The Locksmith Craft in Early Modern Edinburgh

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Abstract

The Edinburgh locksmith craft was a branch of a hierarchical incorporation of metal workers known as the Incorporation of Hammermen. This thesis aims to gain a better understanding of the organization, influence and practicalities of a specific occupation found in most urban areas of early modern Europe. The thesis looks at three broad areas, set out in six chapters relating to the locksmith craft. The first area is the structure, government, and influence of the locksmiths in the social hierarchy in which the craft existed. How influential were the locksmiths? How wealthy were they? What patterns of growth and decline are visible in the surviving records for the hammermen? What does this tell us about Edinburgh’s early modern metalwares market?

The second area deals with the relation of the locksmiths to society. The locksmiths had unofficial associations with other craftsmen both within their own incorporation and outside it, who worked with similar materials or techniques. The role of the craft in providing security is also scrutinized, both in general burgess duties, and the locksmith’s unique contribution in providing security technology.

The third area deals with the practical side of their trade. Their workplace, products and services are looked at in order to understand just what they contributed to early modern society, and how they applied their skills.

This thesis is multi-disciplinary, in that it relies heavily on both historical documents, such as the Incorporation of Hammermen’s minute books and burgh records, and also on surviving material culture, through the extensive collection of locks and keys housed in the National Museums of Scotland. The physical objects used by a society are as important a record as the written documents. By studying the surviving artefacts, some interesting hypotheses can be drawn on the role of the locksmith in early modern urban society, as well as giving a better understanding of the skill levels required to work in this particular craft.

The period covered is from 1483, when the metalworkers were first given permission to incorporate into an organized craft guild, to 1750, which is an arbitrarily chosen point, before which Edinburgh was an increasingly demanding consumer society, but which predates the new technology prompted by the Industrial Revolution. The technology and social structure of the locksmiths did not change drastically over this period, though both were remarkably different from the medieval or modern periods. It was a time when guild influence was still strong, and technology was relatively weak. This study represents a single craft in a unique time period.
Declaration

I, Aaron Michael Allen, have researched and written the following PhD thesis entitled 'The Locksmith Craft in Early Modern Edinburgh'. Initial research in this topic took the form of an MSc (by research) completed at Edinburgh University in 2001. My research is new and original in content to the best of my knowledge and has not been submitted for any other degrees except as specified above. All ideas belonging to other individuals and all sources have been cited to the best of my ability.

27 January 2005
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Preface

My uncle Larry first started my interest in metalwork. He is a machinist, and showed me how to work iron in a forge. This was later coupled with my studies in history when a chance email to the Scottish History department at Edinburgh University as to whether or not I would be able to research the history of the metalworkers received a reply that there were many resources waiting in the archives here. I hope my work will someday be of interest to someone! I would first and foremost like to thank God for blessing me with the opportunity to do a PhD in Edinburgh. Job 36: 3 ‘I will fetch my knowledge from afar, and will ascribe righteousness to my Maker’. Amen. I would like to thank my fiancé, Joanna Swinson, without whom, I would not have finished this. I would like to thank my family, in particular, Mom, Dad, and Amy. I would like to thank all the rest of my family who are very important to me. I have missed them very much these last four years. I would also like to thank Douglas MacGregor and all the guys at Edina Lock and Key for their patience and kindness. I very much enjoyed working in the shop. I learned a great deal about the locksmith craft. I would like to thank the Edinburgh City Archives for their assistance and chat during my research. I would like to thank the National Museums of Scotland for all their assistance and advice, as well as allowing me to use their collection of locks and keys. In particular I would like to thank Mr. George Dalgleish and Mrs. Irene Mackay of the NMS. I would like to thank all the organizations which allowed me to take photographs of old locks in their collections. I would like to thank Prof. Michael Lynch and Dr. E. Patricia Dennison for their guidance and time over the past four years. It has been an honour and a privilege to study under them. As for those which I am undoubtedly forgetting, I beg your pardon for my forgetfulness.
This thesis is dedicated to my father, the late Rev. William E. Allen, who taught me that
\[ 5 + 5 = 11, \] because God doesn't always add the way we do.
## Abbreviations

### Unpublished Primary Sources

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<td>Clock PR</td>
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<td>Mair, Mercat Cross</td>
<td>Mair, C., <em>Mercat Cross and Tolbooth</em> (Edinburgh, 1988)</td>
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Artefacts

NMS
Conventions

The spelling has been modernized where appropriate. The British style is used, except for citations of North American book titles. The occasional Scots word is left where it emphasises the text, or is not found in the Concise Scots Dictionary. The crafts had their own jargon, which is not always decipherable. The dates have been given as stated in the original sources. Prior to 1 January 1600, the new year started on 25 March. In the text, the years will all be deemed to start on 1 January for clarity. Henceforth, 24 February 1567 – 8 will be simply given as 24 February 1568. The Scots monetary system for accounts consists mainly of pence (d.), shillings (s.) and pounds (li. or £).

Prices are given in Scots, unless otherwise stated. The Scots pound was a money of account only; no physical pound coin existed in early modern Scotland. One English pound Sterling was equal to about £4 10 s. Scots in 1560. The French crown was equal to £1 6 s. 8 d. Scots. In 1601 the English pound was worth £12 Scots and the French crown was worth £3 6 s. 8 d. Scots. The actual coin conversions in Scots for the seventeenth century are as follows:

\[
\begin{align*}
2 \text{ d.} & = 1 \text{ bodle} \\
2 \text{ bodles} & = 1 \text{ plack} \\
3 \text{ bodles} & = 1 \text{ bawbee} \\
2 \text{ bawbees} & = 12 \text{ d.} = 1 \text{ s.} \\
13 \text{ s.} & = 4 \text{ d.} = 1 \text{ merk} \\
20 \text{ s.} & = 1 \text{ li.} \\
3 \text{ merks} & = 2 \text{ li.} \\
1 \text{ s. Scots} & = 1 \text{ d. Sterling}
\end{align*}
\]

1 \textit{CSD, 1992}
3 This is based on \textit{CSD}, p. 817
Introduction

While there were several studies of Scottish craft guilds or publications of their records around the first half of the twentieth century, research in more recent times has been exceedingly limited. Recently, there has been much analysis done on the merchant communities in Scotland, but it has been claimed that, 'there has been only one recent study of a craft occupation but this, because it deals with one of the smallest and humblest of the guilds [in Edinburgh], has little light to shed on general occupational patterns.'\(^1\) This refers to Dr. Bennett’s 1981 PhD thesis on the Edinburgh Incorporation of Bonnetmakers.\(^2\) While other studies have been made since, notably two excellent books on the surgeons\(^3\) and goldsmiths,\(^4\) the majority of recent craft research has been more general in topic, dealing mainly with occupational structure or demography.\(^5\)

Detailed work on specific crafts has been severely under-developed.

In 1906, John Smith published a book on the Incorporation of Hammermen of Edinburgh which printed the records of this guild, the largest of the fourteen crafts, up to c.1560.\(^6\) The following study was based on a Master’s degree which was meant to continue Smith’s research. In the process, the field was narrowed down to a specific branch of the Incorporation of Hammermen: the locksmiths. Locksmiths were found in most towns and all cities across early modern Europe. The period considered is from 1483, when the metal workers were incorporated, to 1750, which is an arbitrarily chosen point, before which Edinburgh was an increasingly demanding consumer society, but which predates the new technology prompted by the Industrial Revolution. In this

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\(^1\) Lynch, M., ed., EMTS, 1987, p. 3
\(^3\) Dingwall, H., Physicians, Surgeons and Apothecaries Medical Practice in Seventeenth-Century Edinburgh, 1995
\(^6\) There is a little material from later than 1560, though it is not comprehensive. There are also a few inaccuracies. Smith, J., Hammermen, 1906, p. 181
period, locks were still being made using the medieval technology of warding. Edinburgh was not wholly typical of Scottish burghs; if any generalizations can be made from this survey, they are more applicable to the European urban environment, as no other Scottish burghs came close to Edinburgh’s size. While Edinburgh had fourteen incorporated trades, no other Scottish burgh had more than nine. The intent is to get a better understanding of what was a fundamental trade in the European urban environment before industrialization changed the structure of craft-production.

So why the locksmiths? There were many trades in early modern Edinburgh that warrant studying, fourteen of which were incorporated. There are minute books for several of the incorporated trades held by either the Edinburgh City Archives, or the Trades Maiden Hospital. There are numerous foreign sources on other trades that would give much insight into the processes involved for baxters baking bread, or skinners processing hides. The impetus for doing research on the locksmith craft was the surviving material culture in the collections of the National Museums of Scotland, combined with the practical experience of three years working in a modern-day locksmith’s shop.

