allowed the house to fall into a state of disrepair, and his son petitioned the Court of Session to order William Morison senior to set it to rights. In his reply Morison stated that 'the whole estate belonging to Prestongrange and the Barony of Craigleith amongst others is now under sequestration at the instance of the creditors'. To which he added, 'Nor can Prestongrange help observing that amongst his other misfortunes it is none of the smallest that his son should be the most rigourous and pressing of all his creditors. He possesses ane annuity of 3000 merks while his father is lying in prison and cannot command a sixpence out of the estate . . .'[110].

The prison, in which Morison was incarcerated, was the Fleet, in London[111]. A letter to Lord Milton from George Buchan, one of the York Buildings Company members involved with the glassworks at Port Seton, written in March 1736 is extant. It says that among William Morison's 'late great and foolish contractions' he had become debtor to a Mr Sidney for about £3,000 (sterling), for which, in 1729, he had been pursued in the courts and forced to leave Scotland: he 'ever since has been confined to the fleet prison'[112]. In fact William Morison and a

107 William Henderson lists a number of large sums paid for rent to 'C.C.' or 'C. Charters'. The first, £3,000 was for 'half a year due at Lam: 1718'. Others, paid on 24 Sept 1719, 17 Sept 1720, 25 Feb 1721, were each for £4,291 10s 0d.

108 NLS Ms 17713, ff 48-9.

109 NLS Ms 17712, f 68. 'Note of the debts due to the creditors of Prestongrange', nd but post-1732. William Morison had, in fact, expressed gratitude towards Colonel Charteris 'a very firm kind friend', in a letter to Lord Milton (a relative of Charteris) in 1725, stating that Charteris 'has acted honourably with me . . . and he does demand nothing of me but common interest.' He went on to say that, at that time, he owed Charteris £15,125 sterling. (NLS, Ms 16532 f 87, William Morison of Prestongrange in London to Lord Milton at Edinburgh, 14 Aug 1725).

110 NAS CS236/M/2/10.

111 PRO PRIS 1/4, Fleet Prison Committment Book 1728-July 4 1729, has been examined but has yielded no information. The volumes covering 1729-33 are wanting.

112 NLS Ms 16564, f 63, George Buchan at Longniddrie to Lord Milton, 22 March 1736.

Thomas Burdus had jointly borrowed £5,400 on 27 April 1725, in London[113]. Morison failed to repay the loan and agreed on 10 May 1728 to pay £2,835 in two instalments. He again failed and at a Court of Session hearing on 21 June 1733, all his land and property was claimed by Henry Sidney. Although a list of his assets, made on 12 November 1729, included the harbour at Morison's Haven, the two corn mills nearby, his salt pans and coal heughs, it does not mention the glasshouses, confirming that they were, by then, defunct[114].

Buchan's letter confirms that Morison's affairs were in a chaotic state. As a justice of the peace, Buchan had received a warrant from the manager of the sale of the Prestongrange estate, ordering that Morison's charter chest should be broken open and the 'rights of the lands and vouchers of the payments to the present creditors' should be looked for and inventoried. In fact Buchan met John Rainie, manager of the Prestongrange coal and salt works, who had a key to the chest. They found 'the necessary later papers of the lands but no vouchers of payments' and Buchan describes Morison's papers as 'being squandered among many hands [so] they cannot be brought together'. It seems that, despite these efforts to sort out his affairs, matters were not resolved until 1745, some six years after Morison's death, when the Prestongrange estate was advertised for sale by public roup on 2 July 1745[115]. It was sold to William Grant, having been managed in the interim by Alexander Tytler, factor appointed by the Lords of Session[116], and following his death by his son William Tytler, writer to the signet[117]. William Morison had finally managed to obtain his release from the Fleet, and died 'abroad' in 1739[118].

A MEMORIAL

Although the entire Morison's Haven site, including the harbour, is now buried under tons of mining waste, one small tangible memorial to glassmaking in the early 18th century survives nearby. In Tranent churchyard, the headstone commemorating glazier Thomas Waugh, who died in 1705, is embellished with relief carvings depicting, typically, the tools of his trade. On either side of a hand emerging from the clouds and holding a lozenge of glass, are not only a square and a light hammer but, more significantly, tools belonging not to the trade of glazier but that of glassmaker – an unmistakable blowing iron with a gather of glass, and something resembling pucellas[119], the tool used to shape the mouths of open vessels. Clearly the stone mason was familiar with the local glassworks, which had by then been operating for some seven years and which must have aroused considerable interest in the area (col illus 5).

113 NAS CS138/5363, Decreet of Adjudication, Henry Sidney v William Morison, 21 June 1733.
114 NAS CS133/422.
115 *Edinburgh Evening Courant*, 17 June 1745.
116 NLS Ms 3720.
117 NLS CS210/71.
118 NAS CC8/8/104, Testament of William Morison of Prestongrange.
119 This tool is rather more ornate than the usual pucellas, and may relate to the glazier's trade.

EPILOGUE

The coal seams at Prestongrange were worked until 1963 and continued to fuel industrial production in Prestonpans, one of 'the first industrial villages in Scotland'[120]. The area, also described as 'one of the crucibles of the industrial revolution'[121] became well known for its chemical works and potteries in the 18th and 19th centuries, one of which was, as described above, built on the site of the glassworks. It seems reasonable to suggest that the glassworks at Morison's Haven, which operated for at least 50 years, from the 1620s to *c*1646 and again from 1698 to *c*1727, initially making drinking-glasses and later bottles, vials, tumblers and plate glass, also played an important and hitherto largely unacknowledged role in the area's early industrial history. The lack of awareness of the glass industry is confirmed by the fact that, although a recent broadcast *Just a Dot on the Map* discussed Prestonpans' industrial history in some detail, outlining the existence of salt pans, chemical works, potteries, brickworks and the brewery, no mention was made of the glassworks.

[120] Prof Christopher Whatley in *Just a Dot on the Map*, BBC Radio Scotland, broadcast 12 Nov 1996. My thanks to Christopher Lowell for a cassette of the programme.

[121] George Dalgleish (Nat Mus Scot) in *Just a Dot on the Map*, BBC Radio Scotland, 12 Nov 1996. It is interesting to note that the oldest known minutes of a Masonic lodge in Scotland are those from Morison's Haven (Wallace 1981; my thanks to the librarian of the Grand Lodge of Scotland, Mr Cooper, for this information).

10

GLASSWORKING AT WEMYSS AND KIRKCALDY IN THE 18TH CENTURY

EVIDENCE FOR THE 1698 MANUFACTORY AT WEMYSS

Despite the fact that the glasshouse at Wemyss is mentioned in much of the literature on British glass, often as the *only* early Scottish glassworks, very little is actually known about it. The glass cave, which has already been described in Chapter 4, seems likely to have been the site of the glassworks built at Wemyss by 1621, but no other information has been found. Fortunately, however, some tangible evidence of the later period of its history has come to light which, although slight, does prove that the cave was indeed home to glassmaking in the early 18th century.

THE CO-PARTNERS

On 1 September 1698, at the same time as the granting of William Morison's patent, the Scottish Parliament passed an 'Act and Ratification in favors of the Glass Manufactory at the Weems' (*APS* 10, 179) under the same terms. The Act was designed for 'the better Improvement of ane Manufactory of Glass Work set up be David Lord Elcho within his bounds at the Weems and to be carried on by him and his partners whom he had assumed.' The names of those partners are given in a protest recorded in the Register of Deeds some three months earlier, on 28 May 1698. On that day, £440 Scots was demanded from David Burton, glazier in Edinburgh, in payment for all the shares in the 'Glassecove Work of Wemyss'[1]. The shares, valued at £44 Scots each, were allocated as follows:

David Burton	4
George Watson	2
?Lychester Douglas	2
William Gordon	1
Gaven Hamilton	1

David Burton denied that he was acting as cashier for the company and insisted 'that none of the forsaid persons had payed in their said shares to him', but he did agree to pay for his one outstanding share[?] 'being onlie fourty foure pounds'. This fragment of information is of some interest, not least because it shows the major shareholder in the Wemyss company to have been David Burton, glazier, who was also a shareholder in the Morison's Haven glassworks, which was being

1 NAS RD2/81/848; RD12/38/1088.

set up at the same time. David Lord Elcho is not named as a shareholder. The amount of capital seems very low, compared with that invested in the Morison's Haven works, but it may be that the company had been set up simply to provide some initial working capital, and that the cost of building and equipping the furnace was born entirely by Lord Elcho.

DAVID LORD ELCHO

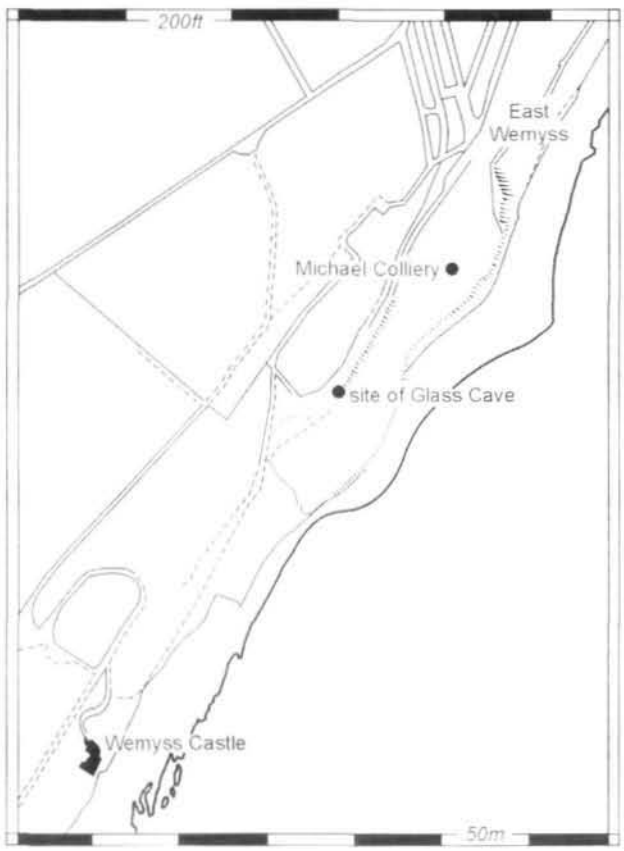
David Lord Elcho (1678-1720) was the son of Margaret, Countess of Wemyss and James, Lord Baron of Burntisland. He inherited the title of third Earl of Wemyss on the death of his mother in 1705. She had already resigned the estate in his favour when he married, in 1697, Anna Douglas, daughter of the first Duke of Queensberry, who brought with her a tocher of 100,000 merks (*Scots Peerage* 2, 282). Shortly after taking over the estate Lord Elcho set out to develop the coal production and, according to Fraser (1885 1, 330), appears to have spent between £15,000 and £20,000 (sterling) on improving and extending the coal workings during his lifetime. It seems reasonable to assume that, in common with other coal-owners, his application for the patent to manufacture glass was linked to the need to increase local consumption of his coal. It is probably also of some significance that in 1700 his mother married Sir George Mackenzie, Viscount Tarbat, who was so closely involved with the Leith glassworks.

According to Fraser (1885 1, 330), Lord Elcho constructed furnaces and other buildings for the glassworks, 'but was then constrained to abandon the enterprise' but no clue is given as to why so much capital should have been expended unproductively, and no further information has come to light. It can, however, be confirmed that he did indeed build a glass furnace in the cave at Wemyss, a fact which did not escape the notice of those interested in the glassworks at Morison's Haven, Andrew Hutchinson and John Scarlett, in 1711.

As has been shown in Chapter 9, when William Morison allowed the erection of a second glassworks on his land and caused London merchant John Ward to withdraw from an agreement to invest in the Morison's Haven glassworks, the interested parties switched their attention to Wemyss. Among David Fearn's papers, already discussed in some depth in relation to the Morison's Haven glassworks, there are various drafts of a contract between John Scarlett, 'Citizen of York Mercht Venturer Manadger of the Saill Cloth manufactorie att Leith and trustee for the same and Burges Guild brother of Edinb'[2] and the 'Right Honourable Earle of Wemyss'[3]. One of these appears to be the copy of a formal agreement, dated November 1711, but is unsigned and in poor condition, with a large area illegible due to paper damage. Nevertheless, together with other drafts it provides considerable new information about the site of the Wemyss glassworks

[2] There is no record of him in the published lists of Edinburgh burgesses.

[3] NAS GD1/576/15. Contract for lease of glassworks at Wemyss. (Papers not individually numbered.)



45
The area of shore to the south of East Wemyss, Fife, showing the locations of the Glass Cave and Wemyss Castle, home of David Lord Elcho, 3rd Earl of Wemyss, who built a glass furnace in the cave. (*Map by Jan Dunbar Aberdeen City Council Archaeology Unit; based on the Ordnance Survey map © Crown copyright*).

and the type of working agreement deemed necessary by entrepreneurs in the industry.

TACK OF THE GLASS CAVE

The paper is headed 'Contract . . . for the lease of glassworks at Weemyss', and covers 'All and whole the great cove [cave] situated near the shoar in the Lo[rdship] and Barronie of Weemyss lying midleway between the touns of Easter and Wester Weemyss together also with the glass furnace ovens and caves baith within the sd cave with the grass ground . . .' (illus 45). Further confirmation that a glass-house already existed in the cave is contained in an undated letter from John Scarlett which speaks of a tack or lease of 'the cave with the furnace wherein already built does lye, as well as of the cave and furnace themselfs'[4]. There is a detailed description of the ground to be leased, which, as well as the cave and adjoining shore, included 12 acres of arable and grass land around the cave, 'including half of the water pond' in the lower south end of the Earl's easter park, as well as a small piece of cornland on the south side of the cave, bounded by a dyke on the east, west and south. It also included a strip of ground joining a road 'for carying of coalls and other materialls from his lo[rdship's] coall hills and other places down to the sd cove and glasswork built therein'.

The tack granted the right to look for and dig clay, stone and sand on all the Earl's land, except his parks, yards, and the entry to his principle house of Wemyss, unless given permission to the contrary, for the 'use benefitt and improvement' of the glassworks or buildings, provided any damage was paid for. It also included full rights to 'cutt carry away and burn unto kelp the sea ware and land weads' on the shore and rocks and 'soe farr as they can reach and cutt into the sea'. John Scarlett expressed concern in his letter to Andrew Hutchinson of 6 September 1711 that there was to be no right to burn the kelp on the Earl's or his tenant's land, to which David Fearn, the advocate acting on his behalf, replied 'Mr. Hutchinson sayes that all may be burnt in the glass house itself', some indication of the extraordinary size and airiness of the cave.

4 NAS GD1/576/15.

No rights to the harbours of East and West Wemyss were granted, but the tack included the power to 'cause build or make an harbour in any creek or cliff near the said cove upon the shoar let to him by this present tack', to enable materials to be imported, and the finished goods shipped out. If such a harbour were built, or improvements to the glasshouse made, the Earl was bound either to pay for them during the term of the tack, or when it was terminated, at a valuation according to their condition at that time, to be established by six independent tradesmen: two wrights, two smiths and two masons.

COAL SUPPLIES

One significant clause in the agreement stipulated that the Earl of Wemyss or his agents should 'have always in reddiness upon his coall hills the number and quantity of one hunder and sixty loads of great sea-coll or chin: coll, each load weighing at least eighteen ston of iron weight'. Transport to the glassworks was to be paid for by the tacksman, who could take whatever quantity of coal was required, at any time, at an agreed price. However, if the supply of coal should fail, the tacksman could give three days notice of his intention to obtain coal elsewhere, in order to keep the furnace going. It is clear from this agreement that Scarlett and Hutchinson were determined to avoid the problems experienced at Morison's Haven, when the coal supply had failed and glass production stopped.

The tacksman could terminate the lease at three-yearly intervals, provided he gave six month's notice and had no outstanding debts, while the Earl of Wemyss agreed 'neither directly or indirectly to encouradge an other glas worke within his said barronys of Weymis or Methill or to afoord any matterials for any glass worke with his Ldships said teritories' while the Wemyss glasshouse was in operation.

THE RENTAL

John Scarlett was empowered to take on any co-partner he wished, and undertook to pay a yearly rent of £4 (sterling) for the cave, furnace, etc, and £2 5s (sterling) for each acre of ground, a total of £32 (sterling), to be paid from Martinmas to Martinmas, the first year's to be paid in advance on the signing of the agreement. He also agreed to pay the same for the Earl's coal as everyone else, but 'not exceeding six and halfpenny sterling for each horse loade, at the dearest rate of the said coals, within 14 days after his Lordships coals grieve shall have given in his bill', and to buy all his coal from the Earl so long as he complied with the conditions set out in the agreement. The length of the tack is not stated in the damaged contract, but another draft says it was to be for 31 years.

PRODUCTION AND PERSONNEL

The type of glass to be made at Wemyss is not specified, but a letter from John Scarlett to Andrew Hutchinson, dated 7 September 1711, asks for details of the cost of producing a gross of full weight chopin bottles, 'not what you can affoard

them for, and have profit by them but what they really may stand to, all costs and charges payd. I know that the price of the raw materials and ingredients will alter the price of the bottles but I want to know what they stand to, when the materials are being had at a moderate price'[5]. It does, therefore, seem likely that the Wemyss glassworks was intended for bottle production.

The agreement was definitely signed, and work on the glasshouse was certainly proceeding, before the sudden death of John Scarlett in March 1712. Also in the Fearn papers is a signed agreement, witnessed by David Fearn among others, between Andrew Hutchinson 'Master of the Glass work at the Weems in Fife' and 'David Phillips in North Leith founder', binding David Phillips to serve 'as a teazer and founder in the said Andrew his glasswork' for three years. The agreement is dated 'the second and twenty ninth dayes of February' 1712[6].

CONTRACT WITH A FOUNDER FROM LEITH

David Phillip's contract is not merely significant for confirming that the Wemyss glassworks was a serious enterprise; it also sets out very clearly the importance to the proprietors of ensuring that the expertise of their employees should be protected, and as such is worth quoting in some detail:

> the said David shall not absent himselfe from the said work neither by day nor by night without the speciall consent and leave asked by him and given by the said Andrew Hutchinson or his clark . . . And that the said David shall not direct teach or instruct any person or persons by word writting or otherwayes But shall his secrets keep as to any thing he does know or shall see done in the mixing of mettal or performing the art of glass mixing or mettal making and that for the space and time of three years . . . To all which articles and conditions he . . . binds and obleidges him . . . under the penalty of five pound sterling money to be paid by him . . . to the said Andrew Hutchison . . . for every discovery of such fault Suchlike he the said David Phillips hereby binds and obleiges himselfe neither to wrong him the said Andrew Hutchinson of any of his ingredients or glasses made or see him wronged by any person or persons without giving the said Andrew . . . timely notice or intelligence thereof under the forfeiture of five shillings money foresaid for every such fault committed or seen committed . . .

He also bound himself to be of good behaviour, a common feature of such agreements. He was to be:

> obsequiously obedient upon all occasions to all the orders and rules prescribed . . . for the good sober and orderly management of the said glasswork . . . as well in relation to the work itselfe as to sobriety good moral life and peaceable behaviour towards one another in and about the said work.

Hutchinson agreed to pay him 5s (sterling) a week and to provide a house for him and his family rent free, with small coal and cinders for one fire when necessary.

5 NAS GD1/576/15.

6 *ibid.*

He also undertook to pay the cost of 'removing the said David his goods and family by water from Leith to the town of Weems'. David Phillips signed with crudely printed initials, clearly being unable to write. Equally clearly, he was being poached from the Leith glassworks, which raises the question of where it was intended by Scarlett and Hutchinson to obtain the rest of their workforce – the most obvious choice being Morison's Haven, particularly as Hutchinson claimed to have brought a team there with him.

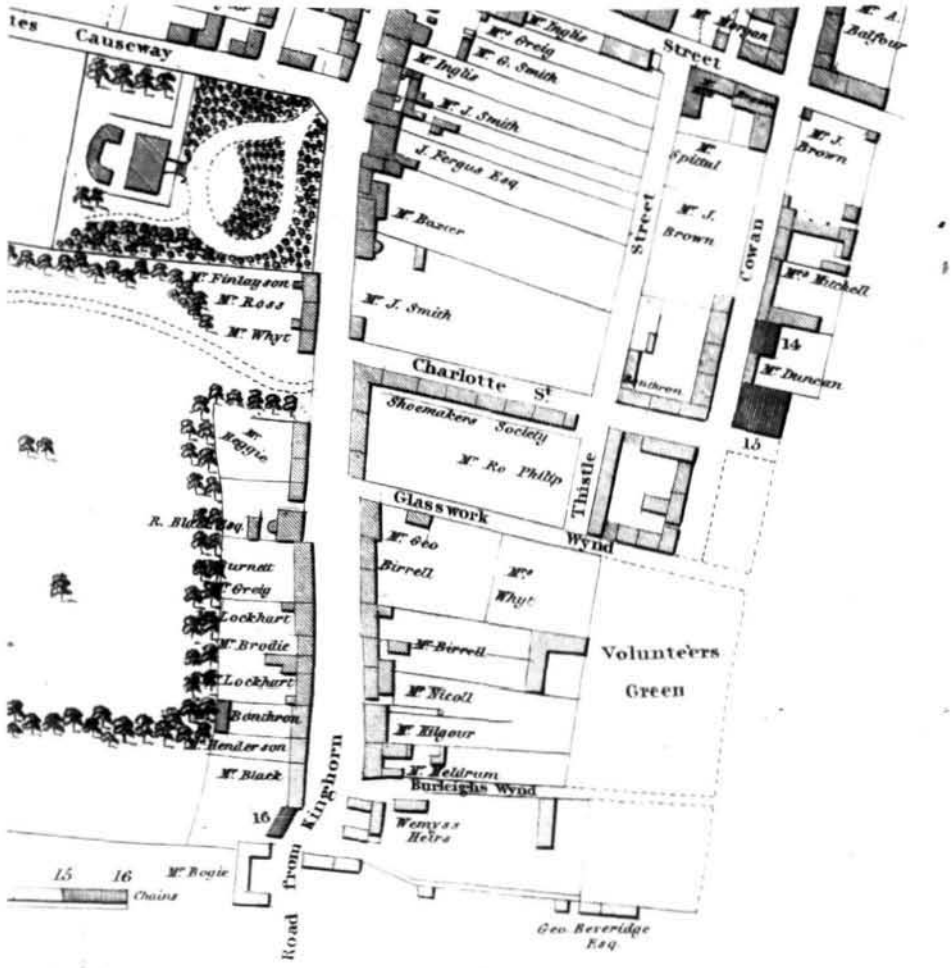
Much work remains to be done on the Wemyss glassworks. It appears that David Lord Elcho did not actually produce any glass, although the reason is unclear. There is only minimal evidence of glass production after 1712, but two sources indicate that the glassworks set up by Scarlett and Hutchinson did function, at least for a time. Certainly the author of the report in the first *Statistical Account* (1791-9, 10, 805) appears to have believed that it was in operation for a short period. More significantly, a mural depicting the Wemyss coast, which was painted by John van Sypen around 1715 shows not only the castle, harbour, saltpans and coal being transported to the shore (Macmillan 1990, 87-8) but also depicts the glassworks in operation[7]. The precise date of the painting is unknown, but the mural is clearly very significant as a unique record of early industrial activity in Scotland and certainly confirms that van Sypen observed a furnace in operation in the glass cave.