The Incorporation of Hammermen was an important craft. Tax rolls and demographics show that they were one of the larger and wealthier of Edinburgh’s crafts. The research in the following thesis shows that the locksmiths were in the higher echelon of the hammermen. Locks and keys were an important part of the early-modern metalwares market. In 1580, when England was kitting out a ship to be sent to Japan, various items were included to impress upon the Japanese magnates how sophisticated England’s products were. Included were, ‘locks and keys, hinges, bolts, hasps, &c., great and small, of excellent workmanship.’

8 Lynch, EMTS, p. 9
9 The Edinburgh City Archives hold the minute books for the hammermen, skinners, and several others, while there are several volumes at the Trades Maiden Hospital, including the minute books for the bonnetmakers, etc.
Keys were an equally sophisticated item, the significance of which was not lost on governmental officials in the early modern period. As Gerald Strauss pointed out in his book, *Nuremberg in the 16th Century*, the, ‘two Losunger exercise the highest honour and dignity, for to them are entrusted the keys to Nuremberg’s treasury.’

Keys were a way of granting access, and therefore prominence. It should not be assumed that because Scotland was not a rich country by European standards, that the metalwork done here was inferior. For example, Scottish pistols were often given to foreign dignitaries. Louis XIII of France even owned a pair of Scottish pistols. Scotland’s craftsmen were not primitive, and the locksmiths were among the finer crafts.

This thesis on the locksmiths included several disciplines. The crafts fall under both social and urban history. Because this is a study of a single town, it is also local history. As one of the most important types of evidence is the surviving objects, material culture is also heavily relied on. By using several approaches, a clearer picture of the everyday life of a locksmith in a European capital is pieced together.

The main primary sources were the records of the Incorporation of Hammermen and the surviving material culture in museums. The Incorporation of Hammermen’s minute books are in the Edinburgh City Archives. They consist of fourteen volumes, and are extant from 1494 to the twentieth century. The minute books from 1494 to c.1560 have been partially transcribed for us by John Smith, and can be found in his book, *The Hammermen of Edinburgh and their Altar in St. Giles Church*. There are a few areas in Smith’s transcription that may not be exactly as written in the original, but they are meant only to be excerpts. The National Museums of Scotland have in their archives Charles Whitelaw’s notes on arms and armour. Included is a partial transcription of the minute books from c.1500 to 1662. Again, these are only excerpts, and they are not in order.

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14 EHMB, ED008/1
15 Smith, J., *Hammermen*, 1906
16 Whitelaw, EHMB
A drawback to the original minute books is that they can be quite vague. The person who wrote them knew the minor details that connected the words he wrote with the real-life happenings of the Incorporation. As a result, some entries consist only of a few names with little description. Others go into great detail. They are very much the random notes of meetings based on knowledge in the clerk’s head. Some of the pages are numbered; others are not. Where possible, the page number is given in the citations.

The minute books are filled with interesting social details. One example, is a reference to a payment for ale provided to builders who were working on a property owned by the Incorporation. Beer was seen as a food source in the early modern period. Another interesting social detail is the emphasis on religion, which was key to the formation of many of the craft guilds, in the pre-Reformation minutes. The first volume of the minute books deals almost completely with the religious aspects of a craftsman’s life. As was noted of Aberdeen’s pre-Reformation church, ‘ecclesiastical institutions...formed part of the rich pattern of foundation, endowment and patronage which linked each constituent part of local society...’. Many pre-Reformation entries in the hammermen’s minutes deal with Saint Eloi’s Day, the production of banners, and the saying of mass. There are often entries of candles being purchased for St. Eloi’s altar in the St. Giles’ Kirk. In the first part of the first volume, no essays were delineated. After the Reformation this changed. More technical detail was added. One example is an entry from 1586 in the second minute book, which gives a locksmith’s essay to become a freeman of the Incorporation: ‘ane kist lock’. After the Reformation, business matters dominate the minutes of the meetings. Religion was always present though, as can be seen by pre-meeting prayers and the craftsmen’s oaths before God; the pre-Reformation sense of a corpus christianum was replaced by a godly body which called itself ‘the house’.

17 EHMB, ED008/1/5
19 Smith, Hammermen, and EHMB, ED008/1/2, p. 44
There are also other documents relating to the hammermen in the Edinburgh City Archives. There are sasines, charters, and instruments. There are treasurer’s accounts and ledgers. There are various kinds of correspondences, memorials, vouchers, and ‘miscellaneous volumes’ from 1566 - 1865. Unfortunately, not all of the documents survived up to the modern day. The 1749 minute book makes a reference to a separate book for listing the names of the journeymen. Its whereabouts are not known.

Other than the record of the Incorporation of Hammermen, the most important primary source for this study was the surviving material culture. The three best sources for this were the National Museums of Scotland’s collection of locks and keys, Joseph Moxon’s 1678, *Mechanick Excercises*, and Ivor Noël Hume’s indispensable book, *A Guide to Artifacts of Colonial America*. The appendix to this thesis has more than 200 pages of notes taken on a sample of the National Museums’ collection. Many of these items would have been made by Edinburgh’s locksmiths. This sample formed the basis for Chapter 6.

Moxon’s book was published in 1678 – the same year as his election to be a fellow of the Royal Society of London for Improving Natural Knowledge. His book set out to record the mechanic arts. In the process he left one of the best accounts of seventeenth-century locksmithing techniques in English.

Hume, a twentieth-century archaeologist, wrote what is arguably still the best resource for British/North American material culture. Of particular interest was his in-depth section on locks and keys based on his personal experience with excavations of colonial sites. There is an emphasis on stock locks and padlocks – two of the more prevalent objects in the NMS sample.

Where possible, correlations were drawn with European locksmiths, based on a wide variety of primary and secondary sources, including museum displays and open sources, and letters from eighteenth-century Edinburgh’s journeymen. The journeyman letters provide a wealth of information about the journeymen’s lives and work, as well as their wages, working hours, and other aspects of their daily lives.

References:

20 EHSAS, ED008/2
21 ECA, ED008/3
22 Ibid., ED008/5
23 Ibid., ED008/4
24 EHMB, ED008/1/8, 6 May 1749
collections in Germany, Sweden, Prague, England, Norway, and several other countries. They are cited in the text and bibliography.
Chapter 1

By Hammer in Hand:
The Edinburgh Incorporation of Hammermen

The locksmith craft was not an independent entity in the burgh structure, but instead a branch of a hierarchical group of metal workers known as the Incorporation of Hammermen, which was itself part of a greater urban framework. To appreciate where the Edinburgh locksmiths fit into early modern society, we must first look at the structures that governed the social and business aspects of burgh life. After looking at the origins of the incorporated trades and in particular the Incorporation of Hammermen, it will be beneficial to review the burgh hierarchy to which the hammermen subscribed. With this general background, it will be easier to understand the hammermen's and in turn, the locksmiths' roles in the early modern capital of Scotland. How influential were the hammermen? What patterns of growth and decline are visible in the surviving records for the hammermen as a whole?
Rise of the Incorporated Trades

The incorporated trades have their origins in the older Edinburgh guild system. The word ‘guild’ is an Anglo-Saxon word which means payment or contribution to a common fund. This early guild was a fraternal group of individuals who were given a monopoly in their town for the buying of raw materials and regulation of trade, an early form of a modern-day trade union. It was set up to protect the guild brethren from receiving too little money for goods and services, while at the same time protecting the consumers against fraudulent dealers.¹ They minimized external competition by controlling who had the right to sell or produce goods in the town and prevented internal competition amongst guild members.² It is generally accepted that the ‘Statuta Guilde’ of Berwick, which dates from 1249 to 1295, acted as the model for the guilds of the other Scottish burghs,³ but the guild seems to have been in the burghs before this. Marwick points out that their existence in Edinburgh is mentioned in an enactment of the ‘Laws of the Four Burghs’, basically stating that dyers, fleshers, shoemakers and fishers should not be in the merchant guild unless they abstained from the practice of their trade with their own hands and conducted it exclusively by servants. As the ‘Laws of the Four Burghs’ predate the ‘Statuta Guilde’, it would appear that Berwick’s guild statutes served as a guide for revamping an older guild structure.⁴ Guilds were known in England as early as 688 A.D.⁵ It is hard to be sure when guilds first appeared in Scotland, but many burghs had a merchant guild by the fifteenth century.

It would appear that there was also some organization of craftsmen. In 1469 James III (1460 - 1488) passed a statute to regulate the election of burgh officers, empowering each craft to ‘choose a person of the same craft, that shall have voice in the

⁴ Marwick, *Guilds and Crafts*, p. 25 - 6
⁵ Ibid., p. 25
said election of the officers for that time, in likewise year by year.\textsuperscript{6} Each individual craft was a separate group, with limited voice in burgh affairs.

It was not until the fourteenth century that Edinburgh achieved the importance we now associate with it. Before Edinburgh’s ascendency, Berwick was Scotland’s most important town due to its lucrative cloth and wool industries.\textsuperscript{7} When Berwick became a permanent English possession, trade shifted north to Edinburgh, which became the economic and political centre of Scotland.\textsuperscript{8}

As Edinburgh grew and prospered, the merchant guild became more powerful, which caused friction with the craftsmen. Wages were fixed and craftsmen’s work was gone over with meticulous scrutiny. The craftsmen were expected to share in burgh duties, but were deprived of certain guild privileges. As mentioned above in the ‘Laws of the Four Burghs’, guild brethren were not allowed to dirty their hands by working; they could only be merchants who employed.\textsuperscript{9} This barred the majority of craftsmen from joining the guild. Some merchants abused their guild privileges by bringing in cheaply produced wares from craftsmen outside the burgh, which hurt Edinburgh craftsmen’s business. They started to feel resentment towards the guild. While there is some contention over the extent to which the burghs polarised into merchants vs. craftsmen, by the fifteenth century there was strong enough feeling that the craftsmen started banding together to protect their business interests. The Incorporation of Hammermen’s 1483 seal of cause started with recognition of wrongs done to the hammermen:

In the first their complaint bore and specified that they were right havely hurt and put to great poverty through the down coming of the black money, walking [and] warding and in the payment of yields and extents which they were compelled to do by use and to be compelled thereto by our Lords authority mandiments and charges and in likewise that they were havely hurt be the daily market made through the high street in crames and on the backside the town in bachling of hammermen’s work pertaining to them of their craft, in great

\textsuperscript{6} Marwick, \textit{Guilds and Crafts}, p. 45
\textsuperscript{7} Lynch, M., \textit{Scotland New}, 2000, p. 62
\textsuperscript{8} Swanson, H., \textit{Medieval British Towns}, 1999, p. 21
\textsuperscript{9} To what extent this was enforced, is unknown.
dishonour to the burgh and in brakeing of the auld good rule and statutes of their craft and upon other scathes that they sustained in default of reformation.\textsuperscript{10}

It was recognised that the merchants had maligned the craftsmen in Edinburgh. Reference was made to the crames, which were stalls where goods were sold. Merchants in these crames were selling types of wares that the craftsmen were trying to make their living from.

The above section of the seal of cause mentioned ‘the down coming of black money,’ as an impetus for their poverty. Black money referred to copper coinage which was introduced in the 1460s.\textsuperscript{11} Copper coins were a revolutionary step at the time and severely unpopular with the Scots. Due to public outcry, in 1482 the currency was, ‘cried down’, meaning it was either demonetised or devalued to the value of a farthing. This ‘down coming of the black money’ probably would not have hurt the affluent of Edinburgh, but it definitely touched the metalworkers.\textsuperscript{12}

The craftsmen formed themselves into craft guilds, by incorporating all like crafts into one ‘incorporated trade’. In the case of the Edinburgh Incorporation of Hammermen, the blacksmiths, goldsmiths, lorimers, saddlers, cutlers, buckler makers and armourers banded together.\textsuperscript{13} These trades all dealt with an aspect of metalware production. The coopers,wrights and masons, who all dealt with woodwork or stone, formed themselves into the Incorporation of Mary’s Chapel.\textsuperscript{14} Other burghs also formed such incorporated trades. This process, which happened in cities across Europe in the later medieval period, has been labelled ‘corporatism’ by modern historians.\textsuperscript{15}

Corporatism was a new approach to the theory and organization of work. James Farr’s description of corporatism, is that it,

laid out organizing principles which shaped social, political, as well as economic, organization, embracing the principles of paternalism, hierarchy, and discipline in the social and political realm, and the economic principle of containing

\textsuperscript{10} Smith, J., \textit{Hammermen}, 1906, p. 181
\textsuperscript{11} Holmes, N., \textit{Scottish Coins A History of Small Change in Scotland}, 1998, p. 22
\textsuperscript{12} Ib id., p. 22 – 3, 27
\textsuperscript{13} Marwick, \textit{Guilds And Crafts}, p. 34
\textsuperscript{14} Colston, J., \textit{Inc. Trades}, 1891, p. 162 – 3
\textsuperscript{15} Farr, J. R., \textit{Artisans in Europe, 1300 – 1914}, 2000, p. 20
competition to preserve the livelihood of artisans and channel quality goods to the consuming public at a fair price.\textsuperscript{16}

Whether in the form of corps, handwerken, companies, or incorporations, by the beginning of the early modern period craft guilds had gone through subtle but significant changes. They were more politicized and more hierarchical than the previous guilds.\textsuperscript{17}

Incorporation, which was Scotland’s label for the corporate structure, served both the craftsmen and the burgh officials. Craftsmen were given a degree of autonomy to regulate prices and quality of their products. They were given the privilege of electing their deacon, or kirkmaster, who was the head of the craft for that year. By 1551 they had two seats on the town council and, with the 1583 decreet arbitral, six seats and theoretical equality to the merchants.\textsuperscript{18} As Lynch points out, the town council in return got a deacon and political system to use as a means of controlling the craftsmen and ensuring burgh peace.\textsuperscript{19} Stereotypically being young and restless, journeymen and apprentices were often a cause for concern in early modern urban society.\textsuperscript{20} With the incorporations in place, the council could depend on the craft deacons to make them behave through economic pressure. If they misbehaved, they could be fined or barred from work. The burgh also got quality control standards for the wares produced by the crafts.

The crafts were also allowed to hold meetings. The focal point of the Incorporation of Hammermen was its meeting house in the Cowgate, the Magdalen Chapel (see Figure 1.2 in the appendix). Before this, the incorporation met at either St. Leonards or Blackfriars.\textsuperscript{21} Sometime around 1553, when the patron Janet Rynd passed away and 1563, as stated on a plaque in the building, the Magdalen Chapel was bequeathed to the Incorporation of Hammermen and became their centre of administration.\textsuperscript{22} Groups of people congregating could be seen as dangerous, but the

\textsuperscript{16} Farr, Artisans in Europe, 1300 – 1914, p. 20 - 1
\textsuperscript{17} Ibid., p. 24 - 5
\textsuperscript{18} Lynch, M., Edin. & Ref., 1981, p. 16 - 7
\textsuperscript{19} Lynch, Edin. & Ref., p. 55
\textsuperscript{20} Friedrichs, EM City, p. 233 - 4
\textsuperscript{21} Smith, Hammermen, p. 47 - 48
\textsuperscript{22} Magdalen Chapel, 41 Cowgate, Edinburgh
incorporations had meeting houses where they held meetings under the supervision of the deacon and masters.

Other benefits came with incorporation, such as the extensive charity network. Before the Reformation, one aspect of this charity was the care of altars set up in St. Giles’ Kirk, along with chaplains, for prayers to patron saints. St. Eloi was the patron saint of hammermen. Once a week, their chaplain would collect a penny from each craftsman for the upkeep of the altar. Around 1500, this was changed to a quarterly contribution, with the Sunday collection becoming a free-will donation. This money was a form of charity, as it provided daily access for the craftsmen and their kin to an altar for the worship of God through St. Eloi. They could pray for the souls of loved ones and in this way attain comfort in times of grief.

Another aspect of the incorporations’ charity was the aid given to craftsmen’s families, widows and orphans. In the seventeenth and eighteenth centuries, the incorporations would give quarterly pensions and extended charities to decrepit craftsmen, or their widows and orphans. At times, the crafts would reaffirm their charity publicly, as in March 1580 when all the crafts of Edinburgh promised to ‘take and sufficiently sustain and uphold from begging their own poor, sic as are failed craftsmen, with their wives, bairns and servants.’ Sometimes this was in payments to widows for living expenses and sometimes it was in the usage of a tenement. Sometimes it was aid in funeral costs. Sometimes there was no specific destination for the charity. In 1740,

the house likewise further appoint[ed] and ordain[ed] the deacon and treasurer to buy two more deals of coals and two more pecks of meal to be distributed to such persons and by such proportions as the deacon in his discretion shall think proper.

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23 Smith, *Hammermen*, p. xxxviii
24 While the alters to saints in Edinburgh were removed after the Reformation, similar customs continued in Catholic countries. For example, Dijon’s locksmiths held masses in 1651 to pray for not only their whole craft, but also the salvation of the souls of the dead locksmiths and their families. Farr, *Artisans in Europe, 1300 – 1914*, p. 230
25 EHMB
27 EHMB, ED008/1/7, p. 19
Obligation to the brethren of the craft might have been reminiscent of the kinship system which survived so late in the Highlands of Scotland.