Without access to the Wemyss Castle archives it is unlikely that the many outstanding questions about the 18th-century Wemyss glassworks will be answered. Nor, more importantly, will it be possible to examine further the much earlier glassworks of the Hay period. This is particularly frustrating because Wemyss is the only named site of an early 17th-century glasshouse.

EVIDENCE FOR GLASSWORKING AT KIRKCALDY

It is some measure of the scarcity of information about the Kirkcaldy glassworks that, in *Historic Kirkcaldy*, published as part of a series of burgh surveys, the only evidence of its existence was the street name 'Glasswork Wynd' on an 1824 plan of the town (illus 46) (Torrie & Coleman 1992, 62). The text reads: 'Glasswork Street . . . Presumably glassworks stood in this area, but no evidence has been found' (*ibid*, 62). The material which came to light during research for the author's original thesis is slight, but it makes it possible to establish that the glassworks was operating from at least 1717 to c1726, and that bottles were made there.

[7] Prof Duncan Macmillan, per comm, June 2000.



46
Detail from 'Plan of the Town of Kirkcaldy', John Wood, 1824, showing Glasswork Wynd (now Street), at the southern edge of the town, close to the shore (which lay to the right of the street plan shown here). *(Reproduced by permission of the Trustees of the National Library of Scotland.)*

THE EVIDENCE IN ADMIRALTY COURT PAPERS

The first mention of a glassworks at Kirkcaldy which has so far been found, is contained in the papers of the Admiralty Court, and concerns the case Swinton v Wallace, dated 1718[8]. Alexander Swinton of Strathore alleged that Patrick Wallace senior, merchant in and provost of Arbroath, and John Mitchell, merchant in Arbroath, owed £44 (sterling) to 'Richard Soame master of the glass work of Kirkaldie' for 44 gross of glass bottles 'which were sold and delivered be the said Richard Soame to them in the month of June last by past or thereby.' Richard Soame had assigned the money, less £3 (sterling) paid to him, to Alexander Swinton in 'Janry last by past'. It can thus be inferred from these dates that the glassworks must have been in operation in 1717.

8 NAS AC9/641.

RICHARD SOAME: 'MASTER OF THE GLASSWORKS'

The description of Richard Soame as master of the glassworks is of particular interest. It seems very likely that he is the same Englishman described, somewhat disparagingly, by William Morison of Prestongrange's lawyer as 'a mere projector' with 'no substance to performe', when he showed interest in leasing the Morison's Haven glassworks 'immediately after the rebellion', presumably shortly before taking on Kirkcaldy[9].

The site of the glassworks was, like the others on the Firth of Forth, very close to the shore, although some distance from the harbour. As noted, the position of the street to which it gave its name can clearly be seen on Wood's plan (illus 46), but no plan of the exact location has yet been found.

LINKS WITH THE MORISON'S HAVEN AND LEITH WORKS

More information about the glassworks can be gleaned from the Pitfirrane manuscripts in the National Library of Scotland. Sir Peter Halkett of Pitfirrane owned mines at Limekilns, from which he sold coal to the glassworks at Kirkcaldy, Morison's Haven and Leith in the 1720s, accounts for which are recorded. Significantly, some of the people concerned were involved with both the Kirkcaldy and the Morison's Haven glassworks, and there may well have been formal links between the two[10]. A letter from John Colnott dated Kirkcaldy, 20 December 1721, addressed to Patrick Angus, factor at Limekilns, reads 'Sir, I desire that you will as soon as possible you can send such a load of coalls to Mr. George White's Glass house at Kirkcaldy as you used to send for acct. of Mr. Fordyse and Cambolt to our Glass house at Morrisons Haven. . .'[11]. There are further orders for coal for the Kirkcaldy works from John Colnott in 1722 and 1723[12].

Further evidence that the two glassworks may have been under the same management is contained in another case heard by the Admiralty Court: William Ferguson merchant of Kirkcaldy v. James Douglas, merchant of Dalkeith 'for payment for bottles sent over the Forth in the boat of Alexander Howison'[13]. The case concerns 30 gross of bottles for wine, which were shipped to Fisherrow (Musselburgh) and then by cart to Dalkeith[14]. The bottles cost 18s (presumably sterling) a gross, and they were dispatched on 20 June 1720. Two of the men who

9 NAS GD1/576/8 Fearn Memorial. The Fern papers also contain an account 'due by Mr. Soams to Pr. Grange 1716', which includes charges for ashes, wood and coal. Kirkcaldy is not mentioned, but it is possible that the items purchased were intended for the glassworks there, which would put the date of the glassworks forward to 1716.

10 A letter from John Colnott, dated Morison's Haven, 29 Dec 1721, in which he writes of coal sent to both places, was cited in Chapter 9. NLS Ms 6437 f43.

11 NLS Ms 6437 f44.

12 NLS Ms 6437 f31, 32; Ms 6438.

13 NAS AC9/680.

14 It is interesting to speculate on the reasons for buying bottles in Kirkcaldy, when they were also being manufactured in Leith and Morison's Haven, which were much nearer to Dalkieth. One possibility is, of course, that the Morison's Haven fire was out at that time.

gave evidence to the court, John Thomson 'one of the blowers of the glassworke at Kirkaldie aged fourty eight years, married' and James Love 'bottlemaker in the glassworke at Kirkaldie aged twenty four years and upwards married', are known to have worked, both before and after that date, at Morison's Haven.

The case itself concerned the quality of the bottles, eight dozen of which were alleged to have broken when filled with wine, causing the recipients considerable loss. Thomson and Love gave evidence that they were 'sufficient . . . as to syze and metle when they were packt', having been carefully selected from the 100 gross available, and that they were carried in hampers and transported on sledges from the warehouses to the boats. Ferguson argued that the problems must have been caused by the land carriage to Dalkeith, since bottles were not usually transported in carts.

OWNERSHIP AND LOCATION OF THE KIRKCALDY WORKS

William Ferguson, a prominent citizen and the 'merchant of Kirkcaldy' in the above case, owned the glassworks, at least by 1720. In 1721 he let the glassworks with 'the haill office house and pertinents and all materialls thereto belonging' to George White for five years at a rent of 14 gross of bottles and 'half anc hundered pound wt Sopp [?soap] for the first year and sixteene gross bottles all the rest of the years and to pay the the bottles monethly'. Ferguson undertook to supply 'his haill pott ashes glasses etc.' at the current price pertaining at Leith, which was to be paid by a gross of bottles weekly, while the work was operating, until the debt was paid off[15]. A letter of 16 September 1721, sent by Ferguson to White at Seaton House, East Lothian (see Chapter 11 below), said he was awaiting a delivery of 23 tons of ashes which, with what was already on site, would be sufficient for White's purposes. Ferguson emphasised that while he could provide coal and ashes, he was unable to advance money – as requested by White in a letter of 14 September[16].

Council records show that Ferguson had been elected councillor in September 1715 and became provost in December 1717[17]. He died in October 1723[18] and on 14 July 1726 'the Glass Work and Office-houses, and diverse Tenements in Kirkaldy, which pertained to the Deceast provost William Ferguson there' were offered for sale by voluntary roup[19]. The glassworks is not mentioned in his testament dative, although among the many debts due to him are £7 owed by John Imrie, glassmaker in Leith, and a bill, dated 14 April 1721, by John Thomson, glassmaker, which had been registered and protested in the Kirkcaldy burgh court books.

15 NAS B41/7/3 Kirkcaldy Burgh Court Book. Tack, William Ferguson and George Whyte, 15 Dec 1721. No page number.

16 NAS B41/7/3 Missive letter Ferguson to White, 16 Sept 1721.

17 Town House, Kirkcaldy KDY 1/1/2.

18 NAS CC20/4/18/300.

19 *Edinburgh Evening Courant* 5-8 July 1726. My thanks to Sheila Forbes for the reference.

A sasine of land disponed to William Ferguson, merchant in Kirkcaldy, on 7 December 1713, fits the description of the areas adjacent to Glasshouse Wynd, and may be the site on which the glasshouse was built, but without more information about the adjoining tenements, it is impossible to know on which side of the present street it was situated. It reads:

> All and haill that tenement of land lying within the said burgh on the south syde of the hie street therof, bounded betwixt the tenement of Mathew Oswalds airs on the South the tenement of the airs of umql Mathew Anderson on the East the tenement of Thomas Whyte elder and now of John Williamsons airs on the west and the said hie street on the north pairts thereof And sicklyke All and Haill that yeard belonging to the said tenement upon the South pairts thereof whereupon there is tuo little houses built already side wall hight. Bounded betwixt the tenement and yeard belong to the said Mathew Anderson on the East the said John Williamsons tenement and ane vennell on the west the tenement of Mathew Oswald on the north and the sea flood on the South pairts thereof[20].

Hopefully more information about the Kirkcaldy glassworks will be found in the future. In the meantime, building work on either side of Glasswork Street should be carefully monitored in case evidence of the early 18th-century glasshouse should come to light.

[20] NAS B41/2/4 (103).

11

THE PORT SETON GLASSWORKS

The site of the next glassworks to be discussed is only about one and a half miles east of Morison's Haven, in the adjoining parish of Tranent. Once again it was built near a harbour and close to the coal-mines which were to provide the fuel. Information about the Port Seton glassworks comes mostly from material concerning two large English institutions, something of which we have already heard in Chapter 9, both of whom were involved in dubious financial dealings in Scotland: The York Buildings Company and the Charitable Corporation for the Relief of the Industrious Poor. It is often difficult, and sometimes impossible, however, to disentangle the affairs of the individual employees and managers from those of the institutions themselves. The involvement of Robert Hackett, Thomas Fordyce and Archibald Campbell of the York Buildings Company with the Morison's Haven glassworks has already been mentioned, and their roles in the establishment of the Port Seton glassworks will now be explored, as will those of other better known Scots. It should be remembered, though, that in terms of their Scottish enterprise as a whole, the production of glass was of very minor importance to the company, justified only by the necessity of encouraging industries which would consume the coal produced on their estates.

THE INVOLVEMENT OF THE YORK BUILDINGS COMPANY

The whole phenomenon of the expansion of the York Buildings Company – from London water suppliers to becoming the largest corporate land owners in Scotland – has been fully explored by AJG Cummings in his PhD thesis (1981) *The York Buildings Company: A Case Study in Eighteenth Century Corporation Mismanagement* and in a further essay specifically about their Scottish industrial enterprises (Cummings 1994). These, together with David Murray's book *The York Buildings Company, A Chapter in Scotch History*, first published in 1883, provide a detailed history of the firm and the machinations of its members, so only a brief summary is appropriate here.

The original letters patent of the company were granted by Charles II in 1675. Incorporated in 1691 as the Company of Undertakers for Raising the Thames Water in York Buildings, the business was a highly respected concern, which fulfilled the role for which it was founded, for many years (Millar 1909, xxxiii). In 1719, however, during an extraordinary speculative boom, typified by massive public investment in the South Sea Company, Case Billingsley, one of the leading London speculators, realised that the York Buildings Company charter had imposed on it no land-holding restrictions. He knew that the government was

having difficulties in disposing of the estates forfeited after the 1715 Jacobite uprising, and saw the opportunities to be afforded by their purchase. With five associates, on 19 March 1719, Billingsley bought the whole stock of the York Buildings Company for £7,000 (sterling) (*ibid*, xxxiv). The Duke of Chandos was elected governor, and in October of that year a joint stock fund of £1,200,000 (sterling) was floated, with the aim of buying up the forfeited estates in Scotland and other land. The fund was over-subscribed and when several Scottish estates were auctioned, also in October 1719, they were bought by the company's agents. The estate in question – that of the 5th Earl of Winton – was bought on 10 October 1719, by Robert Hackett and John Wicker for £50,300 (sterling), the third largest price paid for an estate in Scotland (Cummings 1981 308). It was transferred to the York Buildings Company on 6 April 1720[1].

THE WINTON ESTATE

The net annual rental obtainable for the Winton estate was estimated by the Commissioners for the Forfeited Estates to be £3,446 (sterling), of which £1,000 was for the coal and salt pans (Millar 1909, xvi). The Commissioner's survey of 1716-17 noted that there were 12 salt pans and two coal heughs on the estate, the rental of which could only be estimated because the books had not been kept regularly. The South Sea 'bubble' burst in 1720, having the knock-on effect of a huge fall in the value of the York Buildings Company shares, which caused delays in payments to the commissioners and led to further unwise (to put it kindly) money raising measures, which it is unnecessary to describe here[2].

OWNERS OF THE ESTATE

Before further discussion of the York Buildings Company activities, it would also be appropriate to give some brief details of the Winton estate itself, and its owners. The activities of the catholic third Earl of Winton (*c*1584-1650) (illus 26) in allowing the Italian glassmakers from Morison's Haven to attend mass at Seton House in the 1630s have already been mentioned in Chapter 5. It was he who built the 12 salt-pans in Cockenzie and a harbour, which was, however, destroyed by a storm in 1635 (Seton 1896, 224). The Seton family were loyal and consistent supporters of the house of Stewart, who entertained members of the royal household on several occasions at Seton House (col illus 11). The third earl accommodated James VI and his court for a night, when he visited Scotland in 1617, while Charles I and his entourage stayed there both en route to his coronation in 1633 and on his way back to England (*ibid*). In 1679 the Duke of York, the future James VII, while on a visit to Scotland, was entertained by the fourth earl who, incidentally, bought two dozen 'flint cristall glasses' especially for the occasion[3].

1 NAS E.607/1/25. Forfeited Estates 1715, Register of Dispositions.

2 YBC stock was quoted in the *Edinburgh Evening Courant* in August 1720 at 260, by the end of November it had fallen to 14. These figures presumably refer to monetary value; their significance here is to indicate the rapid decline of the stock.

3 NAS E.661/103/51.

George, fourth earl of Winton (1641-1704) built a new harbour at Cockenzie 'called for distinction of the west harbour "Port Seton"' (Seton 1896, 240). According to Smout (1963, 74), he employed a German engineer to create 'one of the finest harbours on the Forth', from which he traded with Norway and Holland. He was a protestant, as was his successor, again George, the fifth earl (1678-1749), who succeeded to the estate in March 1704. The fifth earl, described in the *Scots Peerage* (8, 603) as 'a zealous Protestant', who was 'suspected of Jacobite views' was declared a rebel, having failed to appear when

4 Detail from John Adair's 'Mapp of the Parioch of Tranent with the Port of Seaton', 1688, showing the close proximity of Cockenzie and Port Seton harbours. Inland the 'Cole Heughs' at East Windygoul, later owned by William Adam, are clearly marked, as is 'Carlaveruk', source of clay used for crucibles at Port Seton glassworks. *(Reproduced by permission of Edinburgh University Library (Map Dept).)*

summoned to Edinburgh in September 1715. The character and exploits of this interesting man are fully described by George Seton (1896, 249-75). It sufficient here to note that, having been sentenced to death for his part in the 1715 rebellion, his estates were forfeited (he escaped from prison, however, and lived out his life in Europe). Most of the forfeited estates were solely agricultural, but the Winton estate was particularly desirable. Robert Calder, in a typically ingratiating literary dedication of that period, wrote of it in 1708: 'very few in the kingdom have so plentiful estate as your Lordship, and none so contiguous, compact and convenient, both for sea and land, for casual and real rents, for advantages of salt and coal, with the accommodation of pleasant and well inhabited towns and villages, all belonging to yourself . . .'[4].

THE HARBOURS

As well as enjoying the advantages of coal deposits near to the coast, and a shore suitable for salt pans, the Winton estate possessed the two harbours mentioned above, the smaller, at Cockenzie, having been created a free port in 1591, when the town was erected a burgh of barony (*Scots Peerage*, 8, 590). Just to the east of Cockenzie was the harbour of Port Seton, constructed by the fourth earl in 1679, large enough to enable ships of 300 tons to berth (Hatcher 1993, 109). The close proximity of the two harbours can clearly be seen in John Adair's map of the parish of Tranent of 1688[5] (illus 47). They are, in fact in separate burghs of barony, but references to the harbours often appear to confuse the names. Indeed the official disposition of the Winton estate, written and signed on 23 July 1731 by the Commissioners for the Forfeited Estates, describes the burgh of barony of Seton and Tranent and a charter granted to George Earl of Winton by James VII on 31 July 1686 'together with the free burgh of Cockenzie called Port Seton'[6].

THE POTENTIAL FOR INDUSTRIAL DEVELOPMENT

The potential for industrial development on the Winton estate is clearly demonstrated in the abstracts of annual rentals compiled by the Commissioners for the Forfeited Estates in 1716-17 (Millar 1909, xvi-xxxii). Of the 38 estates assessed, only Panmure was estimated higher than the Winton rent of £3,446 (sterling). The Panmure estate produced much greater cash rental, but the only non-agricultural product was linen. As was common practice in Scotland at that time, a considerable proportion of all the rents was payable in kind, varying from butter and capons to cereals and carriage of coals. Winton also offered coal mines, salt pans and a viable harbour, advantages quickly seized upon by the York Buildings Company, which wasted no time in attempting to develop its assets. The harbour at Cockenzie was enlarged and in 1722, the first railway in Scotland was built, linking it with the coal pits at Tranent some two miles away (Brown, K

4 Seton 1896, 251, quoting Calder's dedication to *Genuine Epistles of St Ignatius*.

5 Edinburgh Univ Lib, *Mapp of the Parioch of Tranent with the Port of Seaton*, John Adair, 1688.

6 NAS E.607/1/25.

48
William Adam, architect and entrepreneur, from a painting by William Aikman. (*Drawing by Alexandra Shepherd*).

1938, 1-4). They also installed a steam engine at the Tranent coal-mine, putting them 'at the forefront of technology' (Cummings 1981, 308), spending a total of £3,500 (sterling) on improvements to the estate. Considerable quantities of coal were subsequently shipped to London, but this venture, like so many others, was eventually doomed to failure.

TENANTS OF THE WINTON ESTATE

On 11 November 1721 the York Buildings Company leased the barony of Tranent to Thomas Mathie, a Cockenzie merchant, and John Horsely their agent, at £795 (sterling) per annum (Cummings 1981, 312). The coal works were leased to the same men on 15 May 1722, and the saltworks and harbour of Port Seton on 2 February 1723, for a total combined rental of £1,000, the amount which had been estimated by the Commissioners for the Forfeited Estates. Mathie could not make sufficient profit to pay the rent, however, and he petitioned to be released from his tack in July 1734[7], claiming that the pits had been in ruinous state when he took them over and that the coal was very crumbly, eleven-twentieths being culm, or small coal, only useful for salt pans or lime kilns[8]. Another part of the estate, the baronies of Seton, Longniddry and Winton were let to George Buchan of Kelloe, a 'confidential correspondent' of the York Buildings Company, on 11 November 1721 for 31 years (Cummings 1981, 337).

Severe financial difficulties forced the company to make plans to sell the Winton estate in 1727, but they were opposed by the annuitants, and had to continue to lease it. In August 1727 William Adam, the architect (1689-1748) (illus 48), took over the lease of the barony of Tranent and Cockenzie and the harbour at Port Seton for 22 years, at a rent of £640 (sterling) a year. He also obtained, at Martinmas 1728, the lease of the coal and salt works at Cockenzie and Tranent for 12 years, for £450 (sterling) a year[9]. Adam, whose involvement in numerous enterprises, apart from building, will be discussed below, was an agent for the York Buildings Company, as well as being factor on the forfeited estate of East Reston. Also in 1727, a new lease was obtained by George Buchan for Seton,

7 This date appears odd, but it is correct.

8 NAS GD345/854/12. *Courtesy of The Grant of Monymusk Muniments GD345.* Cummings suggests (1981, 313) that the YBC bought coal from their lessees to sell in London.

9 NAS GD345/854/8. List of rentals of the YBC estates in Scotland.

Long Niddry and Winton, at a rent of £1,400 (sterling). So from 1727 the whole of the Winton estate was leased to the company's own agents (Cummings 1981, 338). Even this may not be the full story, because William Adam was employed as salt grieve at Cockenzie in 1716 and 1717[10], so he was obviously involved with the estate well before the advent of the York Buildings Company.

WAS GLASS MADE AT PORT SETON BEFORE 1728?

Precisely when glassmaking began at Port Seton is unclear. There is no doubt that a new furnace was built in 1727, and that the company financing and controlling it was established in 1728, as will be explained. There is, however, the possibility that some glassmaking activities had taken place on the estate before that. We know that Robert Hackett, Thomas Fordyce and Archibald Campbell, all agents of the York Buildings Company, were involved with the Morison's Haven glassworks, and that they were all adept at putting their own interests before those of the company. Attempting to piece together a reasonable picture of the wheeling and dealing of a group of early 18th-century entrepreneurs and their associates is difficult at the best of times, trying to make sense of the few items of evidence in the archives relevant to Port Seton is virtually impossible. It does seem reasonable, however, to present such material as is extant, in the hope that more will eventually be found, and that a more complete picture will emerge. A tentative hypothesis can be put forward that there were glassworks at both Morisons Haven and Port Seton in the early 1720s, during which period there was clearly something of a hiatus, before the estate was leased as described above.

EVIDENCE FROM THE FACTOR'S ACCOUNT BOOKS

The suggestion that there may have been glassmaking activity at Port Seton during the early 1720s – and possibly before that – is based on several small details in the extant material. There are four puzzling entries in the Prestongrange factor's account book, in which, between 27 May and 25 July 1717, he listed the receipt of four payments for the delivery of kelp to Cockenzie, seven cart-loads in all[11]. It is hard to imagine what they could have been used for, other than glassmaking. Hackett's comment that 'Morrison and Winton are to be joyned together for glass works, bottles etc.' in June 1721[12] mentioned above (Chapter 9) seems very premature for a company not actually formed until 1728. In a letter of 7 September 1721, John Cockburn of Ormiston (*c* 1679-1758), who was an assistant governor of the York Buildings Company, MP for Haddingtonshire and Commissioner of the Admiralty, wrote to an un-named correspondent in Edinburgh: 'I confess I doubt much of this glass undertaking going long on, but I

[10] NAS E661/77. 'Account of salt in the girnells of Cockenzie made before 2 July 1716 and how and at what the same was sold.'

[11] NAS CS96/4520. Factor's account book for William Morison of Prestongrange. Two of the payments were *from* James Love, a known glassmaker.