In order for the craftsmen to gain incorporated status, they sought support and recognition from the burgh officials. This support was granted in the form of seals of cause. The seal of cause was a charter given to the body of craftsmen stating that they had certain rights dealing with the regulation of their specific trade. The first trade in Edinburgh to receive a seal of cause was the Incorporation of Hatmakers in 1473.\(^{28}\) They were followed by the skinners in 1474, Mary’s Chapel and the websters, or weavers, in 1475 and the cordwainers in 1479.\(^{29}\)

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<thead>
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<th>Incorporation</th>
<th>Date of Seal of Cause</th>
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<tr>
<td>Hatmakers</td>
<td>1473</td>
</tr>
<tr>
<td>Skinners</td>
<td>1474</td>
</tr>
<tr>
<td>Mary’s Chapel</td>
<td>1475</td>
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<tr>
<td>Websters (weavers)</td>
<td>1475</td>
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<tr>
<td>Cordwainers</td>
<td>1479</td>
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<tr>
<td>Hammermen</td>
<td>1483</td>
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<tr>
<td>Fleshers</td>
<td>1490</td>
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<tr>
<td>Waulkers</td>
<td>1500</td>
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<td>Tailors</td>
<td>1500</td>
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<td>Chirurgeons/Barbers</td>
<td>1505</td>
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<td>Candlemakers</td>
<td>1517</td>
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<tr>
<td>Bonnetmakers</td>
<td>1520</td>
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<tr>
<td>Baxters (bakers)</td>
<td>1522 – 3</td>
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<tr>
<td>Goldsmiths</td>
<td>1581</td>
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Dates from Marwick, Colston and Smith.

Over the early modern period, other crafts would be incorporated, as can be seen in the table above. These incorporations were not static entities throughout the early modern period. Crafts broke away from their incorporations, as was the case of the goldsmiths leaving the Incorporation of Hammermen and receiving their own seal of cause in 1581.\(^{30}\) The bonnetmakers in 1520 departed from the waulkers. Other trades

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\(^{28}\) Smith, *Hammermen*, p. xii

\(^{29}\) Colston, *Inc. Trades*, p. 79, 65, 119, 93 respectively

\(^{30}\) Marwick, *Guilds And Crafts*, p. 34
joined, such as the Incorporation of Hatters, which incorporated with the waulkers in 1672. From 1473 to 1523, more than twenty-one different craft occupations existed in the incorporated trades of Edinburgh. As the urban economy expanded and diversified, new occupations were absorbed into the older structures, in respect to work-types. Watchmakers, pewterers, gunsmiths and white iron smiths joined the hammermen. Poulterers and fishmongers were under the Incorporation of Fleshers. Furriers and glovers joined the skinners. To the wrights and masons were added the coopers, bowers, glaziers, plumbers, upholsterers, painters, slaters and sievewrights. Incorporations were dynamic entities, formed of common trades banding together out of common interest to protect trade privileges, though in smaller burghs the links between crafts in a particular incorporation were not always as straight forward as those in Edinburgh. Aberdeen’s Incorporation of Hammermen included skinners and glovers. They were probably too few to support their own incorporation.

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<thead>
<tr>
<th>Incorporation</th>
<th>Crafts Incorporated at Date of Seal of Cause</th>
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<tbody>
<tr>
<td>Baxters (bakers)</td>
<td>Baxters</td>
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<tr>
<td>Hatmakers</td>
<td>Hatmakers</td>
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<tr>
<td>Skinners</td>
<td>Skinners</td>
</tr>
<tr>
<td>Mary’s Chapel</td>
<td>Wrights, Masons</td>
</tr>
<tr>
<td>Websters (weavers)</td>
<td>Websters</td>
</tr>
<tr>
<td>Cordwainers</td>
<td>Cordwainers</td>
</tr>
<tr>
<td>Hammermen</td>
<td>Blacksmiths, Goldsmiths, Lorimers, Saddlers, Cutlers, Buckler Makers, Armourers</td>
</tr>
<tr>
<td>Fleshers</td>
<td>Fleshers</td>
</tr>
<tr>
<td>Waulkers</td>
<td>Waulkers</td>
</tr>
<tr>
<td>Tailors</td>
<td>Tailors</td>
</tr>
<tr>
<td>Chirurgeons/Barbers</td>
<td>Chirurgeons, Barbers</td>
</tr>
<tr>
<td>Candlemakers</td>
<td>Candlemakers</td>
</tr>
<tr>
<td>Bonnetmakers</td>
<td>Bonnetmakers</td>
</tr>
<tr>
<td>Goldsmiths</td>
<td>Goldsmiths</td>
</tr>
</tbody>
</table>

From Marwick, Colston and Smith.

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31 Colston, *Inc. Trades*, p. xiii
The Incorporation of Hammermen

The Incorporation of Hammermen was the sixth group of crafts in Edinburgh to receive a seal of cause. On 2 May 1483 the bailies of Edinburgh, with the consent and advice of the council, granted a seal of cause to the ‘headsmen and masters of the Hammermen craft, both blacksmiths, goldsmiths, lorimers, saddlers, cutlers, buckler makers, armourers and all others, within the said burgh of Edinburgh’. This passage from the seal of cause delineates the parties involved in granting incorporated status; the provost, bailies and council of Edinburgh. The seal was ratified by the crown in 1496, but the first seal of cause of 1483 was by the authority of the town council.

The other party involved was that of the crafts which were included in the Incorporation of Hammermen. It applied to ‘headsmen and masters’, showing the

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<table>
<thead>
<tr>
<th>Incorporation</th>
<th>Crafts Which Joined Incorporations Later</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baxters (bakers)</td>
<td></td>
</tr>
<tr>
<td>Hatmakers</td>
<td></td>
</tr>
<tr>
<td>Skinners</td>
<td>Furriers, Glovers</td>
</tr>
<tr>
<td>Mary's Chapel</td>
<td></td>
</tr>
<tr>
<td>Websters (weavers)</td>
<td></td>
</tr>
<tr>
<td>Cordwainers</td>
<td></td>
</tr>
<tr>
<td>Hammermen</td>
<td>Locksmiths, Gunsmiths, Knockmakers, Pewterers, White Iron men, Founders, etc.</td>
</tr>
<tr>
<td>Fleshers</td>
<td>Fishmongers, Poulterers</td>
</tr>
<tr>
<td>Waulkers</td>
<td>Sheermens, Hatmakers, Bonnetmakers (separated in 1530)</td>
</tr>
<tr>
<td>Tailors</td>
<td></td>
</tr>
<tr>
<td>Chirurgeons/Barbers</td>
<td></td>
</tr>
<tr>
<td>Candlemakers</td>
<td></td>
</tr>
<tr>
<td>Bonnetmakers</td>
<td></td>
</tr>
<tr>
<td>Goldsmiths</td>
<td>Jewellers</td>
</tr>
</tbody>
</table>

From Marwick, Colston and Smith.

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hierarchy among the craftsman, as apprentices, servants and journeymen were not included. The crafts that were incorporated are listed in the following table:

<table>
<thead>
<tr>
<th>Trades (1483)</th>
<th>Medium</th>
<th>Examples Of Wares</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blacksmith</td>
<td>Iron</td>
<td>Nails, horseshoes, architectural hardware, agricultural implements</td>
</tr>
<tr>
<td>Goldsmith</td>
<td>Silver &amp; Gold</td>
<td>Jewellery, communion plate, fine table wares</td>
</tr>
<tr>
<td>Lorimer</td>
<td>Iron</td>
<td>Horse accoutrements, buckles, spurs, sword guards</td>
</tr>
<tr>
<td>Saddler</td>
<td>Leather</td>
<td>Saddles</td>
</tr>
<tr>
<td>Cutler</td>
<td>Iron</td>
<td>Knives, razors</td>
</tr>
<tr>
<td>Buckler maker</td>
<td>Leather</td>
<td>Bucklers (shields), targets (shields), sheaths</td>
</tr>
<tr>
<td>Armourer</td>
<td>Iron</td>
<td>Armour, swords</td>
</tr>
</tbody>
</table>

Hammermen trades listed in the 1483 seal of cause

The seal of cause also stated that there were ‘others’, but the trades listed in the above table would have been the mainstay of the Incorporation of Hammermen in the late fifteenth century. If the others were not worth mentioning, it is safe to assume that they were not of great size at the time. By the second seal of cause in 1496, it was stated that pewterers were one of the trades. The pewterers must have been included with the ‘others’ in the 1483 seal of cause, indicating the small size of this trade in the late fifteenth century. The locksmiths also seem to have been overlooked in 1483.

The seal of cause detailed several crucial items which indicate the importance of a seal of cause and what it achieved in relation to craftsmen’s rights. The first item of the 1483 seal of cause was that no hammerman was allowed to ‘...exercise or use any more crafts but alane aly and to live thereupon, so that his other brother and craftsmen of the said crafts [were] not hurt through his large exertion and exceeding bounds.’ The seal of cause was not a licence for craftsmen to do as they pleased; it was a set of rules. The hammermen were given much freedom in their particular trade, but at the same time, they were barred from other mediums. Sometimes special agreements were made in which permission was granted by one trade for a craftsman of a different trade to cross over types of work, but this was technically forbidden. A cutler

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34 Smith, *Hammermen*, p. 184
35 Ibid., p. 182
could make any sort of knife he wished, but was barred from making jewellery. Blacksmiths were not allowed to work in gold or silver and armourers were not to make cutlery. This is not to say that crossing of work never happened, but actions were taken by the incorporations to preserve the privileges of working in certain mediums.

One important item set out in the Incorporation of Hammermen’s seal of cause was that,

> there shall [be] no open market used of any of the said crafts, or work pertaining to them of their craft, upon the high street, nor in crames upon boards, nor bachlit nor shown in hands, for to sell in no part fore nor backside with in this burgh, but alanerly on the market day.36

This made for regulated competition and limited the selling of metal wares to the market, in order to protect the Incorporation’s privilege. If individuals wanted to sell metal work, they had to either pay stallenger’s fees for the market, or purchase freedom of the Incorporation.

The next item was,

> ...that upon ilk Saturday afternoon two or three of the worthiest masters and most of knowledge of the said crafts, which shall have power with ane officer with them to pass, search and see all men’s work of the said crafts, if it be sufficient in stuff and workmanship good worth and able to serve the king’s lieges with and where it [is] found faulty to forbid the same to be sold under the pane of escheat as oft as it happens to be found faulty.37

This item set up a quality control for the craftsmen to ensure that the public received quality metalwares, showing again how the incorporations were used by the council as a social control.38

The seal of cause next stated,

> ...that all unfree hammermen both booth-holders and others from this time forth come to the masters of the said crafts or he be made master, to be examined if he be worthy thereto and than he to be made freeman if he be worthy thereto and then he to be made freeman if he [is] found sufficient and do his duty to the town and craft and to the altar as others dues and set up booth and if he [is] sufficient in his craft...he shall brook the privilege of a stallenger for ane year and no longer and all others that are unfree, not examined nor worthy to hold booths,

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36 Smith, Hammermen, p. 182
37 Ibid., p. 182 - 3
38 Lynch, Edin. & Ref., p. 55
shall either be apprentice to a master for certain years, or else, if he be aged, to be a fit man with a master and do his duty there for as said is.39

This clause limited the craftsmen working in the burgh to freemen, servants, journeymen, or apprentices. If a metalworker was in Edinburgh, he had to join the Incorporation. To do this, they had to produce a worthy essay.40 Otherwise, they had to work for a master as an apprentice, a journeyman, or a servant doing unskilled labour. Stallengers were individuals who were not guild brethren or members of an incorporation and did not have freedom to work in the town, but instead bought the privilege of selling wares in stalls during fairs.41 They were limited to one year’s selling privileges in the burgh. This section of the seal of cause brought all metalwork made or sold in the burgh, under the jurisdiction of the Incorporation of Hammermen, ensuring protection of privilege and quality metalwares.

Another item of the 1483 seal of cause was that ‘...no common cramers in the town use to sell or tap any hammerman’s work, nor regrate it again to other men’s use...’42 This clause was to keep the non-craftsmen cramers from selling metal work, whether it was from Edinburgh hammermen, or hammermen from other towns or countries. It protected the hammermen from encroachment by the merchants and ensured that people bought metal work from their local craftsmen.

The rest of the 1483 seal of cause dealt with meeting times, fines and other details of administration. Another seal of cause was granted in 1496. At different times other legislation was added or taken away to refine the system of privilege and government for the craftsmen. The seals of cause for the other crafts were similar in many respects, but not identical. Most of them included compulsory admission to freedom before a craftsman could work in the town. Most had some clause about quality control. Aside from the provision of searchers in the markets, there were also standards for raw materials, such as the quality of flour for the baxters43 or the freshness

39 Smith, *Hammermen*, p. 183
40 A ‘masterpiece’.
41 *CSD*, 1992, p. 661
42 Smith, *Hammermen*, p. 183
43 Colston, *Inc. Trades*, p. 45
of the meat for the fleshers. The seal of cause for the wrights and masons stated that two masons and two wrights were sworn in and sent to look over all works being erected. Apprentices were often mentioned. The goldsmiths were not allowed to admit apprentices with less than seven years apprenticeship. The cordiners' seal of cause demands five years, with three years service with a freeman for 'meat and fee' after. Most seals of cause explicitly stated that it was illegal to harbour or employ another man's apprentice.

Seals of cause usually included clauses particular to the craft which was incorporating. The Surgeons' seal of cause demanded a decent knowledge of anatomy. The wobsters were not to receive nor work another man's yarn. There were many similarities in the seals of cause, but also many unique items.

**Governing the Craftsmen**

Incorporation was the Scottish solution to the problem of governing craftsmen. While many towns and cities in Europe used a similar system, not all urban areas had craft guilds or corporations. Nürnberg craftsmen, for example, were not allowed to form craft guilds. In the 1300s there were craft riots across the German areas of the Holy Roman Empire. Nürnberg's council smarted from this and therefore denied the town's crafts any degree of autonomy. Every aspect of the craftsmen's trades was regulated directly by the local government; the craftsmen had no say whatsoever. The incorporations which Edinburgh started in the 1400s did not represent a craftsman sub-culture taking power and autonomy from a weak town council; incorporation was very much the convenient tool to give order to and control a mass of people. The council gave the

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44 Colston, *Inc. Trades*, p. 56
45 Ibid., p. 67
46 Ibid., p. 29
47 Ibid., p. 100
48 Ibid., p. 2
49 Ibid., p. 120
51 This did not last forever. In 1565 the clockmakers formed a guild. Bruton, E., *The History of Clocks & Watches*, 2000, p. 61
craftsmen privilege in return for order. While there was the occasional craft riot in Edinburgh, the governmental structure was on the whole a functional system. It lasted for nearly 400 years.

As burgh status was itself a privilege granted by the crown, burgh politics were often tampered with by the king or queen, or one of the various factions of nobles. This was most readily seen with the office of provost. The provost was the head of the burgh as well as chairman and chief magistrate of the town council. Although he was supposed to be elected, he was often imposed on the council by the crown or some faction of nobles, as was the case for all twenty-five years from 1553 to 1578. Mary of Guise even imposed bailies on the council in 1559. Though it had a more immediate effect on the town council, crown intervention was also felt by the incorporated trades.

The main power over the incorporated trades was the town council, which concerned itself with many of the details of everyday lives of craftsmen. The council regulated admissions to the guarded freedoms of burgess-ship and guild brethrenship. With too many practitioners of any occupation, business would be poor. The council watched this carefully. With the assistance of an alderman of the crafts, they fixed the prices of materials, the cost of labour and the prices of made work. The seals of cause detail how the council expected the crafts to run their businesses, so that the burgh run would run smoothly and the craftsmen would lead quiet, productive lives.

The town council consisted of seven office bearers, ten non-craft councillors and two craft councillors. The first of the office bearers was the provost, who from 1482 also exercised the office of sheriff. When absent from a council meeting, the provost’s job was taken over by ‘presidents’.

The next of the seven office bearers were the four bailies. Each quarter of Edinburgh had a bailie. The bailies were responsible for many things, such as calling

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52 CSD, p. 524
53 Lynch, Edin. & Ref., p. 15
54 Ibid., p. 6
55 Marwick, Guilds and Crafts, p. 144, 187–9, 191–2, 197
56 APS, General Index, 1875, p. 382
58 Ibid., p. 9
59 Marwick, Guilds and Crafts, p. 31
meetings of the Guild, having burgh suits tried before them, and being present at the exchange of sasines. Sasines were documents attesting to property ownership.

After the bailies came the dean of guild. Through this officer, the council controlled the entrance of burgess-ship and guild brethrenship, and accepted entrance fees. He also presided over the Neighbourhood Court, which controlled building regulations, was responsible for the upkeep of St. Giles, and after the Reformation, took care of the revenues from the old ecclesiastical foundations. It was the dean of guild who paid John Knox's salary from the council.

The seventh office bearer was the treasurer. The treasurer's role seems to have been purely monetary. In 1555 it was declared that the treasurer had no right to appoint a person to burgess-ship. This was the business of other magistrates.

Along with the seven office bearers were twelve councillors. The first ten of these were non-craftsmen. As Lynch points out in Edinburgh and the Reformation, merchants in the 1500s controlled burgh politics. In 1565 a quarter of the 357 merchants listed in a tax roll sat on the council at some point. Merchant power was a common theme throughout Edinburgh's early modern political history.