[12] NAS GD1/170/2. York Buildings Society papers.

don't see wherein we can suffer tho' they should blow up & if I should be mistaken & that they should carry on their business it must be anc advantage to us to have them '*upon our estates* [author's italics]'[13]. Since the York Buildings Company never owned the Prestongrange estate, this certainly seems to indicate that he was talking about the Winton land. It also appears from Cockburn's tone that the company itself was not directly involved, although the company or its members may well have been putting up some of the capital. Another letter of 21 September 1721 further implies that Cockburn was discussing a glassworks at Winton:

> I am intirely of opinion that it is for the advantage of the company to have the glass works established upon the estate, manufactorys of all kinds must increase the consumption & particularly of our coall, butt I would nott have the company any way in their power, for I have the same opinion of Hackett & of all that I hear of being concerned with him in the undertaking, so I shall always endeavour to be upon my guard when I treat with him or any of his gang . . .[14]

We know that Robert Hackett had definitely leased Morison's Haven glassworks and had spent £6,040 (sterling) on it by October 1723. Half of his funding came from the York Buildings Company, but whether it was simply a loan, or a more formal arrangement, is unknown (Cummings 1981, 326; the source of the remaining £3,000, said by Cummings to be Hackett's own money, must also be open to speculation). It is possible that Hackett, Fordyce and Campbell, and other unknown associates, also set up a glassworks on the Winton estate, probably before 1721. It appears that Robert Hackett was subsequently removed from the Winton glassworks, by the York Buildings Company, judging by comments in Cockburn's letters. Written on 26 October 1721 one intriguing letter, mostly concerned with the company cash-flow problems, contains a lengthy post-script:

> Whatt is above was writt in the morning. As I came outt of the house today Mr. West [Richard West, assistant to governor, YBC] putt some papers into my hands & desired me to read them. I find they consist of a letter from Mr. Cole [Christian Cole, on committee of the YBC] of the 19th & a memoriall from Messrs Ffordice & Campbell with anc estimate of the glassworks. I am very sensible that the Company suffered very much by the management the first year, butt if any exchange can be gott [?] [?] their can be no danger if bills are drawn upon the company. Butt whatt makes us nott remit money so fast as you desire, is that we have itt nott.

He goes on to talk about the coal and salt on the Winton estate, then:

> I confess I in my private opinion, think their memoriall is gross, butt I assure you I shall say nothing upon the subject here . . . among other things I spoke with a gentleman some days ago who mett Mr. Hackett accidentally in company . . . & there heard him complaining against the siezeing his glass

13 NAS GD1 170 1. Summary of letters written by Robert Hackett.

14 *ibid.*

> works & he said that he would lett you go on for some time, butt he would make you pay for whatt they had done, for they were considerably in his debt & he would in a little time make who ever meddled with it acct to him. How far itt may be reasonable for the company to engage in a wrangle about a thing which they have nothing to doe with, I shall leave to others to judge[15].

Cockburn's earlier letter of 7 September 1721 had also mentioned 'Hackett's being turned out of the company's service', but Hackett appears to have remained in control of the Morison's Haven glassworks until October 1723, since he offered at that date to 'make over and convey the said Glass Works to the Company or their Order, to remain to them and their assigns until they shall be paid the said sum of one Thousand Pounds'[16], so it seems reasonable to suggest that he had been removed from a glassworks on the company's property at Winton. The implication of Cockburn's letters is that Hackett had fallen out with Fordyce and Campbell, who had certainly been in partnership – or, more accurately, in league – with him. In an undated, unsigned, summary of material concerning Robert Hackett is a copy of the following agreement:

> Robert Hackett Esq. purchaser of the estates of Winton Panmure Kilsyth, East Restoun, . . . constitutes Thomas Fordyce writer in Edinburgh & Archibald Campbell writer to the signet Agents to him, with power to hold court, lett, sett, discharge, remove, decide cases & execute them, & to be answerable to none but the said Hackett, who can despose them at his pleasure. done by Mr. Mather Mackell advocate & procurator for Mr. Hackett in the presence of the Lords of Councill & of Sessions' dated ?September 29.[17]

This agreement would certainly appear to have been in Hackett's, rather than the York Buildings Company's, interest. Hackett was also said to have written on 13 December 1720 that 'the Governor & Company have agreed to grant him leases of the first purchases, & therefore they are desired to continue their care thereof on his account. . . He praises their fidelity very much . . . orders them to send him some koales, salt, bottles etc. to London'[18]. The bottles could, of course, have come from Morison's Haven.

It appears, then, that Robert Hackett intended to lease the Winton estate from the York Buildings Company, and may, indeed, have actually done so on a short-term basis. He appointed Fordyce and Campbell as his factors: 'You have my Factory upon the whole estates . . .', told them all the accounts due for 1720 were payable to him, then charged them with the care of the glass house, adding 'Mr. White goes down in few days to little England (so he alwais calls the glass works)'[19]. Hackett appears to have put this Mr White and a Mr Lonsdale into Seton House and complained in a letter of 23 December 1720 that they disagreed: 'He thinks the house big enough for them both, & sayes he will make it

[15] NAS GD1/170/1, John Cockburn 26 Oct 1721.
[16] PRO T/1/258, Treasury Board papers.
[17] NAS GD1/170/1.
[18] NAS GD1/170/1, Letter presumably in this case to Fordyce and Campbell.
[19] NAS GD1/170/1, Jan 1720. This probably referred to the Morison's Haven works, in view of the advertised English workmen there (see Chapter 8).

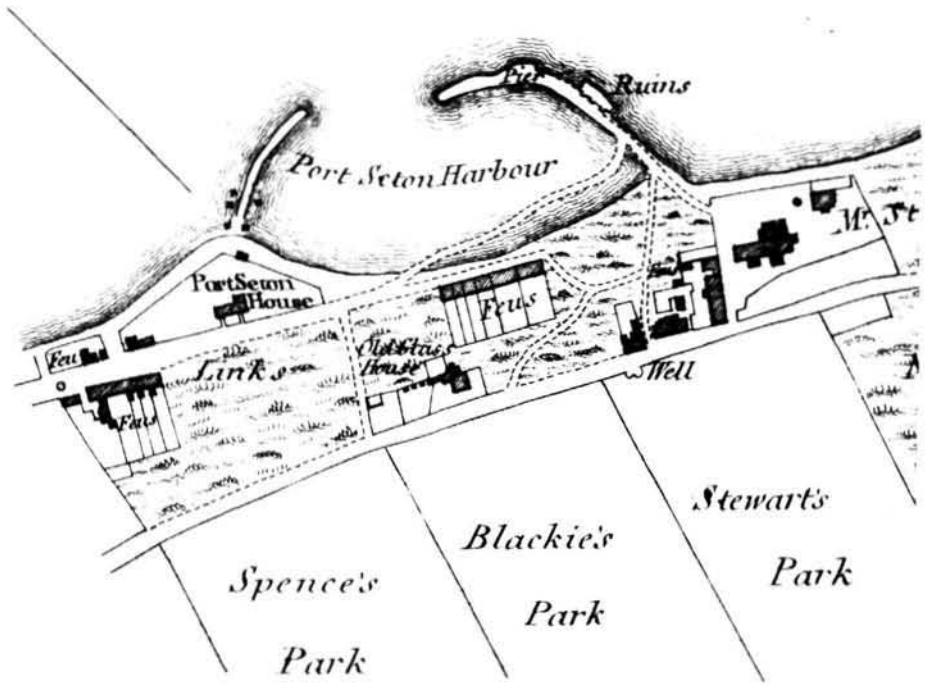
serve several other families & a manufactury'[20]. It is interesting to note that a George White was running the glassworks at Kirkaldy in 1721. In March 1721 Hackett commented 'I am glad Mr. White of the glass house is returned thether, that affair is very liked here, & will I believe prove of good account when others faile'[21]. A letter from Richard West and Robert Wolsted (committee member of the YBC) from London, in September 1721 to John Hackney in Edinburgh, said that they had been asked to speak to Robert Hackett 'that White may be sent away from Seaton House', but since it was very difficult to find Mr Hackett, they should turn him out of the house themselves[22]. Since John Colnott was in charge of the Morison's Haven glassworks at that time, the question of Mr White's role at Seaton House is a pertinent one, as is the type of manufactory planned there. However, White (or another glassworker of the same name) appears to have been working at Morison's Haven by 1722, since there is an entry in William Henderson's account book on 30 May: 'To Esq White one of the head svts at the glass work having PG [?letters] to give him all possable encouragement £28 10[s] 0[d]'[23], an entry which may imply recent arrival, and the possession of desirable expertise.

The letter from Wolsted and West went on to comment on Fordyce and Campbell's duplicity, to the considerable detriment of the company. Fordyce and Campbell defended themselves against the accusations made about them in a letter to the York Buildings Company in December 1721, insisting that, since the company had invested such comprehensive powers in Robert Hackett, they naturally thought they had to obey him, and that self-gain was the last thing on their minds. The penultimate paragraph reads: 'It's a pitie to see so noble a work as the Glasswork is, perish. And therefore wish you would please give the company a good impression of it, so many things concurring to make it a valueable work to them'[24].

SUMMARY

So, the questions remain: was a glasshouse built on the Winton estate, during the period when Hackett and his cronies had control, and before the baronies of Cockenzie and Seton were leased out by the York Buildings Company in November 1721? Was George White installed at Seaton House in order to set up a glassworks? And if it *was* built, did it continue to operate between the end of 1721 and 1728? Only one direct reference to a glasshouse at Port Seton before 1728 has come to light: in a long list of documents produced in the Court of Session at the end of the 18th-century is an item described as 'Agreement not to

[20] NAS GD1/170/1. Seton House, a very large building, was by then in a poor state of repair. (Drawing bym John Clerk of Eldin, nd, copy RCAHMS ELD/161/2).
[21] NAS GD1/170/1.
[22] *ibid.* Robert Wolsted and Richard West, London 21 Sept. 1721 to John Hackney, Edinburgh.
[23] NASW CS96/4520.
[24] NAS GD1/170/1. To YBC from Fordyce and Cambell, 16 Dec 1721.



49
Site of the Port Seton glasshouse, a much enlarged detail from a 'Plan of the Barony of Seton', copied from Ainslie, nd (18th century). The whole area has since been built over. (NAS RHP.3387, Mylne papers.)

subject the York Buildings Company to the penalty of the articles as to the lease of the Glassworks at Port Seton between the York Buildings Company, Thomas Fordyce, John En?ar and William Adam, 9th August 1727'[25]. This does point to the likelihood of an earlier glassworks, but is not sufficient to be certain, especially as some of the material quoted above could refer to Morison's Haven, despite the inconsistencies. It is certain though, that Hackett siphoned money from the Winton estate into his own pockets, and probably those of Fordyce and Campbell, and that they were all unscrupulous opportunists.

ESTABLISHMENT AND FINANCING OF THE PORT SETON GLASSWORKS

It is also certain that a new glassworks *was* established in 1728 at Port Seton, on a site near the harbour, shown on an undated, but 18th-century, plan of the barony of Seton, based on an original drawing by J Ainslie (illus 49)[26].

25 NAS CS22/17, no page number, but listed as Branch 2, Bundle 3, no 57 in the first of 11 volumes dated 10 Feb 1795, dealing with the ranking of creditors of the YBC. There may well be more material about the glassworks in the many letters, accounts, draft agreements etc. listed in this volume, but the warrants cannot be traced at present.

26 NAS RHP.3387

The glassworks was built on land leased by George Buchan of Kelloe, who was also directly involved in its construction. Most of the information about it comes from a small cache of papers in the Grant of Monymusk archives, the central figure being Sir Archibald Grant of Monymusk (1696-1778), nephew of Thomas Fordyce and brother-in-law of George Buchan. The material is, as usual, fragmentary and the picture is inevitably a partial one. The enterprise got off to an enthusiastic start but after apparent early success, was dogged by the usual cash-flow problems, difficulties with supplies of raw materials and incompetence, as well as unfortunate accidents.

It is quite possible that interest in building a new glassworks was generated by the change of tenants on the Winton estate in 1727, when the whole estate was leased to York Buildings Company agents George Buchan and William Adam. Adam completed the take-over by obtaining the right to the lease of the coal and salt works at Cockenzie and Tranent at Martinmas 1728, for 12 years at a rent of £500 (sterling) a year, although he only paid £450[27]. His agreement stipulated that he should only pay the higher figure if he 'should happen to lett or lease the same to the partners of the Glassery', or any other industrial works should be built there which would consume £50 (sterling) of coal a year, neither of which had happened[28]. While the market for coal in London was buoyant, the output of the Tranent mines could be profitably shipped there, but the prices fluctuated widely, and it was of obvious benefit to pit-owners to have local consumers, in addition to the salt pans, to ensure a regular income. From the point of view of William Adam, therefore, a glassworks would consume his coal, the supply of which he had increased by sinking four new pits on the Easter Windygoul part of the estate (Cummings 1981, 320). He was also, of course, a considerable consumer of window glass in his capacity as architect, so he had a double interest in promoting its production. The only known invoice for glass manufactured at Port Seton is dated 22 May 1730. It lists window glass costing a total of £7 0s 0½d, supplied to Sir John Clerk of Penicuik, one of Adam's patrons. The payment was made to 'the copartners of the glassworks' on 12 November 1730 (illus 50)[29].

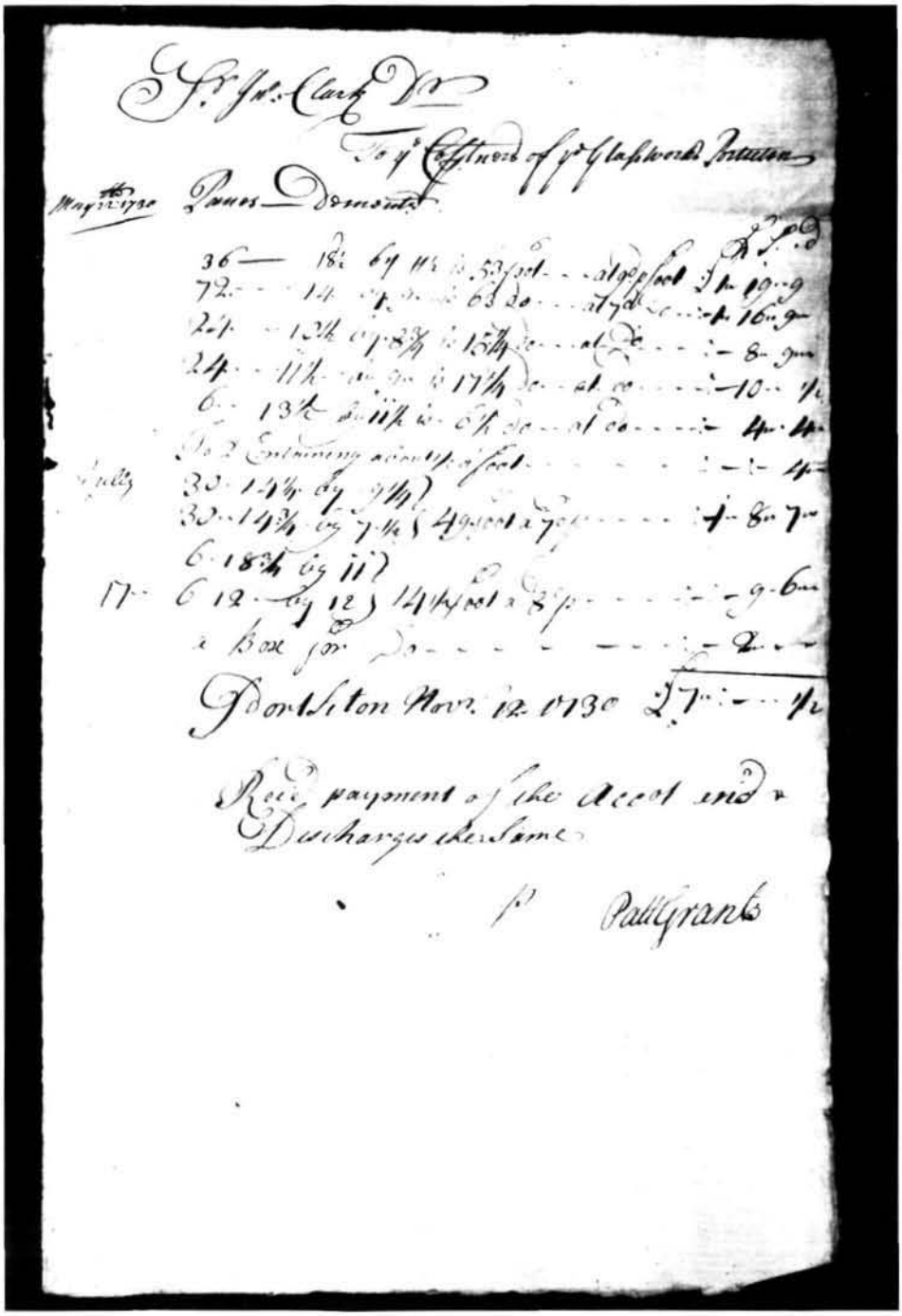
WILLIAM ADAM, ARCHITECT, COAL OWNER AND SHAREHOLDER (illus 48)

A brief description of William Adam's entrepreneurial career will serve to show the extent of his commercial interests. John Gifford, in his biography *William Adam 1689-1748*, describes William's father John as 'the descendant of a line of insignificant Angus lairds' (1989, 68). His mother Helen was a daughter of William, third Lord Cranstoun, a supporter of Charles II, whose estates were confiscated. The family lived in Linktown, Kirkcaldy. William became a mason and travelled to the Low Countries and northern France before 1720. He was credited by John Clerk of Eldin with the introduction of the manufacture of Dutch pantiles in

[27] NAS CS133/452, Decreet the annuitants of the YBC against William Adam, 25 February 1737.

[28] *ibid.*

[29] NAS GD18 1767 3/57, Clerk of Penicuik muniments.



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Receipted account dated 12 November 1730, for window glass provided to Sir John Clerk of Penicuik by the Port Seton Glassworks. (NAS GD18/1767/3/57. *Reproduced by permission of Sir John Clerk of Penicuik.*)

Scotland (*ibid*, 73). On 8 May 1714, Adam and his father-in-law, Wire granted the sole rights to dig and remove clay within the barony of Abbotshall 'for the Tyle and Brick manufactory to be erected by them in Linktown' for an annual rent of 50 merks Scots, and 500 pantiles[30]. Robertson also leased the Abbotshall coal mines.

Most of William Adam's commercial activities were, not surprisingly, connected with the building trade. In 1728 Sir John Clerk visited his Linktown brickworks and wrote in his diary: 'I could not enough admire the enterprising nature of the proprietor who had at that time under his own care near to twenty general projects – Barley Mills, Timber Mills, Coal Works, Salt pans, Marble Works, Highways, Farms, houses of his own a-building and houses belonging to others not a few' (Gifford 1989, 109). In February 1728 William Adam was admitted as burgess and guild brother of Edinburgh gratis, for services rendered to the town, and he moved to Edinburgh in July of that year. Also in 1728 he was appointed Clerk and Storekeeper of the King's Works in Scotland, and in 1730 Mason to the Board of Ordnance in North Britain (*ibid*, 110).

Adam designed and built numerous large houses for wealthy Scottish landowners, including the Earl of Hopetoun, Sir John Clerk of Penicuik, the second Earl of Stair and the Marquis of Tweeddale. Since much of his building work was in East Lothian, free access to the harbour at Port Seton was advantageous, enabling him to land his building materials there, including bricks presumably from his own brickworks across the Forth[31]. In view of the scope of his business interests, it is not surprising that Adam should have been involved with the establishment of a glassworks so near to his coal pits, his harbour and his customers.

THE ROLE OF THE YORK BUILDINGS COMPANY

Both Cummings and Murray regard the Port Seton glassworks as a York Buildings Company project (Cummings 1981, 328; Murray, D 1883, 65). In fact the company put up half the initial capital of £1,500 (sterling), the remainder coming from the shareholders[32]. Prominent members of the company were certainly directly involved but the precise extent to which the glassworks was an official York Buildings Company enterprise, was a matter of some dispute. The letter quoted by Cummings (1981, 330) as evidence of the company's involvement, although showing that it held seven of the twenty shares in the glassworks, also makes it clear that the then director, Mr Abell, who visited the glassworks in 1733, said that 'they look upon themselves to have no concern at all in it further than ground landlords, & that the purchases [of shares] made by Col. Horsey must be for his own account since done (as he says) contrary to a particular clause in their charter'[33]. In fact, it was admitted in a case heard in the

[30] Kirkcaldy Public Library 'Linktown Potteries. Documents 1714-1847', 2,3,4.

[31] NLS Ms 15552 f24. 'Agreement between the Marquis of Tweeddall and William Adam'; f66, Account for parcel of wainscoting and 15,000 bricks sent to Port Seton.

[32] NAS CS133/452. Documents not individually numbered.

[33] NAS GD345/765/7. Patt Grant, Port Seton to Sir Archibald Grant in London, 9 Aug 1733.

Court of Session in 1736, when the York Buildings Company pursued William Adam for money which they claimed he owed them, that the shares 'were purchased by the Company, or att least by Colonel Horsey for their behooff'[34]. Details of the debit balance in the glassworks accounts were listed under York Buildings Company enterprises in the *Journal of the House of Commons* in 1733 (22, 190), but not in a notice in *The Daily Journal*, which listed timber, lead and ironworks in Scotland[35].

THE CHARITABLE CORPORATION SCANDAL

Equally difficult to define is the official role of the Charitable Corporation for the Relief of the Industrious Poor, prominent members of which were closely involved in funding and managing the glassworks, notably Sir Archibald Grant of Monymusk (1696-1778). The Charitable Corporation was involved in what Cummings (1994, 33) describes as 'one of the greatest financial scandals of the eighteenth century'. The Corporation was set up to lend small sums at low interest, in return for pledges – basically a large-scale pawnbrokers, in which members of the public held shares. The men who controlled the corporation, Sir Archibald Grant, William Burroughs and William Squire, with warehousekeeper John Thompson and banker George Robinson, speculated in corporation shares, using money fraudently borrowed from it. George Robinson cheated the others, who then embezzled further money from the corporation, planning to recoup their losses by investing it in York Buildings Company stock, in which they already had an interest, forcing the price up and then selling. Their plan failed, with disastrous financial consequences for the speculators and shareholders alike. The subsequent parliamentary enquiry resulted in the expulsion of Sir Archibald Grant from the House of Commons on 5 May 1732, at which time his finances were in a parlous state. Grant was fortunate, after lengthy litigation, to retain his property in Scotland where 'he spent the rest of his long life improving his estate at Monymusk, where he is said to have planted over fifty million trees, and mending his shattered fortune by marrying rich widows' (Sedgwick 1970, ii 77-78).

SETTING UP THE GLASSWORKS

Whatever the official involvement of the two major public institutions, the York Buildings Company and the Charitable Corporation for the Relief of the Industrious Poor, the people running those concerns were certainly shareholders in the Port Seton glassworks. The glassworks was built by William Adam, work on the site having begun by March 1728. In 1736, Adam claimed that £862 16s 7d (sterling) was still owing to him and that 'the Glasswork in Termes of the Contract is not to this hour compleated'[36]. In a letter from George Buchan to Sir

34 NAS CS133/452.
35 NAS GD345/1515, 15 Aug 1732, 'A Scheme for the Payment of the Debts of the York Building Company'.
36 NAS CS133/452.
37 NAS GD345/765/1.