Craftsmen did vie for political representation. In 1469, before incorporation, each craft had been allowed to 'choose a person of the same craft, that shall have voice in the said election of the officers for that time, in likewise year by year.' In 1508 six or eight seats in the town council had been demanded by the crafts, but they only got two. While two seats on the council was better than none, it was still far less than the ten of the non-craft councillors. With fourteen incorporated trades, craft representation

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60 Marwick, Guilds and Crafts, p. 33
61 Ibid., p. 12
62 Ibid., p. 16
63 CSD, p. 581
64 Lynch, Edin. & Ref., p. 10
65 Marwick, Guilds and Crafts, p. 191
66 Lynch, Edin. & Ref., p. 14
67 Ibid., p. 22
68 Ibid., p. 32
69 Marwick, Guilds and Crafts, p. 83
70 Lynch, Edin. & Ref., p. 15
71 Marwick, Guilds And Crafts, p. 45
72 Ibid., p. 61 This changed to six in 1583. Lynch, Edin. & Ref., p. 16 - 7
was still very limited. All fourteen deacons were consulted by council only when certain matters regarding the common good became an issue. For the most part, representation was restricted to the four or five most prestigious of the fourteen crafts, such as the skinners, hammermen and tailors. 66 per cent of the tax levied on the fourteen incorporated trades was paid by top five incorporations, the skinners and furriers, the baxters, the fleshers, the tailors and the hammermen.\textsuperscript{73} Between 1551 and 1570 there were eleven hammermen councillors; more than any other craft.\textsuperscript{74} The poorest trades, the weavers, waulkers and bonnetmakers, paid less than 3 per cent of craft taxation and had to rely on the wealthier incorporated trades to represent them in the council. Many of these trades, at least in theory, were in the process of migrating out of the city to avoid taxation anyway.\textsuperscript{75}

Prior to 1469 the council was elected by the burgesses. Parliament then transferred control of elections to the council itself.\textsuperscript{76} Elections, which were held at Michaelmas, came to be influenced by only two craftsmen’s votes. As Lynch points out in \textit{Edinburgh and the Reformation}, town growth brought about a more oligarchic government, but unfortunately for the craftsmen, they played a small part in that oligarchy.\textsuperscript{77} Town councils did intend to control the workings of the towns, but it has been argued that this was not necessarily due to a lust for power, or for greed, so much as an idealistic view that it was the council’s Christian duty to lead their town in all aspects of life.\textsuperscript{78} As such, the Edinburgh council did set out to regulate the town’s craftsmen. They wanted to keep the younger craftsmen out of trouble and the elderly craftsmen and widows in shelter and food, while at the same time providing the burgesses with access to quality products at affordable prices. They wanted the town to prosper.

\textsuperscript{73} Lynch, Utrecht Conference, p. 4
\textsuperscript{74} Lynch, \textit{Edin. & Ref.}, p. 24
\textsuperscript{75} Lynch, Utrecht Conference, p. 4 & 5
\textsuperscript{77} Lynch, \textit{Edin. & Ref.}, p. 5
\textsuperscript{78} Strauss, \textit{Nuremberg in the 16th Century}, p. 107
The main vehicle of the council’s control over the incorporations was the office of deacon.\(^79\) Deacons were not an invention that sprang up with incorporation; they were utilized by the council for some time before that. In 1424 an act of parliament was passed stating ‘In all towns each craft, with the town-officers, to choose a deacon to assay and govern the works of that craft.’\(^80\) After the seal of cause of 1483, there was one deacon for all the hammermen; not one for every craft therein.

The deacon’s job was to preside over the craftsmen, making sure that they produced quality merchandise and representing them before the town. In the early days, he was to have no connection with the craft or its craftsmen except once every fifteen days to check up on the craftsmen’s work.\(^81\) Later in the early modern period, the role of deacons became more intensive, dealing with the many aspects of running the incorporations and interceding with other groups on their behalves. In 1738, the Incorporation of Hammermen asked,

the deacon to apply to the magistrates or Council in order to get an effectual stop put to the Hawkers and other persons going through the city and buying and selling old iron, brass and other things belonging to the hammermen and likewise to get a stop put to unfreemen exposing to sale hammermen’s work of the market day...\(^82\)

Deacons were a public face to the incorporations, as well as their elected leaders. When the deacon was sick or away from the town, a deacon from previous years filled in for him.\(^83\) When one died, a new one was elected for the remainder of the deceased deacon’s year-long term. The fourteen deacons were ‘presidents’ of the incorporations.\(^84\)

Although, as Lynch points out, the deacons were not always as easy to control as craft councillors,\(^85\) they were in fact still tools of the council. In 1555, the office of deacon itself was suspended, due to ‘...their election having conduced to the making of

\(^{79}\) Lynch, Edin. & Ref., p. 62
\(^{80}\) APS, General Index, p. 382
\(^{81}\) Ibid., p. 382
\(^{82}\) EHMB, ED008/1/6, 22 April 1738
\(^{83}\) Ibid., ED008/1/8, 23 February 1749
\(^{84}\) CSD, p. 136
\(^{85}\) Lynch, Edin. & Ref., p. 59
The council replaced the deacons with 'visitors' from each craft, who checked the quality of the work of the craftsmen. The visitors also voted on officers, but had no power to convene the craft. The suspension did not last long and the deacons were reinstated by 1556. When a protestant council was trying to push through the Reformation and catholic deacons were not cooperating, they were simply removed and replaced by deacons of the new faith. In 1568, Deacon Wilson declared he was a man of no faith. This seems to modern sensibilities to be a politic answer to the heated issues of the day, but the council thought that Atheism was even more of a threat to the town than the old faith. He too was removed from office, though he later was re-elected as deacon. By 1584, parliament set out that a deacon had to have been a master of his craft for at least two years and that he could not hold the office for more than two years. These limitations, when coupled with the earlier suspension of the office, further illustrate the measures taken by the council for control.

It was a working relationship though; the deacons had a voice in the election of the provost and bailies, the management of the town property and patronage and the granting of extents and contributions. The deacons also had the position of deacon convener to give them representation. When situations arose in the burgh which compelled the council to seek the opinion of the fourteen incorporated trades, the deacon convener would convene them and preside over the meeting. It was one more position given to represent the voice of the craftsmen.

The incorporated trades had a sophisticated system of other offices to aid the deacons in the running of affairs. The deacon and office bearers were referred to collectively, as the 'house'. Each September, immediately after the election of the deacon, the incorporation elected the boxmaster, who controlled the box where money

86 APS, General Index, p. 382
87 EHMB, and APS, General Index, p. 382
88 Lynch, Edin. & Ref., p. 57
89 Ibid., p. 58
90 APS, General Index, p. 382
91 CSD, p. 136
92 EHMB
and important papers were kept. There were three keys to open the box, which were held by other masters in the incorporation. Prior to 1600, the deacon was the boxmaster; after a separate master was chosen. By the 1700s, the position was simply entitled ‘treasurer’.93

There were several duties for the boxmaster. One was the taking care of the monetary side of incorporation affairs. When craftsmen needed charity, it was paid out by the boxmaster. The minute books have many entries illustrating the duties of the boxmaster; ‘The house ordains the boxmaster to give to Adam Grinlaw, locksmith, six pounds Scots to help him in his present straights,’94 and ‘the house ordains the treasurer to lend to Edward Ramsay, locksmith, one pound Sterling and take his bill therefore payable against Martinmas next,’95 being just two examples. In the days before the Bank of Scotland, money was kept in coffers or chests and the boxmaster literally had control of the box. The introduction of banks might account for the change of terminology to treasurer in the 1700s.

Other duties of the boxmaster included going along with the craft masters to search the markets,96 and paying the tradesmen that took care of incorporation-owned properties, such as their meeting house, the Magdalen Chapel: ‘The house appoints their treasurer to mend and gilt the weather cock and globe that was upon the top of the steeple of their Chapel and thrown down by the wind and to replace the same as formerly.’97 The treasurer happened to be a skilled blacksmith, so he did not need to look far when contracting out the job! Other times, the boxmaster was given secretarial type work:

The house likewise ordains that all the members should be warned to the meetings of the house by printed schedules in regard some members complain of their servants neglecting to tell them when they are verbally warned and exceedingly desire the boxmaster to cause print these schedules for that purpose.98

93 EHMB
94 Ibid., ED008/1/5, p. 21
95 Ibid., ED008/1/7, p. 68
96 Ibid., ED008/1/6, 3 August 1734
97 Ibid., ED008/1/6, 3 February 1739
98 Ibid., ED008/1/6, 7 August 1736
The boxmaster was not only the treasurer, but also the ‘vice-president’ to the deacon. It was an important and influential office, which highlights the variety of incorporation business.