Archibald Grant, of 23 March 1728[37], he referred to 'the Articles of Copartnery of the Glass Manufacture at Portseton and the report offered you by Mr. Adams in the meeting you had last in Edinburgh on that subject'. He went on to say that 'it appears in the judgment of most people . . . this work may become profitable to the partners and of benefit to the country', but that the 'framing of the partnery' and setting it up would depend on Grant.

Buchan continued by asking that Grant should discuss the agreement with Colonel Horsey, by then governor of the York Buildings Company, and others, and that he should get it signed by the Duke of Chandos, the Earl of Stair and anyone else he wanted as partners[38]. Buchan had advanced £750 (sterling) 'to carry on the buildings etc.', but pointed out that hiring workmen and buying materials could not be done until the articles of co-partnership were executed. The journal of a local wright, William Dickson, provides evidence that work on the buildings continued, recording on 21 October 1728: 'worken at the harbour . . . at the glasshouse 5 days and a haf day', with a further three and a half days work there in April 1729[39].

THE CO-PARTNERSHIP

The co-partnership was finalised at a meeting on 7 January 1729. Interestingly, the list of co-partners does not include Sir Archibald Grant of Monymusk, although several of his relatives were named, nor does the Duke of Chandos appear. Those present at the meeting of 'the co-partners for erecting & carrying on a Glass Manufacturie at Port Seton' were:

The Lord Drummore
Mr. Anthony Murray
Mr. Hugh Dalrymple
Mr. William Grant
Mr. Alexander Garden
Mr. James Stewart
Mr. Robert Lumsden as proxie for Sir Arthur Anstruther
Mr. Robert Dalrymple for himself and as proxie for the Earl of Stair
Mr. Archibald Robertson as proxie for Colonel Charles Cathcart
Mr. Thomas Belches
Mr. Thomas Fordyce
Mr. William Adam
Mr. George Buchan[40]

Lord Drummore (illus 12) was elected president, and he, Anthony Murray, Thomas Fordyce, William Adam and George Buchan were appointed managers,

[38] James Brydges, Duke of Chandos, first governor of the YBC, was a wealthy but often unsuccessful entrepreneur, whose enthusiasm frequently got the better of his judgement. Among his many ventures was the establishment in 1725 of a glassworks in Bridgwater, Somerset, making window and plate glass, and bottles. Costs were far higher than expected while the quality of the products was poor. It closed in 1733. (Baker, CH & Baker, MI 1949, 232-34).

[39] NAS RH9/1/212. Journal of William Dixon, wright in Cockenzie.

[40] NAS GD345/765/2. The relatives of Sir Archibald Grant were: William Grant (who bought the Prestongrange estate from William Morison's heirs in 1745), brother; Alexander Garden of Troup, advocate, brother-in-law; George Buchan of Kelloe, brother-in-law; Thomas Fordyce, uncle. Lord Drummore owned the Westpans property adjacent to the Prestongrange estate, previously the property of John Jossie.

with Thomas Fordyce in the role of cashier and George Buchan as secretary. The managers were asked to prepare 'proper books' for the management of the company's affairs, and to draw up appropriate rules before the next meeting in March. A copy of the minutes was to be sent to the partners in London, and the secretary was ordered to write a 'letter of compliment' to the governor and court of assistants of the York Buildings Company. A letter to Thomas Fordyce from James King, a glassworker in Parton, Cumberland, was read to the partners in which he offered his services and made proposals about the works. Fordyce was recommended to reply immediately, asking King to go to Port Seton as soon as possible: (the name of James King recurs in relation to glassworks at Newcastle and Glasgow). Shares in the co-partnership were £100 (sterling) each, payable in two instalments, on 1 March and 15 May 1729[41].

PLAN TO CORNER THE KELP MARKET

Part of the plan for the glassworks appears to have been to corner the market in Scottish kelp (illus 2 above), thus ensuring plentiful supplies for Port Seton, and depriving the rival and long-established glassworks at Newcastle of an essential ingredient, or at least forcing them to find alternative sources at a greater distance. Lord Drummore spearheaded the drive to establish contracts with kelp suppliers, his tactics appealing to enlightened self-interest, combining a business proposition with an evocation of Scottish patriotism. A letter from Edinburgh, dated 20 March 1729, written by a David Anderson to David Traill of Orkney, and having all the appearance of a 'round robin', is self explanatory:

> Sir, A Society of Gentlemen have entered into a Co-partnery for carrying on a manufacture of all sorts of glass at Port Seton in this firth, where they designe cheifly to use the produce of our own countrey, and to serve the whole nation with glass, whereby a very great sum will be saved that is yearly sent abroad to purchass glass. I observe all the gentlemen of the countrey incline to favour the undertaking as a national benefite, particularly such as have estates on the coast where ware fit for being burnt into kelp may be gott. Most of the gentlemen of Caithness have entered into contract with this co-partnery, by which they have given them the priviledge of all their ware on their severall estates for nine years, upon their paying forty shilling Scots for each tunn of kelp they shall burn there.
>
> As it is the interest and I hope the inclination of every Scotsman to promote what tends to be the common good of the Kingdome, and the saving our money being carry'd out, I know you will likewise concurr in it, and allow these gentlemen the priviledge of your shores on the same conditions as they have from others, and give them whatever assistance you can. Or if you should choise rather to imploy your own servants and labourers to burn the ware and make the kelp, for every tunn or 2000 weight of good and sufficient kelp, well burnt and free of stones or sand they're willing to pay you 35 shillings Sterl. receivable at a good port in Orkney, or 45 shill. per tunn as above deliverable at their works at Port Setton where ther's a good and safe harbour.

41 NAS GD135/2057/34. Assignation of the Right Honble the Earl of Stair to the Right Honble the Countess Dowager of Stair of his interest in the glass manufactury at Port Seton, 1729.

> I might add that hereby you have the opportunity of doeing a pleasure to the Lord Drummore and severall other gentlemen of that partnery, which I know will be very agreeable to you (H Marwick 1939, 142).

A partial, undated letter from Robert Dalrymple WS and Hew Dalrymple to the Earl of Stair, confirms the apparent success of this tactic, describing Lord Drummore as 'indefatigable' in providing material for the glass manufactory and claiming to have contracted for almost all the kelp in Scotland, or at least 'of these parts from whence the Newcastle people were supplyed', so putting them 'under a hardship they will not easily get out of'[42].

AN AMBITIOUS LAUNCH

The glassworks appears to have been launched with something of a flourish. At the end of 1729 a paragraph in the *Edinburgh Eccho* (sic) informed the public that 'Last week ten horse loads of drinking-glasses came here from the Manufactory at Port Seaton, and we are informed that there Mirrors and other pieces of ware exceed any that come from abroad. They have made a monteith [a large vessel designed for cooling wine-glasses] with the crown and arms of Great Britain, which is esteemed a masterpiece'[43]. Six weeks later they were advertising for sale crown and broad glass, in whole or half cases or cut to the customer's requirements. 'Also all sorts of flint or chrystal glass, consisting of drinking-glasses of all sorts, decantors, lamps, gelly glasses, mustard-boxes, salvers, and vials &c. Glasses for alchymists, and bell-glasses for gardens etc. All at very reasonable fixt rates.' Cullet of all sorts would be bought, either at the works, the shop of William Turnbull, merchant in Edinburgh, or the house of John Stevens, merchant at Leith.[44] By June 1730, the company had set up its own warehouse in the Lawn Market, Edinburgh, and were advertising all sorts of flint-glass, retail and wholesale (Murray D 1883, 65). Commissions could also be taken for window glass, with the incentive of free putty and delivery, while glaziers could buy at a special discount price.

OUTPUT AND OPERATION OF THE WORKS

THE RANGE OF ITEMS PRODUCED

The list of Port Seton products raises a number of questions. If they really produced broad, crown, and plate glass as well as crystal drinking-glasses and other vessels, they must have obtained the services of at least three teams of glassblowers, each with a different skill, together with all the ancillary workers such as plate-glass grinders. The claim that they had made a monteith is particularly striking, especially since the crown and arms on it must have been

42 NAS GD135/2217/22, Earls of Stair papers.
43 *The Echo or Edinburgh Weekly Journal*, 31 Dec 1729.
44 *Edinburgh Evening Courant*, 9–10 Feb 1730.

enamelled or even engraved (although the latter seems unlikely since, according to Seddon (1995, 94) wheel-graving in England did not begin until the 1730s). Whether or not they actually produced the monteith, the 'news item' would certainly have alerted potential customers to the possibility of having their own coat of arms on fine wares. It is possible, of course, that glass may have been bought in, but that would have been very expensive. Letters which will be examined below, certainly indicate that flint, window and bottle glass was produced at Port Seton, although the quality was variable, and the workforce was quite large.

Taken at face value, the range of items made would have required a very large capital outlay on furnaces, buildings, equipment, raw materials and skilled men. The logistics of maintaining sufficiently consistent output and sales to justify such an investment are complex, involving both the regular supply of suitable raw materials and – that perennial Scottish problem – a market sufficient to absorb the wares produced.

PROBLEMS OF CASH FLOW

As usual, most of the extant correspondence addressed to Sir Archibald Grant of Monymusk about the Port Seton glassworks relates to problems. By 1730, he owned three of the 20 shares in the glassworks and a one-third part of William Adam's coal mine at Port Seton 'taken with a view to the Glass Works . . .'[45]. Three more of the shares were, by 1 January 1730, owned by William Burroughs of the Charitable Corporation, and were, together with his share of the stock in hand, valued by him at £600 (sterling)[46].

The man responsible for the day-to-day running of the glassworks was Patrick (sometimes called Peter) Grant. A letter written by him to Sir Archibald Grant in London, dated Edinburgh, 27 May 1731, shows that the financial affairs of the glassworks were already in dire straits. He enclosed a list of outstanding debts and a summary of his receipts and expenditure, pointing out that 'this is the third week the hands are unpaid excepting about £14 I had of my own by me which have distributed amongst them in the best manner I could . . .'[47]. He had applied to Thomas Fordyce for instructions, but had been told that no more advances of money would be authorised 'without special directions', and that both Colonel Horsey and Sir Archibald Grant had written to him, saying that unless the works was financially self-sufficient they 'were easy whether the men stayed any longer or not'. Grant wanted permission to pursue the debtors to the glassworks, and was not prepared to dismiss the workforce without express orders from Sir Archibald. He had consulted William Grant, Sir Archibald's brother, who had

45 LULSC, GL.1732 (7014). A true and exact particular and inventory of all and singular the lands . . . goods . . . and personal estate . . . which I, Sir Archibald Grant, was possessed of . . . upon the first day of January 1730.

46 As above, GL.1732, Inventory of William Burroughs.

47 NAS GD345/765/3.

Table 12
The workforce at Port Seton, 1730-33.

THE WORKFORCE

Some idea of the size of the workforce can be obtained through the Tranent parish records, and other contemporary sources, from which the following list of employees has been compiled:

James King *glassmaker in Port Seton, subject of a caption of horning 2 February 1730.*[48]
Thomas Cook, *glass maker at Port Seton, married 8 December 1730, Catherine Thomson, lawful daughter of deceased John Thomson glassmaker at Morisons Haven, witnesses:*
Leonard Biggens *glassmaker who married Margaret Colt irregularly 9 Jan. 1731,*
and **William Bell** *described as 'glass maker' when his son was buried 28 Nov 1732.*
Samuel Griffin *glassworkman at Port Seton, married 19 May 1731 Anne Wilson, lawful daughter to John Wilson.*
John Stannion *glassmaker at Port Seton, married 28 August 1731 Jannet Thomson,daughter of deceast Patrick Thomson farmer in Seton, witness:*
Thomas Bate *glassmaker in Port Seton.*
John Shepherd, *glass workman at Port Seton, married 16 February 1731 Jean Main, witness Francis Bees wife to –*
William Bees *glassworkman.*
David Elder *died at the 'glasshouse sink', buried 18 June 1731.*
William Parre *glassworkman, buried 18 June 1731.*
Thomas Shule *glassworkman at Port Seton, marriage to Margaret Douglas proclaimed 19 March 1732, 'the marriage was stopt and he dyed'. He was buried 20 July 1732.*
John Colt *glassworkman – wife buried 17 Jan.1732.*
Edward Henderson *glassworkman at Portseton, married 7 July 1733 Jannet Smith daughter to:*
William Smith *potmaker.*
Thomas Smith *glassworkman at Portseton, married Barbara McCarie 7 July 1733.*
William Milne, *smith, died 1733.*
Trevis, *potmaker.*

It is obvious from their surnames that many of the men employed at the glasshouse were not local, and it is significant that most of the marriages listed above took place in the Episcopalian church at Canongate in Edinburgh. The dates cluster around 1731 to 1733, coinciding with the period of maximum production at the glassworks. Bearing in mind that only employees whose names and occupations occur in the records are listed, the number is obviously far from complete and would tend to confirm that several teams of glassmakers were in operation.

[48] NAS D1/2/724.

told him to keep the hands together until he had heard from Sir Archibald himself. 'Mr. Stephen [John Stephen, merchant in Leith, who was closely involved with the glassworks] has valued on you & Capt. Burroughs for £50 sterling & given me to distribute amongst them'.

A CATALOGUE OF DIFFICULTIES

As is to be expected with this type of archive, only fragmentary material remains. As with the Fearn papers, there are lists, jottings, and notes scribbled on the back of dated papers which, while providing useful information, are often difficult to interpret, particularly in terms of the chronology of events.

POOR RAW MATERIALS

Having resolved the immediate problem of paying the workforce, Patrick Grant went on to write about the severe problems they were having with the pots at the glasshouse. He was not certain whether the fault lay in the clay, or with Smith the maker, so he had set another man, Trevis, who had made pots at Newcastle for several years, to see whether he could do any better. Grant appears, however, to have thought that the problem actually lay with the clay itself, and suggested sending to Felton in Northumberland for clay used by some of the Newcastle glassworks, and which 'has been tryed & approven of by Mr. Balfour [of Leith] when he had his bottlework'. Whatever the cause, failure of the pots was disastrous to any glassworks, as was shown in Chapter 1.

It seems likely that the local clay used at the glassworks came from Carlaverock, a hamlet on the Winton estate (illus 47 above). An undated note in the York Buildings Company papers, which appears to be a list of things to be done, includes the line 'James Turnbull, in Carleverook, where the clay is'[49]. The same paper also indicates the source of sand: 'the sand is below Trenent, inquire of John Colnit at the glass house att Morrisons haven who is the tenant there?'[50]. In addition to these difficulties, Patrick Grant's letter makes it clear that competition from Newcastle, together with slight local demand, were also crippling their business. He wrote:

> If you doe not order the window glass on hand, at least what was made before Feby last, to be sent to London or some other places where you think it may goe off in some shape or other it may remain I know not how long, for while the Newcastlers continue to send such glass as they now doe it will never sell here. Consumpt is likewise much wanted for flint glass & want to know if some should be sent to London of such sortes as might probably ansr best there.

[49] James Turnbull was a farmer in Carlaverock. A memorandum in the Fearn papers about the Morison's Haven glassworks includes payment: 'To Mr. Trumble for Clay £1 13[s] 4[d]'. (NAS GD1/576/15, nd).

[50] NAS GD1/170/1. Although undated the note must have been written while the Morison's Haven glassworks was operating.

He also mentions that 92 half chests of window glass, valued at £13, were in the hands of John Thomson[51]. A note on the back of this letter, presumably written by Sir Archibald Grant, says 'Answrd 3rd June 1731 and ordered to dismiss the men from the works &c.'

Despite the apparently terminal nature of the problems and the finality of Sir Archibald's reply, however, the glassworks did not close down; indeed, it survived a tragedy which took place in the middle of June, only a fortnight after his letter. On 21 June 1731 the *Caledonian Mercury* reported: 'We are told that three men fell last week into a coal sink at Port Seton, and perished'[52]. At least two of the men who died, David Elder and William Parr, were employed at the glasshouse, and were buried on 18 June[53].

A letter to Sir Archibald Grant in London, written from Leith on 5 July 1733 by Patrick Grant[54] offers not only a picture of the current state of the works, but also an insight into the whole business of trying to run a glassworks in Scotland. He had been asked to tell Sir Archibald Grant some basic details about the co-partnership, to which he replied: 'Who are the present partners & what each have paid upon their respective shares I never yet could truely learn', although he hoped to do so soon; the holder of this rather basic information was apparently the ubiquitous Thomas Fordyce, recently returned from London.

Patrick Grant went on to promise a description of the works 'with accott of what sorts of work its adapted for, & what tools or materials . . . is upon hand', he could not, however, value them because they were *in situ* when he arrived, and were not valued at that time. The disposal of the existing stocks of poor quality window glass had still not been resolved, but he was more sanguine about the flint glass, which he promised to list and price. Clearly the administration of the glassworks was in a chaotic state, exacerbated by his inability to write up the credit and debit ledger for nearly three months because his arm had been injured by his horse falling on him, although he had kept up the day book. After explaining that coal cost 8s 10d per wagon, or 4s 5d a ton, he went on:

> 'There's few or no advantages in my opinion accrues to a house in this countrey by the cheapness of any thing except it be labourers wages, for as there's few or no materialls produced here but kelp, the freights being dear for want of frequent opertunities especially to this port, comes dearer than in England, and as most of the work men are from thence, they are paid the usuall wages given there, & tho the coalls appear cheaper I really believe them as much worse in quality. The maine furnace is the only one presently

[51] Thomson is shown as owner of two shares on a later, but undated, list of shareholders (GD345/876).

[52] Fleming provides (1938, 106) a more colourful 'quotation' from the '*Daily Post*', describing this incident. His version reads: 'Edinburgh, June 22, 1731. We hear from Cockney that some of the Houses belonging to the Glassworks there suddenly sank down, and the water rushing up, several of the servants perished and others narrowly escaped. The ground below is all wrought coal.' The present author has been unable to trace the '*Daily Post*'.

[53] Tranent OPR. See list above.

[54] NAS GD345/765/8.

> employed, the one side on flint & the other on botles, but the pots haveing suffered by the fall of the roof, by their frequent breaking I can scarce get as many goods made as will discharge the charge untill new pots be ready, which hope will now be in a short time. The charge of repairing the house & furnace again, play wages, & purchasing clay from Felton (that got here being turned so weak that it would doe no longer) and some few other materialls for flint & botles that were absolutely wanted, has drained me so of money that I know not how to get the men kept alive till payts for goods lately sold become due.

It is clear from Grant's remarks that all the raw materials for flint glass, including presumably sand and ash, had to be imported. Although the kelp for bottles was a more local product, that, too, had to be shipped in from elsewhere in Scotland. The only locally available item seems to have been Tranent sand, which would have been suitable only for the coarser glass. If the coal, the availability of which was a major reason for establishing a glassworks at Port Seton in the first place, was of such poor quality, it is easy to understand the despair so patent in Patrick Grant's letter. Obviously even the problems with the clay had not been resolved, some two years after he had complained about it. The roof fall, described in another letter as having taken place the previous winter[55], is also mentioned on the back of one of the undated lists. It says: 'Adams liable for the ill conduct and unsuitableness of the building, and when wages paid whilst it was not ready – Especially for the insufficiency of it. & all dammages sustaind by the falling of the roof . . . but it was notoriously mismanaged from the beginning . . .'. Adam's 'Accompt of Timber and Tyles for the rooff of the Glasswork' costing £81 14s 11½d (sterling), which he provided 'in or about February 1733', was still outstanding in 1736[56].

BACK TO BOTTLES

Patrick Grant wrote a further letter to Sir Archibald in August 1733, in which he suggested that, despite the considerable losses due to the factors described above, he believed that £600 (sterling) a year could be made at the glassworks by concentrating on the production of bottles and a small amount of flint glass. However, the best option would be to make only bottles 'there being the greatest demand & quickest return for them'. The profit margin on window glass was higher, but the Scottish market was too small, and production would only be viable if there were an export trade. He complained again about the cash-flow problem, which had prevented the ordering of essential materials, and had hardly enabled him to 'keep the hands in good humour', and ended: 'I heartily wish some concert could be made amongst those concerned, how the work might be carried on, so as the money hitherto lost, might in time be recovered . . .'. His comments point up the complete lack of co-ordination or any coherent policy, the frustrations of managing the day-to-day business while decisions were made, or rather not made, in London, and the inevitable dilemma of an almost bankrupt business – the only way to recoup past losses being to risk more money. He also drew attention, once again, to the difficulty of extracting payments from the

[55] NAS GD345/765/7.

[56] NAS CS133/452.

purchasers of the glass. Sir Archibald Grant does not appear to have hurried to reply, since a note on the back, after a short summary of the contents, says 'at present wrote for a full state & plan for future conduct, 22 January 1733/4'.

There is some evidence that, in 1733, Sir Archibald had been trying to promote the glasshouse in London, and had investigated the prices charged there for flint glass. A letter sent to his address in Hanover Square gives a list of prices of glass 'from the maker' (doubtless in sterling):

> Small vials being 1 oz. & under at 4s per gross
> from upward of 2oz to 7oz @ 6s per gross
> to 10oz 8s per gross
> ½pt round at 18s per gross.

All the above are bracketed together, with a note, 'Disc @ 25 pr lb?' The list continues:

> all decanter wine glasses & crewetts &c. @ 6s pr [?]
> salve sweetmeat glass, gelly &c. @ 9s nett
> handle basketts at 18s nt.

A letter in the same hand, dated August 1733, and signed Charles Shane, apologises for a delay in sending 'the inclosed acct.' and goes on 'I have taken frequent opportunity to mention the Glass House with all the advantages I could but have not yet mett with anyone that approve the thing'. A note on the back reads: 'Mr. Shaun with price of glasses'[57].

In the *Journal of the House of Commons* for 1733 (22, 190), listed under the general heading 'Account of the Net Charges of the Several Works in Scotland belonging to the York Buildings Company from Christmas 1727 to Christmas 1732', is the 'Account of glass manufactory at Port Seton stands Dr. to Balance £3,329 14[s] 4½[d]' (sterling). Listed under the same heading are 'Thomas Fordyce disbursements 1728 £750' and 'ditto to Christmas 1732 £9 3[s] 0[d]', a total debit of £4,088 17s 5d (sterling).

INTERFERENCE WITH SUPPLIES

By October 1734, matters had deteriorated still further, the pots were still breaking, and Patrick Grant decided to cancel an order for ashes which he had, with Sir Archibald's agreement, ordered from London. He was informed,

[57] NAS GD345/765/2, /3. A Charles Shan described as 'late citizen and glass-seller of London' was declared bankrupt in May 1733 (*London Gazette*, 28 April to 1 May 1733) three months before his letter was written, but his exact relationship to the Port Seton glassworks is impossible to guess. Elsewhere in the Grant of Monymusk papers is a printed, undated, advertisement for the raffle of china at Charles Shans, the Prince Eugene's Head, Cheapside, London (GD345/1493/43), but that may not have been his permanent address. Searches in the PRO and Guildhall Library have failed to unearth any more details.

however, that they had already been shipped, so he struggled on until they arrived. When the ship docked he discovered that only one kind of ash was on board, although another sort was also needed, 'the man who had agreed to furnish them haveing gone back of his bargain – through the influence of the glasshouses at London, who threatened never to take any more from him, if he served us . . .'[58]. It is interesting that, despite all the problems, the Port Seton glassworks should have been perceived as a threat to the London glasshouses, and is, perhaps, indicative of some considerable success in the short term.

POSSIBLE CLOSURE OF THE GLASSWORKS

WORK STOPS IN 1734

This appears to have been the last straw. Grant not only lacked essential raw materials and was very short of money, but he was also having great difficulty in obtaining coal, because William Adam was refusing to supply any. This is hardly surprising since Adam was owed for coal supplied in 1732 and 1733[59]. Grant was 'upon the 12th currt. oblidged to stop the work', having failed in his attempts to extract money due from customers or to obtain credit, and had been forced to let the hands disperse. So, on the face of it, the Port Seton glassworks ground to an ignominious halt on 12 October 1734, after a documented existence of only six years.

Needless to say, the financial mess remained to be sorted out, and several of the jottings and notes in Sir Archibald Grant of Monymusk's papers, related to his debts and money owed to him, include mention of the glassworks. In what appears to be instructions to his solicitor, written in May 1735, is a section headed 'As to the Glass work'[60], which talks of raising a process against all the partners, either together or individually, for £450, in addition to which he was claiming back money he had personally advanced for the works. William Adam is said to have obtained a decreet against the York Buildings Company for £800 'alledged due to him', against which he was withholding his rent[61]. Adam was also apparently suing Patrick Grant for a smaller sum, but Sir Archibald considered that Adam actually owed the glassworks money, not only because he was responsible for the collapse of the roof and consequent damage to the materials and lost wages, but also because he had received quantites of goods from the glassworks for which he had not paid, an allegation reiterated in a letter of 26 March 1750, some fifteen years later[62]. An account from William Elliot, writer, of

58 NAS GD345/765/9. Patrick Grant at Port Seton to Sir Archibald Grant of Monymusk Bart to the care of Thomas Farquherson merchant in Aberdeen, 26 Oct 1734.

59 NAS CS133/452. A breakdown of the coal supplied shows that, between 14 Dec 1732 and 24 Nov 1733, he provided 384 wagons of great coal, 10 wagons of small coal, and 40 'loads' of coal to the glassworks.

60 Nas GD345/876/19. Memorandum for William Elliot from Sir Archibald Grant.

61 This is possibly the case heard in 1735-7, the papers of which are in CS133/452.

62 NAS GD113/3/317/18. Innes of Stow papers, Thomas Fordyce at Ayton to Mr Innes, 26 March 1750.

5 July 1735 confirms that Sir Archibald did take action against the proprietors of the glassworks[63].

OR DID IT REMAIN ACTIVE AS A BOTTLEWORKS?

Despite the evidence which appears to confirm the closure of the glassworks, there are some indications that it may have actually continued in operation until at least 1742, probably making bottles. On one of the undated, unsigned lists, apparently in Sir Archibald Grant's handwriting, appears the following:

> The workmen at Portseton Glass house offer as follows. To deliver to Mr. Grant into the warehouse round bottles at 12sh 6d pr gross, and long-necks at 14sh 6d pr gross, all good & sufficient merchantable wares, in payment of all materialls, charges and incidents – furnisht by the proprietors according to the following particulars thereof, but if upon an acct. keept, it shall appear that the said prices cannot be allowed by the proprietors, then the round bottles are to be deliverd as above at 12sh pr gross & the long necks at 14sh.
>
> The soap & wood ashes, at the prices and charges they cost
> The kelp at 45sh pr tun
> the collet at the price and charges it costs
> the coals to be paid in bottles as above the price they cost
> the clay and potts upon hand to be returned in the same quantities or their values, as deliverd.
> the houses to be kept in repair, and the charges deducted from the price of the bottles.
> all other utensills belonging to the proprietors to be returned as deliverd.
> 24 sh pr week to be deducted out of the price as above towards Mr.Grants salery, besides his supply with coals.
> This agreement to subsist for six months from the date of the articles – and accts to be made and cleard monthly[64].

Could this indicate an attempt by the workmen, under the leadership of Patrick Grant, to take over the running of the works, avoiding the need for an injection of cash by paying for the materials *in situ* with the bottles they made? Certainly it suggests a radical change of system, since the wages of all but Patrick Grant would, presumably, have to come from the sale of the bottles directly, rather than being paid whether or not they produced anything. It also spells the end of flint and window-glass manufacture, in line with Patrick Grant's wish to concentrate on bottles, while the six-month trial period also suggests a change of strategy, and the alternative prices a certain flexibility.

It is difficult to be certain when the glassworks closed permanently, since the extant material appears somewhat contradictory. It was certainly not functioning in April 1735, when William Adam presented a petition to the Court of Admiralty. He had raised an action against the York Buildings Company and Patrick Grant, 'sometimes manager of the glass work at Cockenzie' and had arrested utensils and materials

63 NAS GD345/876/16.

64 NAS GD345/765/9. The currency is not defined, but was presumably sterling.

belonging to the glassworks, which were aboard a boat 'now lying in the harbour of Leith'. He had similarly arrested other glasswork utensils which were in the hands of John Stephen, also at Leith. Adam asked for a warrant permitting the goods to be unloaded and put into the custody of John Stephen. This was granted, as was his request for an inventory to be compiled[65].

However, another document of 3 September 1735, implies that the glassworks was, in fact, still a desirable asset at that point. On 30 July 1735, Sir Archibald Grant of Monymusk obtained a decreet in the Court of Session, requiring the York Buildings Company to pay him £2,888 2s 4d (sterling), plus interest and expenses of £500 (sterling), for a long list of items supplied to the Strontian lead mines on behalf of the company[66]. They refused to pay, so on 3 September 1735 Grant obtained a decreet of adjudication against them. He claimed property equivalent to the money owed him, which included: 'Item, the said Company's shareright and interest in the Glassworks at Cockenzie or Portseton with the Harbour and ?new house'[67].

Since there are other references to a glasshouse at Port Seton later than one would expect if it had ceased to function in 1734, it seems quite possible that it was, in fact, restarted. For example, on 7 January 1741 the Tranent parish accounts record receipt of £6 3s 4d (Scots) for hire of the best mort cloth and a peal of the great bell for 'Mrs. Grahame at the Glasshouse'[68]. A decreet of the Court of Session made at Edinburgh on 31 January 1741, also refers to the glassworks. In the case of the annuitants of the York Buildings Company against George Buchan, is a list of the money which Buchan was permitted to withhold from his rent for various expenses, including: 'Item for the seat of the glass works yeards & office houses thereof at £1 13[s] 4[d] [sterling] yearly'[69].

More important is a 29-year lease of Cockenzie and Port Seton, Longniddrie, etc, recorded in the Register of Deeds for 1747. It was granted by the York Buildings Company to George Buchan and John Buchan, his son and was dated some five years previously, on 21 July 1742[70]. Part of the agreement reads: 'as also reserving power and liberty to the sd Govrs. and company to design and take of from the lands in the barronie of Seton lying nearest to Cockenzie and Harbour of Portseton for the use of the glass works or any other use they think all twenty acres of ground for which the lessee shall have deduction yearly . . .' It seems unlikely that the phrase 'for use of the glass works' would refer to anything but an operational glasshouse – which must, therefore, extend the period of operation to at least mid-1742.

A further reference to the above lease occurs in a deposition by George Buchan made in August 1753[71]. After a lengthy statement about rent, he says that the

65 NAS AC10/215, 14 April 1745. Only the petition has come to light.
66 NAS CS137/273.
67 NAS CS137/274.
68 NAS CH2/357/10.
69 NAS CS18/234, Nov 7 1740-Jan 31 1741.
70 NAS RD3/207/1.
71 NAS GD345/876/4, Edinburgh 11 Aug 1753.

York Buildings Company could sink pits or make wagonways 'upon any part of the said lands as also to take off ground near Cockenzie or Portseton for the use of the glassworks for which they are to allow the damages and rent yearly to the deponent'. He was obviously refering to the 1742 lease, and it seems very unlikely that the glassworks was still in existence as late as the 1750s, since a letter from Thomas Fordyce to Mr Innes, deputy cashier to the Royal Bank in Edinburgh, shows that by 1750, Patrick Grant was dead, as was William Adam, and that Thomas Fordyce was, once more, juggling his finances[72].

There are twelve volumes of extracted legal processes relating to the York Buildings Company in West Register House, Edinburgh, which are difficult to access, since they are only very minimally indexed[73]. In a long list of items held by the Court of Session, mainly relating to the lead mines at Strontian, is a letter from Mr [Francis] Grant (see below) to a Mr Pembroke, dated 4 January 1743. It is described as 'about Port Seaton and informeing he would be obliged to surrender his lease of the coal and saltworks unless the same was repaired. Advises the company to erect a glass house'[74]. Unfortunately, despite the best efforts of the archivists, the warrants for the processes cannot be found. The extract does, however, indicate that no glassworks was operating at the beginning of 1743.

Thomas Fordyce's letter, written from Ayton on 26 March 1750, asked Mr Innes to meet a bill drawn on him, which was part of £300 which he, Lord Drummore, William Adam, Alexander Garden of Troup, and others un-named, had borrowed from Provost Coutts, for the 'deceast Patrick Grant for support of the Glassworks'. He went on: 'Peter Grant was to pay the money out of the produce of the works, but when he dyed the whole was found to be due, tho he still said he had put more glass in Mr. Adams hands than would pay the whole, for which there is a process depending.' The others had repaid their parts of the loan to Mr Coutts, but Thomas Fordyce had not done so, in the hope that the money would be recovered from William Adam's heirs after his death in 1748. It seems somewhat unlikely, although not impossible, that his debt dated back to 1734.

On balance it seems possible that a much reduced workforce, producing only bottles, operated at Port Seton until the 1740s, but further evidence is required to regard the case as proven.

END OF THE GLASSWORKS AND SALE OF THE WINTON ESTATE

William Adam, who had refused to supply coal to the glassworks in 1734, relinquished his lease of the coal and salt works of Cockenzie in 1736. In a letter to Lord Milton he mentioned the forthcoming roup of the lease and the losses he

[72] NAS GD113/3/317/18.
[73] NAS CS30/13-24. YBC extracted processes.
[74] NAS CS30/14 p 1056.

had sustained at the works, commenting somewhat acerbically that his 'old friend Mr. [George] Buchan' seemed determined to take it over as he 'has a notion that a great deal of money is to be made by it . . . I am fully satisfyd he will burn his fingers, but then, I shall lose the opportunity of getting any part of my loss made up'[75]. In fact, the lease of the coal works was taken over in 1737 by Francis Grant, brother of Sir Archibald Grant of Monymusk and of William Grant, who bought the Prestongrange estate in 1745 (Cummings 1981, 340).

The estate of Winton was finally offered for sale by the York Buildings Company in 1778, after many years of neglect, frankly admitted in the advertisement. After describing the improvable agricultural land, the rents of which had not been increased for 60 years, it continued: 'The coal and salt works yielded, at the time of the Company's purchase in 1719, above 1000l. per annum; but having been neglected, in the general confusion of the Company's affairs, are now let at 300l. per annum . . .'[76].

The history of the Port Seton glassworks seems to be a classic example of an ambitious enterprise embarked upon with initial enthusiasm, by investors from a variety of backgrounds, many of them appropriately associated with the consumption of glass, but which foundered in a short time, leaving debt and disillusion in its wake. Problems with the quality and supply of raw materials; the lack of local expertise; poor management, especially when the major decision-maker was living in London; difficulty in obtaining payments for goods supplied, leading to the inevitable starvation of cash; and the consequent impossibility of maintaining a product of sufficiently high quality to compete with Newcastle, all contributed to failure. It is just possible that the glassworks did actually function on a small scale, producing only bottles for the local market, for a considerably greater period than can be proved at present, but there is no doubt that the attempt to manufacture table and window glass for the prestigious sector of the market did not, sadly, survive for long.

[75] NLS Ms 16564, William Adam to Lord Milton, 11 Aug 1736.

[76] *The Edinburgh Advertiser*, 14 Aug 1778.

12

THE GLASGOW BOTTLEWORKS

On 12 November 1700, 'James Montgomerie of Pearston, younger', presented to the Scottish Parliament a well-argued and forceful case, setting out the reasons why he should be given the privileges of a glass manufactory[1]. This petition heralded the foundation of one of the more stable and successful of the Scottish glasshouses, although very little has been written about it. The scene was set by James Denholm in his history of the city, published in 1804 (416), when he stated categorically that: 'The first glasshouse was erected about the year 1730'. Pagan similarly (1884, 81) placed the start of the bottleworks in 1730 while Fleming (1938, 146) discussed Montgomery's petitions and the licences granted to him up to 1703, but continued: 'We hear nothing further till 1730, when "The Bottle-house Company" was established . . . at the north-east corner of Jamaica Bridge'. WR Scott (1911, 192) followed suit, suggesting that the bottle-house 'built in 1699 must soon have been used for some other purpose than that for which it had been originally intended.' However, a recent history of Glasgow, edited by Devine and Jackson (1995, 80), gives the more accurate date of 1700[2]. Certainly, James Montgomery and his partners, having campaigned hard for their patent, *did* build their glassworks before 1702, and, remarkably, the same company was still operating, on the same site, 40 years later[3].

ARGUMENTS FOR AND AGAINST A WEST-COAST GLASSWORKS

THE APPEAL FOR A GLASSWORKS

Montgomery's petition was in competition with William Morison of Prestongrange whose patent had been granted by the Privy Council on 27 April 1697, and confirmed by Act of Parliament on 1 September 1698 (*APS* 10, App. 49a). Montgomery's reasons for stating that Morison did not deserve to retain his monopoly have already been described above (Chapter 9) but they formed only one prong of his attack.

1 APS X, Appendix 49a.

2 The correct date is given in the 'Register of Companies to 1775' (typescript) in the Mitchell Library archives.

3 ML B10/15/5699, Disposition Patrick Montgomerie [etc] to Richd and Alexander Oswalds [etc], 1742.

It began by pointing out how badly served Glasgow and the west of Scotland were with supplies of glass, despite the glassworks at Leith and 'other parts', because it 'cannot be transported to the West Countrie, but with a vast Charge and great hazard, being at a great distance, and necessarly to be carried over Land'; an irrefutable argument in a time of atrocious roads, especially in the case of a fragile and bulky cargo. Montgomery's petition was actually to make glass and soap, the logic of which was explained in his next statement. He pointed out that there was an ample potential supply of ashes to be obtained in the west of Scotland and the Highlands, from ferns, 'a most useful Material for that Work'[4], and also from wood

> which serve for little or no other use, and may be Manufactured first into good white Soap, which would be of great use to the Kingdom, and which is no where made in Scotland, nor imported, but with vaste charge, and the remains of these Wood ashes, after the Soap is made, is a most excellent matterial for making of Glass.

He was, of course, right about the usefulness of soaper's ashes in bottle production, but there were already Scottish soap-makers, and the manufacture of soap was actually one of the earliest to be established (WR Scott 1911, 130). In fact a co-partnership to make soap had been set up in Glasgow in 1675[5]. This enterprise had failed, however, and Gordon Jackson writes that their losses reached £51,810 Scots by 1680 (Devine & Jackson 1995, 79). WR Scott (1911, 132) describes another Glasgow soapworks in some detail and also provides a possible clue to the difference between the soap being made by the existing manufactory, and that projected by Montgomery: while Montgomery talks of 'good white Soap', that being sold in Glasgow in 1715 was 'good black or speckled soaps'. Since the Glasgow soaperie was actually in operation in 1700, Montgomery was clearly intending to produce a more refined product.

Montgomery continued by saying that he and his partners

> have these ten Months bygone been with great Application and vast Charges seeking out the best Workmen who were to be got in England, and providing all Necessars and Materials for the samen: And have also erected a very pretty Edifice for serving both the Soap and Glass-Work.

He therefore appealed that they should be granted the privileges of a manufactory, on the same terms as the Leith and Morison's Haven glassworks.

OPPOSITION FROM WILLIAM MORISON OF PRESTONGRANGE

Not surprisingly, his application was opposed by William Morison of Prestongrange – leading Montgomery to argue that Morison had not produced

4 See chapter 1. Bracken ash was used in the French 'verre-de-fougére'.

5 The eight partners, among whom was the provost of Glasgow, a previous provost and three former baillies, had obtained a plot of land from the burgh, built the premises and bought, among others, a ship called the *George* (NAS RD2/86/1/541, Agreement betwixt the partners of the soaperie, 15 Sept 1675, reg May 1702).

what he had promised and that what he did produce was of poor quality. Montgomery pointed out that he had, in fact, built his own glassworks within the two years allowed in the 1698 Act, after which Morison's 9-year monopoly would come into effect; he had only delayed going into production because he did not want to lay out more capital until he had obtained the privileges of a manufactory. His petition had been further and unavoidably delayed by parliamentary adjournments. He also, with some logic, argued that, since David Lord Elcho had been granted the same rights as Morison but 'hath given over his design', he could replace him, without extra hazard to Morison.

PARLIAMENTARY SUB-COMMITTEE REPORT

That Montgomery's petition was sympathetically received is clearly shown in draft responses of the same date among the parliamentary papers. The first draft takes up the point about the problems of supplying the west of Scotland with soap and glass from the east[6]. The report of the [trade?] subcommittee begins: 'It is the opinion of the said committie that Mr. Montgomerie shall have the benefite of ane manufactorie for makeing of whyte soap and all kyndes of glasses from which he is not secluded by Prestoungrange act'. They deferred a decision however on whether he could make window glass[7]. The Privy Council finally granted Montgomery and his partners the right to make glass and soap, with the privileges of a manufactory, on 18 February 1701[8].

Like other applicants for such privileges, James Montgomery appears to have been somewhat economical with the truth, at least so far as his commitments were concerned. It is hard to equate his claim, in November 1700, that he had been recruiting and equipping a skilled workforce for the previous ten months, with an entry of 29 June 1700 in the records of the burgh council, stating that the council had received an application from him for a feu of ground, in order to set up a glass work 'for makeing botles, window glasses and others' (*Glas Recs 1691-1717*, 303). A committee was duly appointed to visit the site, and to report back to the council.

CONSTRUCTION AND OPERATION OF THE GLASSWORKS

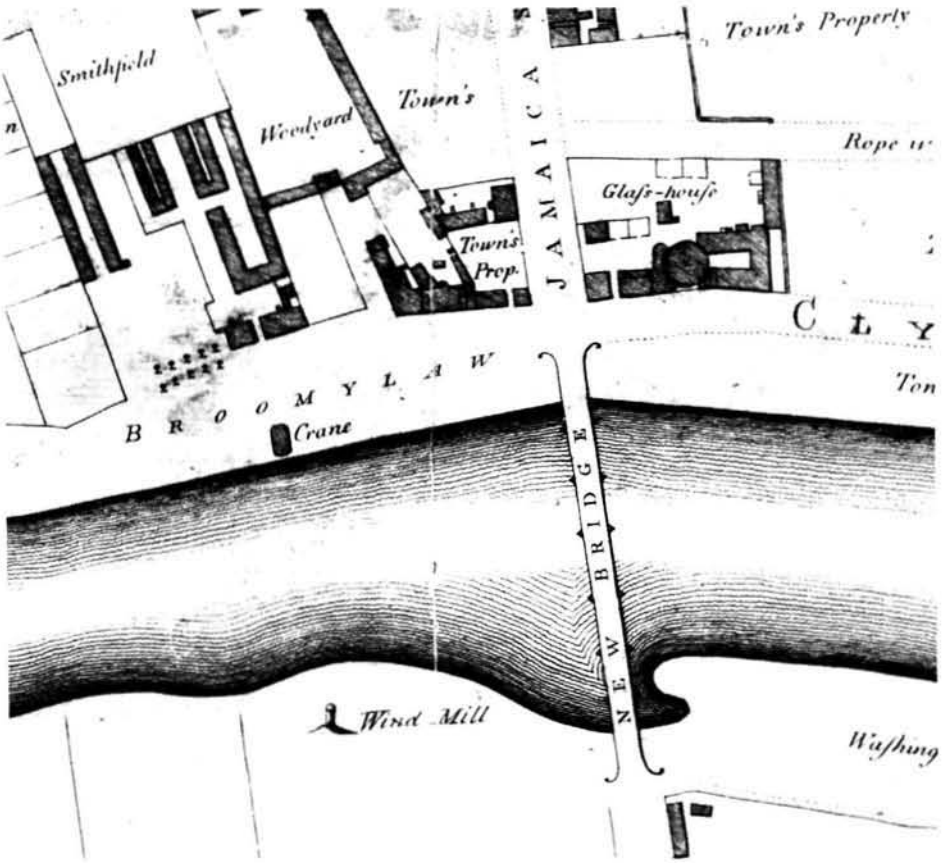
THE SITE CHOSEN FOR THE GLASSWORKS

The plot of land chosen by Montgomery and his partners was on waste ground 'lyeing betwixt the foot of the Old Green and Broomilaw' (*Glas Recs 1691-1717*, 303), a site which, with some later additions of land, continued to accommodate a glassworks for some 150 years. The original area measured 200 feet from west to

6 NAS PA7/17, Supplementary parliamentary papers.

7 NAS PA7/17/154 (5).

8 MI, B10/15/5699.



51
Site of the Glasgow glasshouse in 1778, after the completion of Jamaica Street and the New Bridge. Many of the features listed in the original feu had disappeared by then. Much of the area is now occupied by the Custom House and Clyde Hall. Detail from 'Plan of the City of Glasgow, Gorbells and Caltoun', John McArthur, 1778. (NLS Map.Rol.c.4. *Reproduced by permission of the Trustees of the National Library of Scotland.*)

east, 80 feet deep at the east side, and 40 feet on the west, bounded by the 'high way betwixt the Watter port and the Broomielaw on the south, the towns waste ground on the west and north, the forsaid burn at the end of the Old Green on the east parts' (*ibid*, 112) (illus 51). The site was next to a coal pit[9] and near to the quay at Broomielaw, which had been built in 1663 (RH Campbell 1985, 45). Although the Clyde at that point was restricted to ships of shallow draft, the proximity of water transport for the sand, ashes and clay needed in bottle production, combined with ready access to the growing Glasgow market, clearly made the site an ideal one. Montgomery asked for a feu of three times nineteen years. No formal agreement was made at that time, however, although the committee measured out the plot, and agreed that he could use it.

> Upon the faith of the above acts of council the saids James Montgomerie, William Smith and Thomas Clark took possession of the ground and built and erected thereupon a glasshouse, with houses and office houses, . . . and carried on a going work therein and making of bottles.[10]

9 ML B10/15/5698.

10 ML B10/15/5699.

A note on James Montgomery and the range of his enterprises.