Another section of the incorporation government was the panel of craft masters chosen each year to help the deacon in governing the crafts. There were eight main craft groups: blacksmiths, cutlers, saddlers, locksmiths, lorimers, armourers, pewterers and sheersmiths. Each of the eight crafts would present the names of their youngest and oldest master to the new deacon after September elections. For the year they represented their craft in incorporation business. The Magdalen Chapel has a half-circle of seats with the shields of the eight crafts painted on the back-boards. The two masters of each craft would sit at their respective seats during meetings of the house.

In 1652 another craftsman from each craft was included with the masters to act as a searcher in the markets. This was originally the job of the deacons, but the work was allocated out. The searchers would go through the markets checking the quality of the products being sold by the hammermen. The searchers were still in use in 1661. Eventually, they went back to just the two craft masters and by 1733 it was their job to check the sufficiency of the hammermen’s work in the markets. If work was found to be insufficient, it was seized and auctioned at the Magdalen Chapel to other craftsmen. The craftsman who bought the seized work could then fix it and resell it. In 1734 there was discussion in an incorporation meeting as to whether or not masters of one art could judge the sufficiency of the work of a craftsman from a different art.

They did not check only for quality. On 9 August 1740 ‘...work seized from Chalmers in Potterrow for not razing his stall in the market when two of the clock in the afternoon struck...[was] returned to him in respect it was but just over the market, he always paying to the officer one shilling Stirling.’ The rules were enforced to ensure

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99 Sheathmakers prior to 1615, sheersmiths from 1615, although there were no sheersmith masters in the mid-1700s. EHMB
100 Ibid., ED008/1/3, September 1652
101 Ibid., ED008/1/6, 10 November 1733
102 Ibid., ED008/1/6, 3 August 1734
103 Ibid., ED008/1/7, p. 43
trade privileges were guarded. The craft masters were an integral part of the system of social control under the deacons.

Another aid to the deacons in running the incorporations was the use of committees. There were two types of committees; general committees and craft committees. General committees were simply a group of masters gathered together to help the deacon and boxmaster take care of various bits of business and make decisions too delicate for one man to decide. They were appointed 'for the ensuing year nine to be a quorum and to meet at the deacon's call.'

As an example, there was a general committee appointed 'for assisting the deacon and Treasurer in the concerns of the Incorporation,' in September 1749. It consisted of all of the old deacons, all of the old treasurers, excepting William Armstrong who was excused by reason of 'indisposition,' all the eldest masters and Patrick Crichton, Alexander Fairbairn and James Clarkson. The committees would examine the accounts and oversee annual justification of expenditures and money issues. They would oversee the boxmaster's payments to various tradesmen and charities:

The house having heard the report of the general committee anent taking under consideration the present state of their poor in this hard season, they unanimously approve of the conduct of their said committee and return them thanks therefore and ordain the persons underwritten to have the particular quantities of coals and meal after specified.

They gave coal and meal to a list of twenty-nine individuals and then extended 'the same to seven thousand four hundred weight of coals and three bolls fifteen pecks of meal.' The general committees helped to disperse representation through the craftsmen and helped the deacon deal with the work load. They also helped when the deacon or treasurer wanted public witness for the monetary issues of the year's business.

The other type of committee was more specialized. The craft committees were committees organized for a special purpose pertaining to a specific craft. In May 1745,

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104 EHMB, ED008/1/6, 22 September 1733 Though not called a 'committee', there is an earlier reference from 1546 stating that deacons chose four men to take care of incorporation business: 'To quhen all ye deacons chosit iiij men to gang at ye provestis bak our part of ye expensis...' Smith, *Hammermen*, p. 127

105 EHMB, ED008/1/8, 16 September 1749

106 Ibid., ED008/1/7, p. 18
two locksmiths were appointed to a general committee of the black- and locksmith arts to decide if a coachmaker could keep a blacksmith in his shop to work on his coaches only.¹⁰⁷

The deacon represented that the occasion of calling this meeting was to inform the arts that he had received a letter from Thomas Ainslie, smith in Calton of Edinburgh...proposing that he would take it an honour done to receive him as freeman of this incorporation...and if found qualified he would pay to the house twenty-five guineas and the deacon desired the arts their resolution thereon and what answer in return should be made to the said proposals.¹⁰⁸

As this only applied to the blacksmiths and locksmiths, it was a committee made up of their arts present at the Magdalen Chapel to hear the details of the letter.

The committee...reported that they had met...with Thomas Ainslie...and had brought him up to offer five hundred merks Scots in name of upset money and dues for the Trades Maiden Hospital and that he seemed...a proper person to be admitted a freeman locksmith among the incorporation

The locksmith art reported that they had agreed to admit the said Thomas Ainslie to an essay and to appoint him essay masters, with a land lord, in manner and will the usual requisites, required of ordinary entrants
But a letter was produced...importing that unless the blacksmith art would allow (Ainslie) to make his own essay and in his own shop he withdrew his proposals
Which being argued among the locksmiths they refused to alter the piece of work usually appointed for the essay to all entrants, or dispersing with essays being made otherways than in the shop and under the eye and custody of some freeman. Whereupon the said Thomas Ainslie’s proposals were withdrawn.¹⁰⁹

If the deacon had decided the case by himself, the blacksmiths and locksmiths might have protested and caused him more trouble. By forming a committee for their crafts, his life was made simpler and they had a say in the fine details.

Arguably the most important and possibly the most readily overlooked, position in the Incorporation of Hammermen was the clerk. Clerks were the secretaries of the incorporations. They kept the minutes in the minute books.¹¹⁰ They were educated men, capable of reading, writing and arithmetic. They played a crucial role during the

¹⁰⁷ EHMB, ED008/1/7, 14 May 1745
¹⁰⁸ Ibid., ED008/1/7, 30 May 1745
¹⁰⁹ Ibid., ED008/1/7, 15 June 1745
¹¹⁰ Ibid., ED008/1/7 In the earlier days of the incorporation, notaries were paid to keep the minutes. Ibid., ED008/1/1
meetings of the incorporations, taking down the minutes and recording all details of incorporation business. At the beginning of each meeting, the clerk read the prayer, called the roll of members and read off the minutes of the last sedurunt, signing the book appropriately as he went.

Clers recorded all the day-to-day business of the Incorporation of Hammermen. The minute books have entries divided up into quarters, with election results in September and quarter compts all through. Records of charities given, acts passed or simply read before the house, details of property management, settlements of internal craft disputes, legal matters, auction results from insufficient products found in the markets and punishments for various offences were all hand-written in various shades of black ink on the hand-made paper which was bound into the minute books. Without the clerks, the incorporation would not have run smoothly. Without the clerks we would know nothing about the craftsmen of the early modern period.

Election Process

The term of a deacon lasted for one year, with elections taking place annually in September. Around the beginning of incorporation, the deacon was elected directly by the council, but this was a dynamic process. The last alteration to the election process prior to 1750 happened in 1686. On 10 September there was a warrant in the Incorporation of Hammermen’s minutes for booking an act of the fourteen deacons of the incorporations. At Magdalen Chapel,

The whole house being combined anent the making of the list of six persons to be given in to the Council of Edinburgh, out of which their deacon is to be chosen for the year to come: Deacon Midletown presented an act of the fourteen deacons anent the eight ingiving of the said list and the same being publicly read to the Incorporation, was approved of and ordained to be booked and read yearly at the making of the list whereupon this act is made.

111 EHMB, ED008/1/4, 1682
112 Ibid., ED008/1/8, 16 September 1748
113 Smith, Hammermen, p. lxxix
114 EHMB, ED008/1/4, 10 September 1686 Other incorporations had been using the leet system for some time.
It seems that it was not until 14 September 1695, nine years later, that the new election process was finally implemented. At Magdalen Chapel,

The list frae the Council of Edinburgh being presented and it being put to a vote which of the following persons there________ should be deacon for the year to come viz George Dalgleish, Samuel Walker and John Lethem, George Dalgleish by plurality of votes was elected deacon for the year to come (the Electors being quartered conform to the act of parliament) who being present...

The town had moved to a system where the Incorporation would prepare a long leet of six suitable candidates for deacon. After a vote of approval by the freeman masters of the incorporation, the leet would be submitted into the town council, which picked three of the deacon candidates. The next day the Incorporation would meet again to receive the short leet from the council and vote:

The list from the Council of Edinburgh being presented, it’s put to the vote which of the persons therein contained viz James Wilson, David Hodge and George Aitken shall be deacon of this Incorporation for the ensuing year

James Wilson by plurality of votes elected deacon, who being present accepted thereof and gave his oath for faithful administration, to whom his Brethren promised Reverence and obedience...