JAMES MONTGOMERY AND HIS PARTNERS

James Montgomery, like so many of his contemporaries, had other business interests, and not only in the west of Scotland. He was a co-partner in the South Sugar House in Glasgow, which had been granted the same privileges as the two existing sugar-houses in 1696 (Scott 1911, 136) and, like James Balfour of the Leith glassworks, he was a shareholder in the Gun Powder Company, established at Canonmills on the Water of Leith, again in 1696 (NAS GD 421/5/372). He also owned ten £3 (sterling) shares in the Scots White Paper Manufacture, established in 1694 (NLS MS 1913). Montgomery owned four-ninths of the glasswork at Broomielaw, William Smith had three-ninths, and Thomas Clark the remaining two-ninths (ML B10/15/5698). All three men were described as merchants in Glasgow. There are two identical entries in the rolls of Glasgow burgesses relating to a James Montgomery: on 25 September 1690 and 30 June 1697, both simply describing him as 'merchant, guild brother master' (*Glas Burgs* 1, 223; 239). He was elected a bailie in 1702 (*Glas Recs 1691-1717*, 361).

The partners certainly did act on faith – the rights of the partnership to that plot of land were not actually legalised until 1742, when the council finally disponed it to them, since they had 'been in the possession thereof . . . for these fourty years'[11].

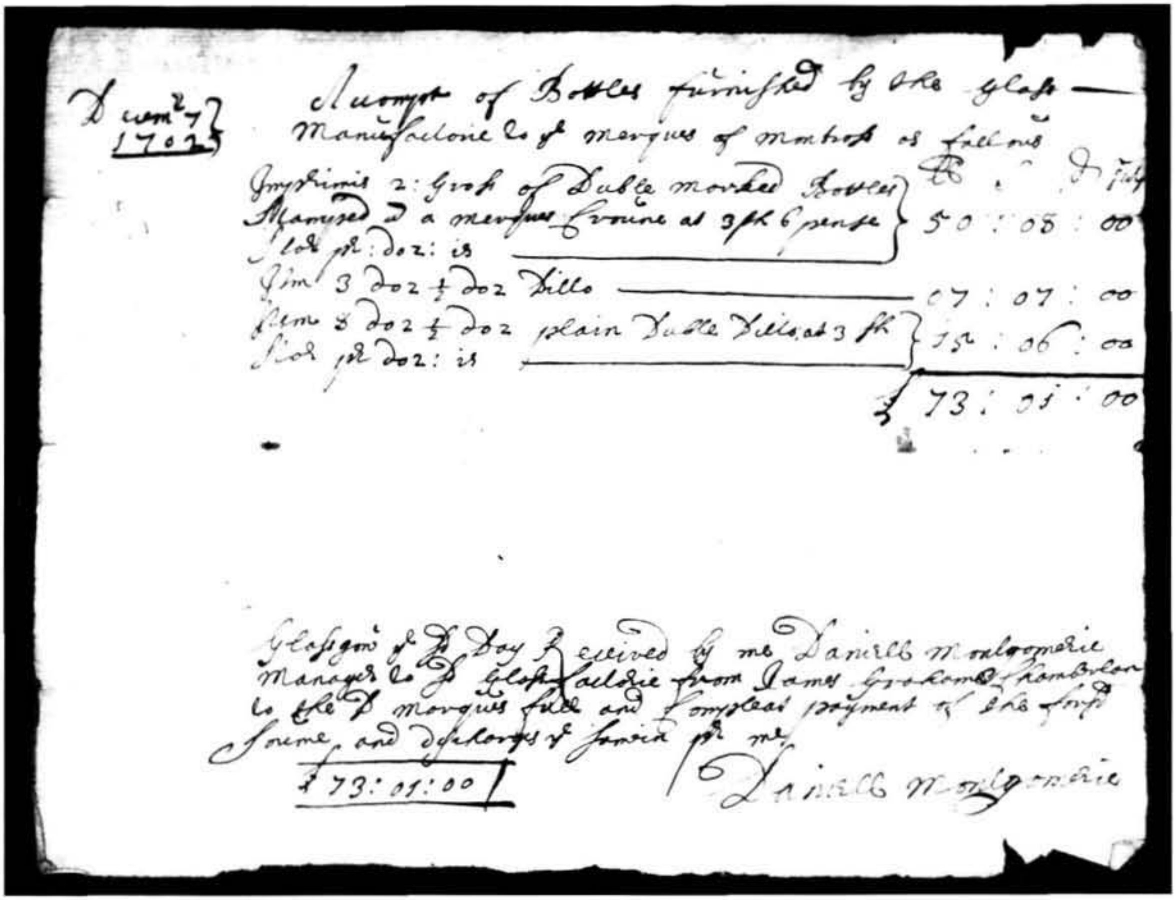
PRODUCTION OF SEALED BOTTLES FOR THE MARQUIS OF MONTROSE

The Glasgow company lost no time in obtaining aristocratic patronage. In April 1702, the Marquis of Montrose bought 12 dozen chopin bottles from the glassworks at 3s a dozen, with a further 24 dozen later in the year. Partner William Smith signed the receipt[12]. More significant is an account for December 1702, when the glass manufactory supplied: '2 Gross of Duble marked Bottles Stamped with a marques Croune at 3sh 6 pense Ster pr: doz:' for £50 8s (sterling), plus a further three and a half dozen, and another eight and a half dozen 'plain Duble Ditto: at 3sh.'[13]. This time the receipt was signed by Daniell Montgomerie, 'manager to sd Glass factorie'. The account provides more evidence that the Scottish glassworks were producing sealed bottles to order, like their English counterparts (illus 52).

11 ML B10/15/5698.

12 NAS GD220/6/700/32. Montrose Estate paper. Accounts.

13 NAS GD220/6/700/33. Newman (1977, 97) defines a double bottle as one 'divided internally into two separate compartments, each with its own mouth . . .', although in this case this definition seems unlikely. Perhaps it related to size.


Decem 7 1702

Accompt of Bottles furnished by the glass-
Manufactorie to the marques of montross as follows

Imprimis 2: Gross of Duble marked Bottles Stamped wt a marquess Crowne at 3 sh 6 pense Scots pr: doz: is — 50 : 08 : 00
Item 3 doz ½ doz Dillo — 07 : 07 : 00
Item 8 doz ½ doz plain Duble Dillo at 3 sh Scots pr doz: is — 15 : 06 : 00
£ 73 : 01 : 00

Glasgow the sd Day Received by me Daniell Montgomerie Manager to the sd Glass Manufactorie from James Graham Chamberlan to the sd marquis full and Compleat payment of the forsd Soume and discharges the samen pr me
£73 : 01 : 00 Daniell Montgomerie

52
Receipted account from the Glasgow glassworks for bottles sold to the Marquis of Montrose in 1702. The sealed bottles stamped with the Marquis's 'crown' are of particular interest. (NAS GD220/6/700/33 Montrose papers. *Reproduced by permission of Montrose Estates (1993) Ltd.*)

LINKS WITH MORISON'S HAVEN

In the discussion of the Morison's Haven glassworks above (Chapter 9), it was shown that some of the workforce there had come from Glasgow. Among the papers of advocate David Fearn is a memorial for Andrew Hutchinson, master of the glass manufactory at Morison's Haven, 'anent the dammadges sustained by him related to the glassworks of Glasgow and Morison's Haven'[14]. The Fearn papers claim that:

> Mr. Hutchinson haveing gone to Glasgow upon a call from thence to manadge that work when his presence was not necessary at Morison's Haven, the under-takers sent one of their number to Glasgow (where he had men at work to save Charges at Morison's Haven, their being no stocks for their working there) to disturb Mr. Hutchinson and his men from a settled business and forced him and his men to come to Morisons' haven where there was no work for them, to his great loss and scandal at Glasgow by forceing him from thence. . .

14 NAS GD1/576/15. Memorial for Mr Andrew Hutchinson.

Hutchinson himself claimed that, in December 1709, 'his workmen were all imployed at Glasgow which worke he was master of', while elsewhere in the document he also claimed to be a co-partner in the glassworks there. He went on to name the team of glassmakers, all of whom had been 'forced . . . away against the will of the owners of the Glasgow glasswork'. It must be assumed that the loss of six glassworkers was also to the considerable detriment of the Glasgow glassworks, although if they were taken there in the first place by Hutchinson, presumably they were additional to the regular workforce. In another paper in the same archive, Hutchinson described how, when faced with paying 'dead wages' to two teams of men, he had taken 'a jorney to Glassgow to undertake [?] work to imploy one set of my men which I did agree for to be pd 6d for 22 bottels which is a glass makers dozen and a quarter partner beside of the work'[15].

Michael Stringer
Rob Colney
James Love
James Colney
Isaac Colney
Rob Spence

Table 13
Glassworkmen known to have worked at Glasgow and Morison's Haven in 1709.

Denholm's reference in his *History* (1804, 416) to the glassworkmen operating in both Glasgow and Leith is repeated by Fleming (1938, 146). Having stated that the Glasgow glasshouse started about 1730, Denholm continues:

> It began upon a small scale, and continued to work for several years for only four months per annum, yet this was then sufficient to supply the demand. A glasshouse was thereafter erected at Leith, and to this place did the Glasgow workmen resort when unemployed at home.

Denholm's comment about four month's supply of bottles being sufficient for the west-coast market rings true, and a shared team of glassmakers would make sense, but no evidence has come to light which supports his assertion. Since his dates are, in any case, incorrect, he may have been referring to the movement of workmen between Morison's Haven and Glasgow, mentioned above.

EVIDENCE FROM THE BURGH COUNCIL RECORDS

In 1712, the burgh council of Glasgow appointed a committee to estimate the rent of the sites on which a number of manufactories were built, and to check that they were being used entirely for the work intended, and not let to tenants. The industries to be assessed were: 'the Easter, Wester and South suggaries, roapary, soapary and glassary' (*Glas Rees 1691-1717*, 481-2). Some improvements to the

[15] NAS GD1/576/15. Papers not individually numbered.

public amenities in the vicinity of the glasshouse were undertaken by the council in the ensuing years. In 1735, for example, they agreed to enlarge and widen the bridge 'at the glasserie', and to renew and repair the timbers of Broomielaw quay (*Glass Recs 1708-1738*, 440). The following year, the magistrates authorised the dean of guild 'to cause make a gravel walk from the towns Hospitall to the glasshouse at the Broomielaw' (*ibid*, 457).

James Montgomery died on 17 June 1733[16], his share in the glassworks being inherited by his eldest son Patrick, also a merchant in Glasgow, who had been admitted burgess and guild brother in Glasgow, by right of his father, on 26 July 1729. By 1742, William Smith had also died, and his three-ninths share in the business had passed to his sons-in-law, John McGilchrist and Thomas Clark, who also retained his own two-ninths[17]. It was to these three men that the burgh of Glasgow disponed, on 14 May 1742, the formal rights to the land occupied by the glassworks for the previous 40 years.

SALE OF THE GLASSWORKS

A NEW CO-PARTNERSHIP

The legalisation of their rights to the Broomielaw site were a preliminary to the sale of the glassworks and the transfer of those rights just a month later, to another group of Glasgow merchants: Richard Oswald (1687-1766) and Alexander Oswald (d.1768), George Murdoch (1715-1795), John Rowan, John Park, and Thomas Sommers 'master bottle maker' there[18]. The disposition, dated 22 June 1742, set the price of the business at £180 (sterling), a remarkably small sum[19]. It is possible that the very low price fetched by James Montgomery's glasshouse reflected its small size, and probably the age of the buildings; certainly the new owners had plans for expansion and rebuilding. The legal document is not very clear about the share disposition but, since it specifies that a sixth went to George Murdoch, and one-twelfth each to John Rowan, John Park and Thomas Sommers, brothers Richard and Alexander Oswald must have bought a seven-twelfth share equally between them. The disposition included the right to make 'glass of all kinds' but not to manufacture soap, which was reserved by the vendors.

EXPANSION OF THE SITE

Even before they legally owned the glassworks, in fact on the same day that the council disponed the land to the previous owners, 14 May 1742, Richard Oswald and George Murdoch petitioned the burgh council for a further piece of ground,

16 NAS CC9/7/57 pp 90, 331.
17 MI. B10/15/5698.
18 MI. B10/15/5699. It was registered 12 June 1744.
19 In comparison, the bottleworks company at Leith, set up in 1746, had an initial share capital of £2,250 sterling (see Chapter 6).

to the west of the existing site, in order to expand. A committee was appointed to examine their request and reported on 3 June 1742, recommending that they should be granted the extra land, with the exception of thirty feet 'next to the coallrie' which was to be retained by the town 'for a highway from the Broomielaw' – the future Jamaica Street (*Glas Recs 1739-1759*, 117). The 'ground duty' was set at one merk a year. The land was granted to the new company on 25 August 1742 and a new glasshouse was built on it, at a cost of £1,425 6s 0d[20]. The ground was legally disponed to the company, after some rationalisation of the precise area, on 12 June 1744[21]. The glassworks site then measured 267 feet [81m] from north to south, 92 feet [30m] wide at the east end, and 87 feet [26.4m] at the west end.

SHARE ALLOCATION

Meanwhile, the partnership had been joined by William Rainie (Raining), merchant in Glasgow[22]. The share allocation in 1744 was:

Richard and Alexander Oswald, equally between them	2 twelfths
George Murdoch	1 twelfth
John Rowan	2 twelfths
John Park	3 twelfths
Thomas Sommers	2 twelfths
William Rainie	2 twelfths

Richard and Alexander Oswald were sons of the Rev. James Oswald of Dunnett[23]. Alexander was admitted burgess and guild brother of Glasgow in 1720, Richard in 1724, both *gratis* (*Glas Burgs* 1, 347; 371). Richard was a highly successful merchant, involved in trade with the West Indies and Madeira, the importation of tobacco, a sugar manufacture and ropeworks. He built Oswald's land in Glasgow, and then bought the estate of Scotstoun (Devine 1975, 183). George Murdoch was similarly successful, eventually serving four terms as provost of Glasgow. His business interests included the Dalnotter Iron Company and the ropeworks, as well as tobacco importation, and he too bought an estate – Frisky Hall, in Dunbartonshire (*ibid*, 182). Two years after becoming a partner in the Glasgow bottleworks, Thomas Summers, 'master of the Glassary', bought two £150 (sterling) shares in the new glassworks company at Leith, followed, in 1747, by his acquisition of a 199 year tack of land there, investments which also imply some considerable financial success. He had, in 1745, been admitted burgess and guild brother in Glasgow *gratis*, at the request of George Murdoch, bailie (*Glas Burgs* 1, 485).

20 ML B10.15.5976, Inventory of the Bottle work Company & Effects and debts . . . 1 Dec 1747. The currency is not defined, but was presumably sterling.

21 ML B10.15.569?, Disposition the Town of Glasgow to Richard and Alexander Oswald and other partners of the Glasswork, 1744.

22 ML B10.15.569?.

23 ML Register of Companies to 1775, Typescript of all the partnerships in Glasgow. The antecedents of the Oswalds are fully explored.

A CONTEMPORARY ACCOUNT OF THE GLASGOW GLASSHOUSE

A unique contemporary account of a visit to the glassworks is extant in the Montrose papers. In a letter to Mungo Graham of Gorthy, Andrew Gardener, a merchant in Glasgow, wrote, on 22 May 1745:

> Last night betwixt 7 and 8 o'clock I called at the Glass house and lookt on their botles, they have a sort at 16sh pr gross another at 18sh pr gross, the first sort they call ale botles and the next sort they call wine botles, I see litle difference or not betwixt them. The wine botles they are very litle longer in the neck than the ale botles they are very sharp chopins, it will take 13 botles to hold six pints, both sorts are the same size. The Clerk tells me he has about a gross of what he calls English quarts which will hold about a full gill more than a chopin, (which if they be not gone before you send) you may have them at 20sh: the gross As to the makeing botles just now they cannot for their furnace is down, and wont be ready these six weeks for bloweing any botles. These botles I mention are ready for takeing away when ever you please And the sooner the better . . .[24]

The reference to bottles intended specifically for ale, as well as those for wine, is the first to have come to light during this research. Secondary references to ale bottles at this period are also scarce and it is likely, especially in view of their very similar appearance, that modern writers would catagorise them all as wine bottles – a further indication of the problems inherent in interpreting artefacts from the past[25].

Another letter in the Montrose archive mentions the risk of the theft of bottles, and implies that they were too costly a purchase to be undertaken lightly. In a discussion about whether to buy pint or chopin bottles (the Scots pint being larger, the equivalent of three English pints), the Laird of Gorthie's correspondent suggested that the pint bottles 'would be more tempting to the thievish bodys who come about the house and that if one of them is broke its a double loss.'

A FRESH START: REORGANISATION OF THE CO-PARTNERSHIP

A major reorganisation of the Glasgow co-partnership took place in 1748, following the death of John Park. His heirs wished to withdraw his three-twelfths share and the remaining stockholders decided to dissolve the company. The glasshouse, dwelling houses and other buildings, together with the utensils and materials for making bottles, 'the stock of bottles on hand, Debts and other Effects due to the Bottle-work Company in Glasgow', were offered for sale by public roup on 1 June 1748[26].

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24 NAS GD220/5/1604/23. Andrew Gardener, Glasgow to Mungo Graham of Gorthy, 22 May 1745. The currency is not defined, but was presumably sterling.

25 This letter is discussed further in Chapter 6.

26 *Edinburgh Evening Courant*, 14 April 1748.

THE NEW SHAREHOLDERS

They were bought, for £3,010 (sterling), by Richard Oswald[27]. The company's books had been balanced on 1 December 1747; all sales income, less the cost of materials and repairs to the furnace and other expenses, was to go to the purchaser, who was also responsible for the company's debts of £605 2s 5d (sterling). Since the upset price was set at £3,000 (sterling), and Richard Oswald bought the company for £3,010 (sterling), it seems clear that the roup was a device for making a fresh start, with a sound capital base, and a reallocation of shares. The new shareholders were:

Richard and Alexander Oswald, equally between them	4 twenty-fourths
George Murdoch	4 twenty-fourths
John Rowan	3 twenty-fourths
William Raining	3 twenty-fourths
George Buchanan	3 twenty-fourths
William Robb	3 twenty fourths
Robert McNair	2 twenty-fourths
Thomas Sommers	2 twenty-fourths

Richard Oswald then made over to the company 'all the subjects effects lands and others belonging to the said botlework . . . and profites arising . . . since the first day of December 1747 . . . with all right title or interest he has'. The capital was to be the £3,010 (sterling), each of the partners contributing his share of that total, and his share of the company's debt. John Park's heirs were to be paid off.

THE COMPANY RULES

Rules for the new co-partnership were also set out. No partner was to increase his share of the capital without the consent of the others; no one was to withdraw during the life of the partnership, which was set at eight years from 1 December 1747, or longer if they thought fit; accounts and books were to be kept regularly and open to inspection at all times; the books were to be balanced and inventaries taken every June, and were to be signed by the company, or the majority of them, and were to be binding. No one could withdraw any of their stock or profits until all the debts had been cleared, unless the annual profits were 10% of the capital, and then only with stringent conditions imposed to ensure that the company's cash reserves did not suffer.

It was also agreed that policy decisions were to be made by the majority of shareholders, were to be binding on the whole company, and were to be recorded in the sederunt book. Borrowing on behalf of the company was allowed, but only with the agreement of the majority of shareholders, and again with safeguards; also, provisions were made for the death of a partner. Although the co-partnery was planned to continue for eight years, the company could be dissolved at any

[27] ML, B10/15/6077, Contract of Copartnery amongst The Bottlework Company in Glasgow 1748.

time if the majority so wished. The penalty for failing to abide by the rules was to be £100 (sterling). The agreement was signed by all the partners between 15 December 1748 and 3 February 1750, and was registered in the Burgh Court Book of Glasgow on 4 July 1750. The company still enjoyed the patronage of the Duke of Montrose, who bought 144 dozen quart bottles in 1750, at a total cost of £14 6s 10d (sterling)[28].

COMPANY SALES

It is clear from the inventory of debts prepared for the roup that the partners themselves were major purchasers of bottles from the company. The largest debt was that of Messrs. Oswalds, merchants in Glasgow, for £638 8s 7d (no doubt sterling). This was reduced, however, by an 'abatement for bad Bottles and disct. for Bottles Exported &c.' amounting to £119 8s 7d[29]. George Murdoch owed £149 6s 1d, after a £40 discount for bad bottles. As well as direct sales to customers, they appear to have used the services of middle-men like Robert Gilmor, who owed them £130 'for 1762 doz. Bottles Consigned him for Sale'. He received a discount for cellar rent and breakages. There were also entries for bottles shipped to Norway and Lisbon. Assets listed at the glassworks included 50 tons of soaper's ashes, 3 tons of old glass (cullet), 37 tons of kelp, 16 'potts' and 7½ tons of clay. The bottles on hand consisted of[30]:

	£	s	d
45 doz. Cave B. @ 6d	£12		
3 doz. Bigg Bottles	0	18	0
320 doz. pottles @ 3/4	53	6	8
14542 doz. Com 2 ?s @ 1/8	1211	16	8
1776 doz. Champ. ?s @ do.	398	0	0
1400 doz. Cha. pts. @ do.	116	13	4
2141 doz. Sq. Snuff @ do.	176	8	4
	1971	3	0

BUILDING PLANS

In 1752, the co-partners planned to build a house for the use of the glass manufactory, but were asked by the dean of guild to leave 15 feet of land fronting their site, to be incorporated, with the town's existing 30 feet, into the new road which the town still intended to build. The company suggested that they should exchange the required strip of land with one at the back of the site, with compensation for the difference in value, and the usual committee was set up to consider the matter. Their decision was not recorded in the minutes of the town

28 NAS GD220/6/1079/15.

29 ML B10/15/5976.

30 It is difficult to interpret some of the list. A 'cave' = a case for holding bottles of wine or spirits (Robinson 1985, 89), so perhaps 'cave bottles' were designed to fit a case. It seems reasonable to guess that 'Com 2's were chopins; the champagnes were usually for strong ale. Glass snuff bottles are uncommon. Small horn-shaped crystal snuff bottles are known (Dr D Lamb, pers comm), but since these snuff bottles were cheap and made at a bottle factory, they were probably storage jars for retailers.

council until some four years later, on 23 August and 1 October 1756, by which time they wanted the road to be 60 feet wide, but the other boundaries of the glassworks to remain the almost the same, to which the glass company appears to have agreed (*Glas Rees 1739-1759*, 485-6).

It is possible, but is not specified, that the new building was connected with the planned production of window glass, which also began in 1752. An announcement in the *London Daily Advertiser* in May 1752 declared that 'At Glasgow they have begun a new branch of Manufacture, the making of the best Crown Window Glass'[31]. Because the glass was made in Glasgow, the bench mark for comparison was Bristol, not Newcastle, as it was on the east coast. The glassworks making the crown glass was not named, but the bottlework company appears to have been the only one operating at that date.

ANOTHER CO-PARTNERSHIP

In November 1756, the company was again dissolved, and prompt payment of customers' debts was requested, or rather demanded, in a notice in the *Glasgow Journal* in December. The company's clerk was named as Andrew Scott, at the glass house, from whom common quart bottles were still available at 25s (sterling) per gross, and champagne quarts[32] at 27s, 'for ready money only'[33]. George Buchanan senior could also supply them. It is quite possible, however, that this was simply a further reorganisation of the company, since the glassworks certainly continued to function with three of the original shareholders[34]. By 1764, Richard Oswald, George Murdoch and George Buchanan had been joined by three Newcastle glass men, Ralph Carr, John Cookson and James King; Andrew Scott, another Glasgow merchant; Michael Herries of London; and William and James Cunningham of the 'New Brewery of Glasgow'[35].

THE EXTENT OF THE GLASSWORKS BY THE 1760s

By 1764 Jamaica Street had finally been built. The extent of the property belonging to the bottle work company is made clear by a Sun Insurance Company policy of May 1764, which places the Glasgow Bottle Work at the corner on the west[36] side of Jamaica Street, valued at £50 (sterling). The company also owned a tenement on the east of the street, with some brick buildings between it and

[31] NLS Mf83/66, Early English Newspapers.

[32] Olive Jones, a Canadian archaeologist, has investigated the 'champagne' bottle, using English primary material. She concluded that 'there is absolutely no evidence to suggest that the "champagne" bottles were intended exclusively for champagne', and suggested that the term may have referred to a slightly different metal, size or shape. (Jones 1986, 12-13). Custom records show that champagne bottles exported in 1787 were, in fact, used for strong ale (NAS E504 22 32).

[33] Presumably sterling.

[34] *Glasgow Journal*, 2nd Dec 1756, in Pagan 1884 ii, 83.

[35] Guildhall Library Ms 11, 936, Vol 154, policy no 209215, 22 May 1764.

[36] Plans and prints show the glasshouse to be on the east of Jamaica Street and the bridge, rather than in the position suggested by this policy.

53
Detail from 'View of Glasgow from the South West', Robert Paul, 1764. The curious tower on the near bank of the Clyde is the remains of an old windmill. (*The Glasgow Room, The Mitchell Library.*)

the bottleworks, with a valuation of £500 (sterling); a tenement 'adjoining the Bottlehouse on the East but not communicating therewith', £150 (sterling); and a tenement 'only adjoining the above on the East having a small rivulet running betwixt it and the old Green, the whole Tenements fronting the River Clyde', £300 (sterling). They insured warehouses and pott lofts adjoining the latter site on the north, 'but not communicating and adjoining the Bottle house on the west and communicating with it by a door from the pottlofts' for £500. All the buildings were of brick or stone and with slate roofs (illus 53). As well as property insured for a total of £1,500, their stock of bottles, pots and clay were insured for a similar amount[37].

[37] Guildhall Library Ms 11, 936, Vol 154, policy no 209215, 22 May 1764; all valuations in sterling.

After 60 years on the Broomielaw site, and with the city of Glasgow set for rapid expansion in an era of ever increasing trade with the West Indies and America, the Glasgow Bottle Work Company was in a strong position to take advantage of the trading opportunities opening up on the west coast. The extent of exports of bottles to the British colonies is discussed in Chapter 13. The origins and interests of the new partners are indicative of a new phase in Scottish glassmaking during the second half of the 18th century, which saw the involvement of breweries, direct investment from Newcastle and a major expansion in the business, with new glasshouses opening in Glasgow, Greenock and Dumbarton before the end of the century.

13

IN CONCLUSION: A REVIEW OF PAST AND PRESENT ISSUES

The period covered by this monograph – some 150 years – encompassed immense political and economic changes in Scotland, from the early days of the Union of Crowns, to the aftermath of the Union of Parliaments. It also saw considerable progress in commercial practices and the persistence of the glass industry as part of the country's manufacturing base. The commercial background and the history of the individual glassworks have been discussed in earlier chapters, but it would seem useful to examine further some of the issues which affected the glass industry as a whole and to conclude by looking briefly beyond 1750, to the expansion of glassmaking during the rest of the century.

THE IMPORTANCE OF FUEL, ESPECIALLY COAL

First, there was that essential and determining factor: fuel. In 1610, when Sir George Hay founded the Scottish glass industry, wood was the only fuel used in glasshouses and it was argued in Chapter 4 that he initially used the resources of his woodland on the shores of Loch Maree to produce glass under the patent of monopoly. The technology changed rapidly, however, and by 1615 coal-burning was both possible and required by statute in England and Wales. Scotland was fortunate to have readily accessible great-coal in the mines along the Forth, which burned cleanly. By the 1660s, Scottish coal was being supplied to the manufacturers of northern Europe, including 'brewers, sugar-bakers, smiths, soap-boilers, glass-makers . . .' (Hatcher 1993, 103). Whatley has shown (1987b, 32), however, that by the end of the 17th century much of the most accessible coal had been worked out, many of the pits near the Forth were experiencing severe flooding and much of the readily available coal was of poor quality, best suited to heating the saltpans. The Halketts of Pitfirrane obtained permanent exemption from export duties which remained even after the Union, because their coal was 'only fit for the Smith's forge,' but they still regularly supplied coal to the glassworks at Leith, Kirkcaldy and Morison's Haven.

Whatever the difficulties experienced by the coal owners, the proximity or ready availability of coal dictated the siting of the Scottish glasshouses and supplies appear generally to have kept pace with demand. Sometimes it ran out because of problems at a mine, as it did at Morison's Haven in 1708 but usually if that happened there were alternative sources available. In some instances, consumption of the landowner's coal was the raison d'être for the glassworks. At

Leith, on the other hand, all coal came in by sea. In the first quarter of 1753 a total of 252 tons was shipped to the glassworks from Alloa (Clackmannanshire), Throsk (Stirlingshire), and Dysart and Limekilns in Fife[1]. Despite the undoubted problems of the coal owners, supplies of fuel do not seem to have caused major difficulties for the glass industry up to 1750, and they were, of course, a vital element in its expansion during the second half of the 18th century.

PRODUCTION AND THE WORKFORCE

Although a rough estimate of the numbers of workmen employed at different glassworks has been compiled from the evidence concerning them, other demographic evidence can be deceptive. Even when it is known that glassmakers were operating in a parish, they do not always show up in statistics. The lists of glassmakers given in the text are far from complete, and point up some of the difficulties in assessing numbers. The parish registers are not consistent in noting occupations, and the 17th-century tax rolls do not record even known glassworkmen. Robert Glasgow, for example, who was definitely a glassmaker living and working in North Leith in 1695, is simply listed as 'servant' in the hearth tax record[2]. The list of occupations taken from the poll tax records, printed by Helen Dingwall (1994, App 4, 289-93), includes three soap-boilers but no glassmakers, although it is known that Leith glassworks was in operation during the 1690s. So Robert Glasgow is presumably included in Dingwall's table as one of the 1,084 male living-in servants in Edinburgh. As she points out, the category is possibly problematic and 'some males designated servant were in fact trade journeymen in craft households' (*ibid*, 44). Glasgow is only one of several known glassmakers who have somehow disappeared in contemporary statistics.

The problem of defining occupations is further highlighted by the hearth tax listing of Alexander Ainslie as 'clerk to the glasswork at Leith'. Dingwall's list includes 22 clerks. Her appendix is drawn from the poll tax records, but if Ainslie were listed there as a 'clerk', it would be misleading. The clerk of a glassworks was not simply a keeper of records, but was more akin to what, in present-day terms, would be the manager[3]. Ainslie is variously described elsewhere as a carpenter and a merchant. He was also a half-partner in a cork-cutting business and part-owner of the glasshouse; very much a business man of his time, so the simple category 'clerk' would hardly do justice to his position. The lack of records for men working in the glass industry may well have contributed to its very low profile in secondary works on manufacturing in the 17th century[4].

1 ECA Register of Shore Dues at Leith.
2 NAS E70/4/10; see Chapter 6.
3 NAS GD305/1/160/91, 'Observes on Alexander Ainslie's Accompts'.
4 There is no mention of glassmaking in Dingwall's very comprehensive thesis, although the North Leith glassworks was operational during the 1690s. This may be due to the exemption from taxes thanks to the glassworks's status as a manufactory (Dingwall 1989).

THE GLASS INDUSTRIES IN SCOTLAND AND ENGLAND

Some idea of the relative sizes of the glass industry in England and Scotland can be obtained from figures at the end of the 17th century. In 1696 there were 37 bottle houses in England, and no less than 88 glasshouses altogether[5], although imposition of the war tax in 1695 may well have reduced the numbers, at least for a time (see Chapter 7 above). The vast majority of the English glasshouses were in the south, (24 in London, nine in Bristol and 17 in Stourbridge), but 14 were in the north, 11 of them at Newcastle. Of these, four were bottleworks and six produced window glass. In Scotland in 1695 only one glasshouse was operating, and at no time, except perhaps in the 1620s, were more than three Scottish glassworks in business at any one time prior to 1750. Given the relative sizes and economic positions of the two countries, this disparity is hardly surprising, but it does put into perspective their comparative manufacturing strengths.

Relations between glassmakers north and south of the border seem to have remained much the same over the 140 years. Although the external economic conditions were quite different in 1730 from those in 1630, the problem of competing with English products remained. For most of the period England was a source of manpower and materials, the arch-rival for markets and the setter of standards for products. In 1621, glasses from England were placed in Edinburgh Castle to act as prototypes for the new Scottish industry; in 1734, the clerk at Port Seton complained that they would never manage to sell the window glass made there, because it was inferior to that from Newcastle. It is, however, clear, that the English regarded the Scottish industry with equal antagonism. They resented the loss of skilled men throughout the period, were envious of the wine imports from France (and later Portugal) which required bottles, and apparently deliberately sabotaged the Port Seton glassworks in 1734, despite the fact that it was both distant and ailing. But it was a highly competitive trade, so such tactics are not surprising. Given the strength and size of the English industry, the surprise is that Scottish glasshouses survived at all, especially after the Union. It has been suggested that, after 1707, 'the industrial successes lay only in sectors, such as sugar refining, which were not competitive but complementary to the English economy' (Campbell 1985, 8). There was never any question of the Scottish glass industry being complementary to the English; from 1610 onwards it was at best an irritant, at worst a threat, to the English manufacturers.

OWNERSHIP OF THE GLASS PATENT

One of the early obstacles to the possible expansion of the Scottish industry was the patent to make glass, which remained in the hands of the Hay family. Initially, it enabled Sir George Hay to establish the industry very successfully, and he was clearly the éminence-grise behind the business until he sold his rights in 1627.

5 Powell 1923, 39, quoting Houghton's Letter No. 198 from his periodical letters on husbandry and trade, published 15 May 1696.

Table 14
A list of all known Scottish glasshouses with their dates of operation.

Location	*Initial date*	*Intermediate references*	*Final date*
?Loch Maree	?1610		?1620s
Wemyss	?1617	1621	?1627
? (Crawford of Camlarg)?	1617, 1619		1619
? (Emmanuel Meether)	?	1620	?
Morison's Haven (I)	?1617	1620, 1625	1627
Morison's Haven (II)	1635	1636, 1637, 1645	?1646
Morison's Haven (III)	1698	1704, 1705, 1709,1711, 1714, 1716,1718, 1719, 1721, 1722, 1724, 1726	?1727
Westpans (I)	164?		164?
Westpans (II)	?1647	1661	1663
Leith Citadel	1663	1664	?
North Leith (I)	1678		1682
North Leith (II)	1687		1688
North Leith (III)	1688		1714
North Leith (IV)	1714		1738
North Leith (V)	??1738		??1746
North Leith (VI)	1746		?
South Leith	1747		1756+
Glasgow (I)	1700		1744
Glasgow (II)	1744		1756+
Dolphinston	?1711	1712	?
Wemyss (II)	?1711	1712	?
Kirkcaldy	?1717	1718, 1720	1726
Port Seton	?1728	1729, 1730, 1731, 1733	?1734
Newhaven	No dates available: described as 'old' in 1724		

Where either the starting or finishing date of a glassworks is unknown or uncertain, intermediate references are given.

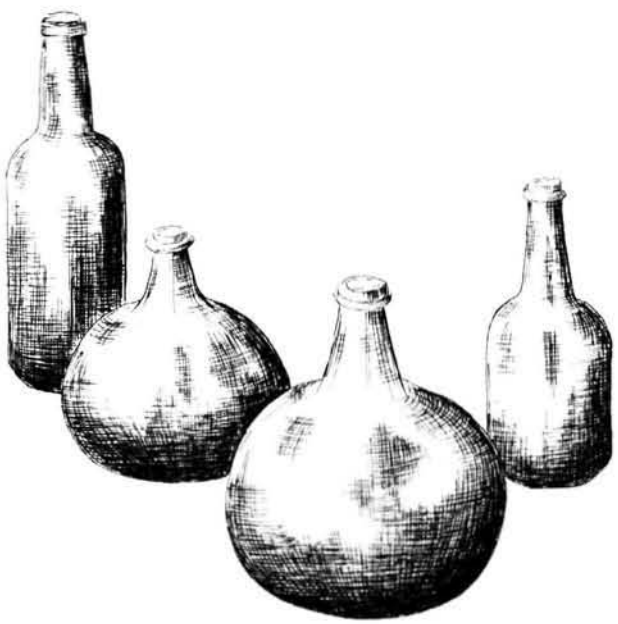
Thereafter, however, only one of his descendants appears to have been involved with or supported the industry, but the family continued to hold the patent and to extract considerable sums from those they licensed to make glass under it. This unproductive financial burden cannot fail to have been detrimental to a manufacturer struggling to establish a profitable business; Robert Pape had to pay 1,400 merks a year in 1663, for example, in addition to all the other start-up costs. This drain on the industry continued until at least 1678, the last payment date recorded in the known documents, and probably longer. It is interesting, if fruitless, to speculate on what might have happened if the Hay family had not retained their stranglehold. It is difficult to obtain any overall view of the

chronology of the Scottish glasshouses from their individual histories: a table summarizing their dates is shown opposite.

THE PRODUCTS

Glass itself changed considerably during the period – the finer quality product of the first two-thirds of the 17th century was the light, more malleable soda glass; after the 1670s, the metal changed, to produce heavy, softer, more brilliant 'flint glass', containing lead oxide. Bottles altered dramatically, from the fragile, clear containers used before the 1650s, to the thick, strong, heavy, dark chopins, mutchkins and quarts, in which wine and ale could continue to mature, and which were exported in large numbers during the 18th century (illus 54).

Production methods, however, altered hardly at all (col illus 3 and 4; illus 56). Bottles, window glass, drinking vessels, hour-glasses, were all blown. Some standardisation of bottle sizes was achieved by blowing the body into a mould and then adding the neck and string-rim, but the technique of mould-blowing had existed since 2nd-century Egypt. It was not until the 1830s that glass was pressed into moulds, and much later that any automation arrived in the industry. The moulds used by the early glassmakers in Scotland would have been of a simple 'dip' type, without hinges. At Darney, in north-eastern France, once home of the Hennezel family, a glassworks is still in operation where men can be seen blowing into foot or hand-operated hinged moulds, all the operations taking place within the one area, alongside the furnaces, with workers in close proximity to the hot metal. Apart from the gas-fired furnaces, the glass there is made in much the same way that it was in the 17th century – Moses Henzell would feel quite at home.



54
Shapes of some common bottles in production in the 18th century. (*Drawing by Alexandra Shepherd*).

Without archaeological evidence, of course, the layout and design of the Scottish furnaces can only be guessed at. The external structure of glasshouses changed dramatically after the turn of the century, from the wooden-roofed building described at North Leith in 1687, to the familiar glasshouse cone, shown in Paul Sandby's picture of the South Leith glassworks in 1751 (illus 35 above). Whether the glasshouse at North Leith built in 1746 incorporated a cone is unknown.

Table 15 List of the types of glass known to have been made in the Scottish glasshouses between 1610 and 1750, showing the dates of references to particular products.

Place and dates of operation		*Products with dates of reference*	
?Loch Maree?	?1610-162?	possibly window glass	
Wemyss		window glass	1621
? (Crawford of Camlarg)	16??-1619	drinking glasses	1617
Morison's Haven (I)	?1618-27	drinking glasses	1620s
Morison's Haven (II)	1635-*c*1646	wine, mortar glasses	1635
		beads	1636
Westpans	?1647-1663	wine, beer, mortar glasses	1647, 1661
Leith Citadel	1663-?	wine, beer, mortar glasses; bottles; vials	1663
North Leith (I)	1678-82	wine, beer, mortar glasses, vials	*c*1678
		window glass; stamp glasses	1678
		'whyte glass' (with antimony)	1679
		beer glasses, cruets, 'sougaroons', 'brandys',	1683
		'marmalats', vials, hourglass vials,	1683
		window glass	1683
North Leith (II)	1687-88	crystal wine & beer glasses; ordinary wine & beer	1687
		glasses; bottles, cruets, mortars, vials;	1687
		apothecary wares; ?knife and sword handles	1687
North Leith (III)	1688-1714	bottles	1688, 1690, 1688-1714, 1693,1699, 1702, 1703, 1704, 1706, 1707, 1710
		vials	1688
		'chemistry ware'	1688, 1689
		apothecary glasses	1689
		window glass	1712
North Leith (IV)	1714-1738	bottles	1719
North Leith (V)	1738-1746	*no products recorded*	
North Leith (VI)	1746-?	bottles	1746
South Leith	1747-1756	bottles	1747
South Leith (Edinburgh Glasshouse)	1756-	bottles	1756
Glasgow (I)	1700-1744	bottles	1702, 1742
Glasgow (II)	1744-56	bottles	1745, 1748, 1756
		window glass	1752
Morison's Haven (III)	1698-*c*1727	plate glass	1698, 1700, 1722
		window glass	1698
		bottles	1698, 1704, 1705, 1709, 1711, 1714, 1716, 1718, 1719, 1721
		watch glass	1698, 1700
		tumblers	1700, 1704
		vials	1704, 1709
Kirkcaldy	*c*1717-1726	bottles	1718,1720
Port Seton	*fl* 1728-1734	drinking glasses	1729, 1730
		window glass	1730, 1731
		mirrors	1729
		decanters, jelly glasses, salvers , vials, bell glasses	1730
		?bottles	1733

Public demand for items made with glass changed and grew with increasing economic prosperity among the middle class. Building standards improved and window glass became much more widespread, particularly after the invention of the sash window. The small lozenges depicted on Thomas Waugh's tombstone (col illus 5) were replaced by square or rectangular panes, usually of crown glass. Window glass was made in Scotland at various periods, certainly under Hay, at Leith in the 1670s and at Port Seton, but it appears often to have been of doubtful quality and unable to compete with Newcastle. From 1752, however, crown glass was being made in Glasgow and from 1781 at Dumbarton, where it was a particularly successful product (Logan 1972, 177) (illus 56).

It has been emphasised several times in this volume that bottle production was the saviour of the Scottish glass industry, since demand was consistently high, thanks to the highly developed wine and ale trades. The characteristics of the 'English' bottle, described in Chapter 1, ensured its popularity, both in the domestic market and overseas and fortunately for both the Scottish and English manufacturers, the technology eluded French glassmakers until well into the 18th century. More luxurious items were also made in Scotland, certainly during the Hay period, when the Italians were working at Morison's Haven and exporting their wares to London; later smaller quantities were produced. Although bottles were the 'bread-and butter' product, tumblers were also made to order at Morison's Haven in William Morison's time, while hour-glass vials and other more fancy items were made at Leith in the late 1670s and up-market crystal was blown at Port Seton in the 1730s.

The range of glass produced in Scotland was inevitably limited by poor local demand, but some idea of the types of glass made at different times can be seen from Table 15 It would, in any case, be unwise to assume that the relatively few references to products remaining in the archives provide an accurate reflection of all that was – or could be – produced at the various glassworks. Although the makers of broad or crown glass would not have blown bottles, because their skills were quite different (as were their materials, tools and furnaces)[6], skilled vessel-glass blowers could make a range of wares – as the contract at Leith between Sir James Standsfield and the two Englishmen from Dublin illustrates[7]. The best that can be said is that we now know some of the objects that were made; there may well be others for which no evidence has yet come to light.

FINANCIAL MANAGEMENT AND SURVIVAL

It is clear from the histories of the individual glassworks that, apart from during the very early period, the small Scottish glass industry always had to work hard to survive, but it is equally clear that entrepreneurs continued to invest in it. Consequently, although there are no figures available to show what profits were

6 NLS DEP 175, Box 35 bundle 64.

7 NLS DEP 175, Box 29 bundle 43.

made, it must be assumed that some were. Some of the set-backs to the manufacturers were just bad luck: Edward Dagnia died within two years of Robert Pape engaging him to set up the glassworks in the Citadel at Leith, and his family moved away, eventually to found a dynasty in Newcastle; Sir James Standsfield was murdered shortly after engaging some experienced glassmakers capable of producing a wide range of items at North Leith. John Scarlett, too, died just after setting up a new glassworks in the cave at Wemyss, having obtained financial backing, a founder under contract, and a comprehensive leasing agreement with the land and coal owner. The effect of his sudden death is unknown. Some problems, on the other hand, resulted from plain bad management, with Port Seton the outstanding example of a bungled opportunity. Some of the glassworks have yielded little or no information – the question of Newhaven looms large and there is still much to learn about Kirkcaldy. The basic fact remains – small and beset with problems though the industry was – glassmaking in Scotland was almost continuous from 1610 to 1750, which, in itself, makes it unique among the early manufacturing industries.

Whether survival is synonymous with success is open to question but it is, at least, an essential prerequisite. Certainly the long-standing presence of a glass industry in both Leith and Glasgow provided the base on which later expansion was built. In both places the glasshouse sites of 1750 continued to be used for the same purpose until the 19th century. After 1747, things really did begin to change. A new glasshouse was built at South Leith, specifically to produce bottles, by a large, well organised co-partnership, many of those involved being in the wine trade. Similarly in Glasgow, the small bottleworks, which had been quietly operating for over 40 years, was taken over by a new, dynamic co-partnership of merchants. On both sides of the country, glassmakers were ready to take advantage of the expanding markets, both at home and abroad, and they do not seem to have been deterred by the tax which was imposed in 1745 on the materials used in the glass batch. This tax, which has been the subject of much debate, and which involved excise officers virtually taking up residence in the glasshouses in order to weigh the ingredients placed in the pots and the end products, was increased in the 1770s and 1780s. The tax was not repealed until 1845, by which time it had caused lasting damage to the industry. It has been discussed very fully by Catherine Ross in her thesis on the Newcastle glass industry (1982, 321-64) and, since it came too late to effect the period of this research, will not be examined here.

BOTTLE EXPORTS AFTER 1745

Although a burden to the industry, the glass tax provides an aid to the researcher; after 1745 all the customs accounts record the weight of glass exported and its source. Since there is a virtually complete run of customs quarterly accounts from all Scottish ports after 1742, it is possible to see the volume and pattern of glass exported after that date. The Leith books show, for example, that, between 1745

Table 16
Chart showing the numbers of bottles (in dozens) exported from Leith, after the imposition of a tax on glass in 1745. Figures taken from the Port Books.

and 1795, exports of chopin bottles increased from 277 dozen in 1745 to 16,165 dozen in 1795-6[8] (Table 16).

The Leith figures also show that, although at first they were few in number, there were shipments of glass, especially bottles, to America as well as to Europe throughout the last 50 years of the 18th century. In 1745, only the *Magdelen* sailed to South Carolina, and she did the same trip in 1747. During the rest of the century, until the War of Independence, bottles and to a lesser extent other glass, were exported to Virginia, South Carolina, Charlestown, Granada, Jamaica, Tobago, Barbados, St Lucia, and St Christopher. The destinations in Europe are to be expected, since the trade from Leith was long established, but the number of trips to the Americas is more surprising, and is probably indicative of competition between the Scottish glassmakers for the lucrative colonial market. The Leith accounts for 1795-6 show that American independence appears to have affected their trade. There were voyages to Quebec, New York and Jamaica, but the remainder were all to Europe.

The exports from Port Glasgow tell a similar story. In 1748 there are two entries in the ledger, for 437 dozen quart and 10 dozen pint bottles bound for America. By 1767 a large amount of glass of all types was being exported, including 11,578 dozen bottles from the Glasgow bottleworks. These are virtually all described as 'quarts', with the occasional 'double quarts' and chopins. However, one entry is

8 NAS E504/22/2: 7; 13; 21; 32; 39.

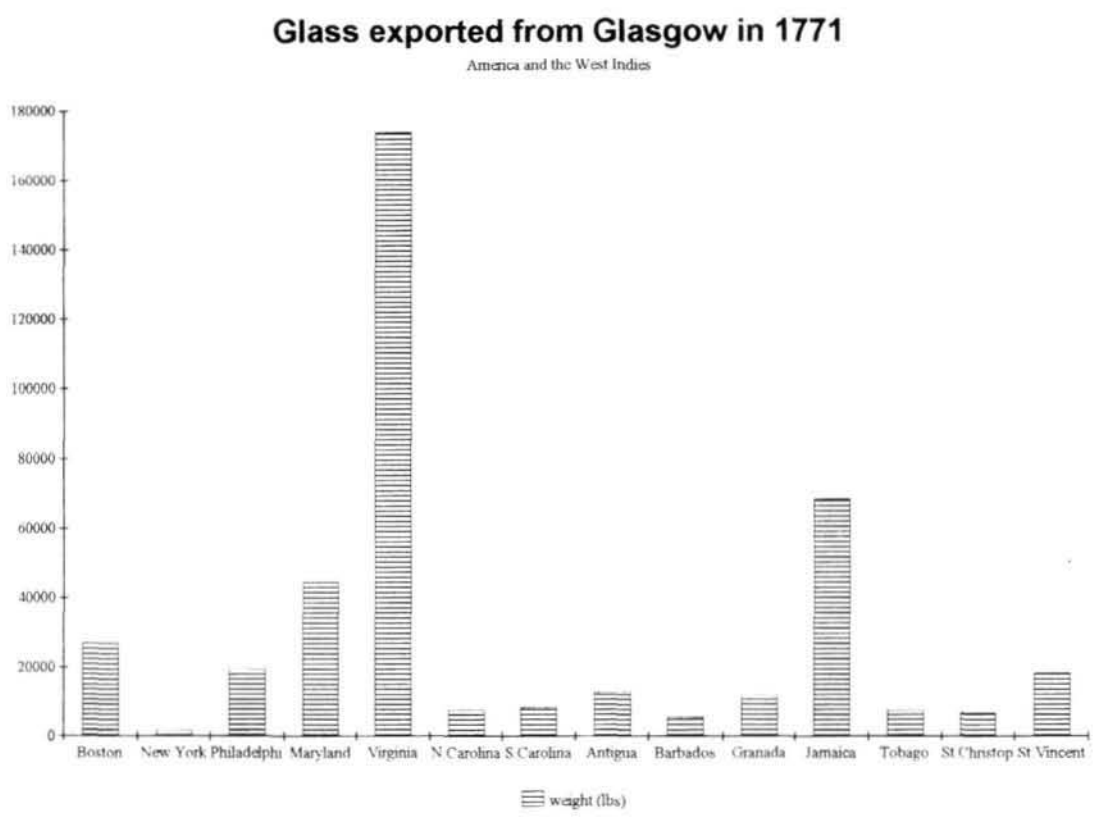


Table 17 Chart of the volume of glass exports from Glasgow to North America and the West Indies, 1771, using figures given by Gibson (1777).

for 'quart or chopin' bottles, so it is difficult to know whether the two sizes were, in fact, synonymous. As well as glass produced in Glasgow itself, there were shipments of 1,630lbs of crown glass from Newcastle and Bristol; flint glass from Newcastle; 13,394lbs of green glass, including 7,858lbs from Edinburgh, and 147 looking glasses[9]. A high proportion of the bottles from Glasgow were intended for strong ale.

John Gibson, in his *History of Glasgow*, published in 1777, produced details of all the exports from Glasgow in 1771 including glass, which he listed solely by weight. The glass exported to the Americas, according to Gibson's list, is shown in Table 17. Since he does not specify the source of the glass, however, it is interesting more for the relative volume sent to the different destinations than for information about the amount made in Glasgow.

9 Unfortunately, the entries are not sufficiently consistent to enable tables to be produced.

A new, specialised, glass product is also evident in the customs accounts – one which is particularly associated with Leith – the vitriol bottle. Thomas Summers' ability to blow huge bottles, which was reported in a Manchester newspaper in 1751, was put to good use in supplying these containers to the vitriol works at Prestonpans, which was set up in 1749. In 1757, 100 Leith bottles, each protected by a basket, containing 11,280 lbs of oil of vitriol, were exported to Rotterdam[10]. Each bottle, therefore, contained almost 113 lbs of vitriol. Even larger volumes are shown in later shipments, the average bottle containing about 120 lbs[11]. In 1795, a total of 1,226 of these monster bottles were exported from Leith, along with considerable quantities of crown glass for windows and flint glass, all made at the greatly expanded Leith glassworks[12].

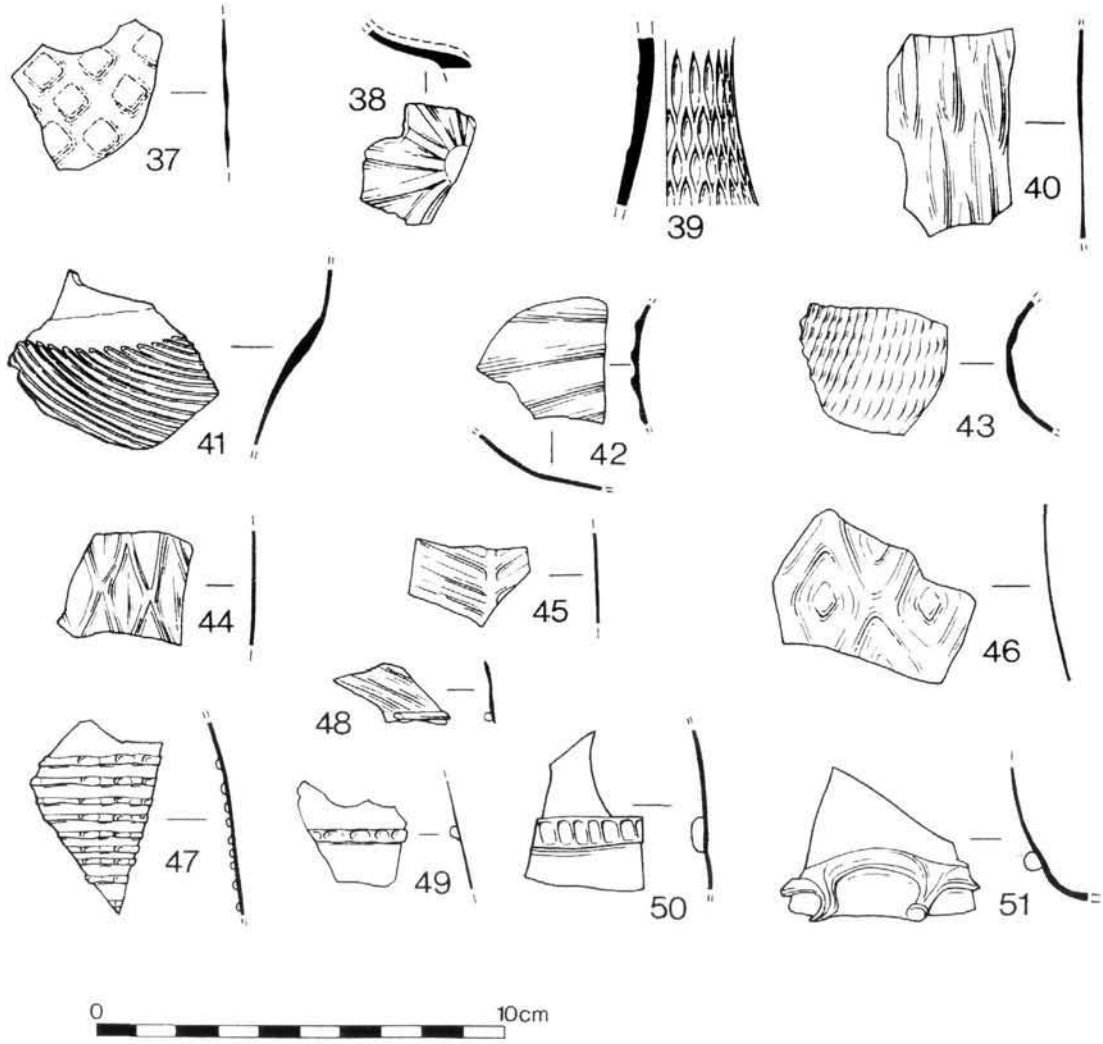
During the last 50 years of the 18th century, the Scottish glass industry expanded beyond all recognition, both in terms of size and range of products. In 1750, Lady Frances Erskine of Mar established a bottleworks at Alloa[13], subsequently the site of glassmaking for more than 200 years, the history of which has been recorded by John Carvel. In 1777, the Dumbarton glassworks was founded. It remained operational until 1850, and has been researched by John Logan. Other glassworks were built at the end of the century, two fairly short-lived ventures at Greenock and Dundee; much more successful enterprises at Glasgow and Leith; to be followed by those in Edinburgh, Portobello and Perth. More information has been published about the post-1750 glassworks than those of the earlier period, but further research remains to be done if the full story is to be told.

THE FUTURE OF THE SITES

But what is the future for the past? The physical sites of some of the glassworks described in this monograph remain and any further information about them must come from archaeologists. Westpans is the only known site of a pre-1750 glassworks to have been been investigated. Most of the other sites are at present inaccessible, but it is possible that re-development in the future might enable examination of some of them.

Despite the increasing interest in Scotland's industrial heritage since the 1960s, when the Scottish Committee for Industrial Archaeology was established, a huge number of sites have been destroyed. John Butt's book *The Industrial Archaeology of Scotland* was published in 1967, followed by *Industrial Archaeology in the British Isles*, with Ian Donnachie, in 1979. These, and numerous articles and papers by others interested in the field, raised public and political awareness to the extent that in January 1994, the Scottish Office produced two important publications: National Planning Policy Guideline 5, called *Archaeology and Planning*, and Planning Advice Note 42, *Archaeology – the Planning Process and Scheduled*

[10] NAS E504/22/7.
[11] NAS E504/22/21.
[12] NAS E504/22/39.
[13] Recent research by the author indicates a more likely starting date of 1767.



55
A group of moulded green glass sherds found at the Haughton Green glasshouse, near Manchester, which operated between 1615 and 1653. Although we know that Scottish drinking-glasses were also blow-moulded, their appearance is unknown since no glasshouse sites in Scotland have been excavated. (Vose 1994, 28).

Monument Procedures. These put the onus on local authorities to take into consideration any potentially important archaeological sites in their planning processes, and set out the guidelines to be followed. Unfortunately, funding is often a problem, and many of the requirements remain voluntary.

The need for public vigilance, greater interest by the local authorities, more co-operation between agencies and more clearly defined responsibilities is illustrated by the fate of the pottery sites on the Scottish east coast, some of which are also associated with glassworks. Although before the 1994 guidelines were in place, it is to the lasting shame of the authorities, who were well aware of their importance, that all the Mid- and East-Lothian pottery sites have been demolished, at least above ground, most of them in the 1980s. A restrained paragraph in the catalogue *Pots at the 'Pans* (Dalgleish, Haggarty & McVeigh 1990) described the situation in 1990:

> The last decade has seen the total destruction of many former pottery sites. Although there have been some archaeological successes, due mainly to the efforts of a few individuals, it must be admitted that there has been a haphazard approach to the problem of the loss of our ceramic heritage. Lack of communication between the agencies charged with preserving and recording our past has contributed to this.

The authors went on to suggest a complete survey of the area to identify and protect remaining sites – and specifically that William Littler's porcelain factory at Westpans should be the subject of proper investigation. Despite this, in 1990, a house was built on part of that site and it was only thanks to a concerned local resident, the prompt action of archaeologist George Haggarty and the co-operation of the owner, who delayed building for a fortnight, that a rescue dig was undertaken, funded by Historic Scotland. This site is significant not only for its ceramic history, but it is also very likely to have been the area used by Jacob Visitella for his glassworks in the mid-17th century, although that was not known at the time of the excavation. The whole of the Westpans area has now been scheduled by Historic Scotland.

There are, of course, many more glass furnace sites in England, dating back much further than in Scotland, so a considerable amount of archaeological work has been done there. The 17th-century English glass furnaces excavated at Haughton Green and Kimmeridge (Vose 1994, 1-71; Crossley 1987, 340-82) provide evidence of the glass vessels produced in the period (illus 55 and illus 15 & 27 above) – essential information, since very few whole pieces have survived. Pottery sites usually contain large numbers of shards *in situ*, and inevitably a huge volume of rejects and kiln failures dumped nearby. Even a rescue dig in the teeth of the bulldozers can yield numerous boxes of broken, and sometimes whole, pots, moulds, saggars and kiln furniture for analysis. The early glass furnaces, on the other hand, were small and their rejects were re-used as cullet, so any surviving shards tend to be tiny and in much smaller numbers, and soda glass, in particular, was very fragile. There is also the opposite problem, that some of the cullet on site

56
A 19th-century view of the operations inside a crown glasshouse, drawn by William Cooper in 1835. The boy on the right is blowing the initial gather, while his master shapes it on the marver. In the background men are 'flashing' the glass into a flat circular table, while the man on the right is placing it in a lehr. (Cooper 1835, frontispiece. *Reproduced by permission of Trustes of the National Library of Scotland.*)

may have been imported. Old glass furnaces tend to be less obvious than pottery sites, leaving fewer clues behind to alert the potential developer or planner.

We now know from documentary evidence that during the 17th and early 18th centuries a wide variety of glass was produced in Scotland. We do not, however, *know* what any of these objects looked like, however much we may guess. Nor do we know to what design the Scottish furnaces were built; how many hearths they contained; when the first brick cone was constructed; whether any coloured glass was made. Later glasshouse cones appear in paintings and engravings of Scottish landscapes, but no interiors are shown until well into the 19th century. By that time, as can be seen in the illustration above, the buildings were much larger and more sophisticated than their predecessors, although the actual glass-blowing processes remained the same.

There are many questions and no answers. We can, of course, just assume that the English excavations can provide them, but that must surely be unacceptable in Scotland at the start of the 21st century.

Hopefully, the documentary evidence provided in this monograph, together with more information which must inevitably come to light in the future, will enable the small number of sites of the early Scottish glass industry to be preserved and eventually explored, putting them physically, as well as historically, on the map – as they deserve.

GLOSSARIES

GLOSSARY OF GLASS TERMS

Annealing	Gradual cooling of hot glass objects, in order to avoid thermal stress.
Arch	Entrance to the annealing furnace
Barilla	Ash from marine plant grown in Mediterranean, source of soda for the glass batch.
Batch/mix	Mixture of ingredients prepared for melting.
Blowing iron	Hollow iron rod used for blowing glass.
Broad glass	Window glass made from a flattened cylinder, originating in Lorraine.
Bunch/bundle	Three sheets of broad glass, tied together with straw.
Case	Container holding 24 *tables* of *crown glass*, (approximately 120 square feet), or 15 bundles of *broad glass*, (approximately 180 square feet).
Caulker/Calcar	Oven for *fritting* (partial fusing) of raw material.
Chair	Glassblower's seat or group of glassblowers working together.
Chist	*see* kist
Conciator/founder	Man who mixes raw materials and supervises melting of the batch.
Cradle	Alternative term for a *case* of window glass.
Crown glass	Window glass of disc form, 'flashed' from a bubble of glass, originating in Normandy.
Crucible (pot)	Glass-making pot made of *fireclay* or pipe-clay.
Cullet	Broken glass used in the *batch* to reduce the melting point.
Decolouriser	Manganese or cobalt oxide, or arsenic, used to neutralise the natural green colour of the glass caused by iron in the *batch*.
Façon-de-Venise	High quality soda glass made in Venetian style.
Finisher	Man who completed a bottle by adding the neck and rim.
Fire clay	Clay capable of withstanding high temperature, used for crucibles.
Flint glass	Glass containing lead oxide.
Founder	*see* Conciator
Frit	Mixture of partly fused raw materials, ground up and ready for melting.
Gaffer	Master glassblower or head of *chair*.

Gather	Gob of molten glass taken from the furnace on a *blowing iron* or *pontil rod*.
Green glass	Glass naturally coloured by presence of iron oxide in the *batch*.
Grog	Pieces of broken crucible, used in clay mix for making new pots.
Hovel	Building containing the furnace and the working area round it.
Kelp	Seaweed burnt to a solid ash, used to provide *potash* for the *batch*
Kist/chist	Container of imported window glass, holding 20 *wisps*.
Lehr (leer)	*Annealing* oven.
Linnet hole	Small flue connecting furnace with *lehr*.
Litharge	Lead monoxide, used for fine glass before 1700.
Lozenge	Diamond-shaped piece of window glass.
Marver	A slab of iron or stone on which the molten glass is rolled after being gathered.
Metal	The fused materials, molten or hard, from which glass is made.
Mould-blown	Glass blown into a mould, taking on its form, and then further blown.
Pearl-ash	Purified *potash*.
Play wages	Half-pay given to the workforce while the furnace fire was out, also called 'dead wages'.
Pontil (punty)	Solid iron rod used to hold an object, by means of a blob of glass, while it is being worked.
Pontil mark	Scar left on base of glass object where the *pontil rod* was attached.
Potash	Potassium carbonate, used as an alternative to *soda* to provide the alkali necessary for the glass *batch*.
Pucellas	An essential tool, shaped like tongs, used for shaping vessels.
Sealed/marked bottle	Bottle marked with blob of glass which is stamped with initials, arms, date, etc of owner, tavern etc.
Servitor	Chief assistant to the *gaffer*.
Siege	Platform of clay or stone on which the pots rest in the furnace.
Silica	A mineral essential to glassmaking, the commonest form being sand. The Venetians used white river pebbles, while in England calcined flints were sometimes used.
Smalt	A blue pigment made by the fusion of *zaffre*, potassium carbonate and *silica*, ground to a powder
Soapers ash	Residue from soap production, used in bottle making.
Soda	Sodium carbonate
Soda glass	Glass containing alkali in the form of soda rather than *potash*, made in Venice and Britain until 1670s.
Table	Circular sheet of *crown glass*.

Teaser	Stoker
Wisp	Term used in Scotland and northern England for a bundle of three sheets of broad window glass.
White glass	Glass containing de-colouriser, used for drinking glasses and other vessels requiring improved transparency.
Zaffre	An impure oxide of cobalt, which can be further refined to produce *smalt*.

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GLOSSARY OF SCOTTISH WORDS AND LEGAL TERMS

Advocate	A member of the Scottish Bar.
Arrest	Seize by legal warrant.
Bailie	Officer of a barony; town magistrate.
Bigged/bigging	Built/building.
Blench ferme	A feudal holding for nominal payment.
Caption of Horning	See Horning.
Cautioner	A surety.
Cess	A tax
Chalder	A dry measure of capacity (which was very variable).
Chamberlain	Steward or factor.
Compear	A defender to appear in a court action.
Court of Session	The supreme civil court in Scotland.
Craigstone	A detached rock; a large stone.
Culm	Coal dust, slack.
Deals	Timber.
Dean of Guild	A judge with jurisdiction in mercantile or building disputes.
Decree(t)	A final judgement.
Dispone	To convey land.
Disposition	A unilateral deed by which property is transferred.
Doocot	Dovecot
Dyke	Ditch or wall.
Easter	Eastern (similarly wester = western)
Ell	Measure of length. The Scots ell was approximately four-fifths of the English, ie 37inches (*c* 0.95m).
Factor	Someone appointed to act on someone else's behalf, an agent.
Feu	A piece of land on which the buyer owns the buildings but the land remains the property of the landowner (superior), for which an annual rent, or feu duty, is paid.

Forfeited estates	Land and property confiscated for treason (eg after the Jacobite rebellions of 1715 and 1745).
Garble	To select.
Girnel	Granary or storehouse.
Grieve	Manager or overseer.
Harl	Roughcast.
Heugh	Pit, mineshaft.
Horning	A legal process taken against a debtor. Letters or 'captions' of horning were obtained from the court by a creditor. If the debtor failed to pay, a law officer blew three blasts with a horn at the market-cross and published the fact. The debtor then became a rebel and subject to forfeiture of his possessions. It was, however possible to obtain sanctuary at the Abbey of Holyrood until arrangements could be made to clear the debt.
Ilk	Each, the same (place, person, thing).
Instrument of sasine	Document signifying completion of property transfer.
Intromit	To handle or deal with, for example, funds or property, hence intromission.
Kirk Session	Church court consisting of minister and elders of a parish.
Links	A stretch of open heath, usually near the sea-shore.
Memorial	A statement of facts submitted to a judge before a hearing, or a document prepared by a solicitor for counsel.
Mort cloth	Pall for covering a coffin, often hired from the kirk session.
Pertinents	Everything forming part of lands conveyed unless specifically exempted.
Plenishings	Goods or provisions; furnishings.
Portioner	Proprietor of small estate or piece of land once part of a larger estate.
Process	Steps in a court action.
Protest	Demand for payment of money through a notary.
Quhilk	Which.
Register of Deeds	A very large series of volumes containing formal documents registered and recorded by the Court of Session or other courts from 1554. A deed could be registered at any time after it was signed.
Roup	To sell or let by public auction.
Sasine	The transfer of possession of land (recorded since 1661 in the Register of Sasines).
Sederunt	A sitting, eg. of a court or committee.
Sequestration	The process of bankruptcy.
Signet	The Seal of the Court of Session.
Sink	Pit-shaft, coal-pit.
Stent	Taxation on land..
Tack	Lease of land.
Tacksman	Leaseholder, usually with sub-tenants.

Tocher	Dowry.
Umquhile	Late (deceased).
Vennel	Narrow alley or lane between houses.
Warrants	The original documents recorded in the Register of Deeds, which were retained by the court.
Writer	Solicitor.
Writer to the signet	Solicitor belonging to an exclusive group entitled to sign the signet.

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