The deacon elected, they proceeded to elect the other officials:

Each member of the Incorporation proceeded to name three persons to be a list out of which their boxmaster is to be chosen for the ensuing year

It being carried by plurality of votes that Alexander Anderson, William Armstrong and George Aitken should be the three persons out of which the boxmaster is to be chosen for the year to come. It’s put to the vote which of these shall be boxmaster for the year to come

George Aitken by plurality of votes elected boxmaster for the year to come who being present accepted thereof and gave his oath for faithful administration...

115 EHMB, ED008/1/4, 14 September 1695
116 Ibid., ED008/1/6, 14 September 1733
117 Ibid., ED008/1/6, 15 September 1733
118 Ibid., ED008/1/6, 15 September 1733
After the boxmaster was elected, the incorporation then asked the eight crafts to give their youngest and oldest masters to act as the 'masters for the year'.

After 1737, actions were taken to curb mob violence by instituting an act to be read after the elections each September. It was an:

act of the town council of Edinburgh settling and determining the places at which the merchants and craftsmen are to assemble themselves on the appearance of any mob or disorder of the date 3 August 1737 years which is ordained to be read annually after the Election of the deacon was publicly read over.

The council made use of the September elections to remind the craftsmen of their duties to the town.

Edinburgh’s Incorporation of Hammermen was not unique in its election process. Glasgow’s hammermen also elected deacons in either September or early October. The leeting process which was apparently introduced to Edinburgh’s hammermen in 1686, had been in use in the Glasgow incorporation since at least 1618.

Conquering the Suburbs

The craftsmen were under the control of several burgh institutions, but where was that control? What was the burgh jurisdiction? The Edinburgh of the early modern period was far more compact than the sprawling city of today. The burgh boundaries were very important, as living inside them was a pre-requisite for burgess-ship, guildry and freedom of an incorporation. Burghs in early modern Scotland used to have an annual event where the town council and people would walk or ride around the boundaries of the burgh, in order to demarcate and reaffirm what exactly was under their control. In the same way as the council had a specific area of control, so did the Incorporation of Hammermen.

Originally, the extent of Incorporation jurisdiction was basically the burgh wall. Edinburgh had been given permission by James II (1437 – 1460) in 1450 to fortify the

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119 EHMB, ED008/1/5, 1701 election
120 Ibid., ED008/1/7, p. 51
121 Lumsden and Aitken, History of the Hammermen of Glasgow, p. 37
town. After the defeat of Flodden in 1513, the burgh wanted a modern, defendable wall, which was started around 17 March 1514, and was still being worked on in 1560. The wall was eventually built around the town, encompassing Edinburgh. Not only was it a defensive structure, but also a reminder of what belonged to the town. To get a share of the privileges of trade in Edinburgh, one had to be inside the walls. Canongate, outside the walls, was a separate burgh completely. Leith was not in Edinburgh. Anything outside the walls, with the exception of the south-west section of Canongate, was outside of Edinburgh. Figure 1.1 in the appendix is a map of Edinburgh from 1582. As can be seen in this slightly artistic view of the town, the majority of buildings were piled into the cramped confines of the walls, though they probably would have been cramped before the wall was built. The population was rising, but the people needed to live inside the burgh boundaries due to financial interests and trade rights.

In the 1500s Europe saw a huge increase in population. The population of Edinburgh was also experiencing a dramatic rise. As the population expanded, housing became more cramped and difficult to find. With taxation being a burden, people started taking up residence outside the burgh walls forming suburbs. Michael Lynch illustrated this exodus to the suburbs in the book *The Scottish Medieval Town*. In Edinburgh in 1558, there were sixty-six master hammermen paying taxes. In 1583, there were only fifty-two hammermen listed in a tax roll. By 1634 there were only forty-two master hammermen paying taxes in Edinburgh. As we can see from the burgess rolls (see Table 1), the hammermen were not decreasing, but increasing. Lynch attributes this decrease in taxpaying hammermen to an ‘unchecked flight to the suburbs,’ and notes that it was especially popular with the textile and clothing trades in Edinburgh. There are thirteen different trades shown by Lynch that appear to be declining. If a

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122 Harris, S., *Place Names*, 2002, p. 254
123 Edin. Recs., p. 146
124 Ibid., p. 67
125 Yet Edinburgh’s south-east quarter claimed part of the Canongate. Lynch, *Edin. & Ref.*, p. 27
127 Ibid., p. 274
128 Ibid., p. 274–6
craftsmen lived outside the walls, he was not obliged to pay burgh taxes, or contribute his valuable time to burgh duties. If he maintained his freedom in an incorporated trade, he could still make money from the burgh markets and fairs, without paying out money in taxes and lost time. This set the majority of the tax burdens on the craftsmen which followed the law and resided in the burgh.

The town council made much effort to curb the abuse, such as the act of 1 June 1640:

The same day, forsameikle as the provost, bailies and counsel of this burgh, finding that are great part of the burgesses and guild brethren of this burgh, neglecting both their oath given at their admission to the liberty of this burgh and their bound duty in their times of necessity, wherein they are obliged before God for the well of this burgh, has to their disgrace left this good town, leaving the same exposed to all hazard and in [this] manner separate themselves from the rest of their neighbours, in which carriage if they shall continue they can not be thought worthy to bruik any liberty within this burgh: Therefore they have statute and ordained that all persons, burgesses and guild brethren of this burgh, repair to the same betwixt and the sixth of this instant and make their actual and continual residence therein with the rest of their neighbours, that they may be ready at all occasions to undergo all such labour, hazard and burden as they, with the rest of their neighbours, shall be commanded, with certification to theme if they shall failzie they shall be deprived of their liberty of this burgh and they and theirs declared incapable thereof in all time hereafter and ordains this to be intimate be sound of trumpet at the market cross of this burgh, that none pretend ignorance.  

There were even acts of parliament set up to stop this, such as 1592 when crafts were forbidden from being exercised in the suburbs of the burghs, but in 1669 the Court of Session decided that this did not apply to the residents of any burgh of barony. In 1671 legislation was also passed saying that there could not be any suburbs within a mile of a royal burgh, though this did not rid Scotland’s towns of suburbs.

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129 Marwick, Guilds and Crafts, p. 168
130 APS, General Index, p. 382
131 Mackenzie, Scot. Burghs, p. 83
132 Ibid., p. 74. Scotland was not the only country that wrestled with suburban growth; London is just one example of the many European cities in which the craft guilds had to deal with suburban craftsmen.
Edinburgh eventually got around the problem by first gaining superiority over the suburbs and then organizing the suburb crafts under their own incorporations. In 1567 Edinburgh purchased the burgh of barony of South Leith. In 1636 part of North Leith was acquired, when superiority over Canongate was purchased. Canongate had been granted to the Abbots of Holyrood by King David I (1124 – 1153). Until 1636 it was a separate burgh of barony.

The suburb of Portsburgh (see Figure 1.3 in the appendix) included the area from Bristo to Tollcross and Bruntsfield, which had belonged to the Touris family of Inverleith. They sold their superiority to Sir Adam Hepburn of Humbie in 1648 and he in turn sold the superiority to the magistrates and council of Edinburgh. The king turned Portsburgh into a free burgh of barony and it was absorbed into its larger neighbour. The road which ran through Bristo, known as ‘Potterrow’, accumulated houses as Edinburgh spilled out of the walls at the Kirk o’ Field port (see Figure 1.4). Apparently there were potters working in the area at one time and henceforth the name. In 1649 it became part of the newly formed barony of Portsburgh and was sometimes called ‘Easter Portsburgh’. This union seems to have been nominal, as their craftsmen were still separate in the early eighteenth century.

With Edinburgh’s superiority over these areas, there was some contention over the rights to craft production in them. At first, even with superiority over these areas, it did not make it possible to live in them and still be a burgess of Edinburgh. In 1659 one David Hastie, a weaver in the Canongate, was admitted burgess in Edinburgh providing ‘...the said David obliging himself to take up his residence within the town, otherwise to loose the benefit of his burgess-ship.’ Eventually the rules were relaxed. If Edinburgh was going to have competitors who refused to live inside the town walls, they wanted to at least have control over them. For example, in Leith in 1619, twelve coopers were allowed to join the Edinburgh coopers and continue working in Leith as

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133 Harris, *Place Names*, p. 360
134 Ibid., p. 142
135 Mackenzie gives the date as 1639. Mackenzie, *Scot. Burghs*, p. 84
136 Ibid., p. 84
137 Harris, *Place Names*, p. 463 - 4
138 Marwick, *Guilds and Crafts*, p. 175
long as they did not reside there. Whether the craftsmen in the suburbs in the later 1600s and 1700s had to live in Edinburgh, is uncertain. The crafts were allowed to form into societies. These societies were not full incorporations; they were subordinate to the Edinburgh incorporations. They were only allowed to bring their work into Edinburgh on certain market days and were prosecuted if they did otherwise. The hammermen of Leith, Portsburgh and Potterrow had to meet at the Magdalen Chapel. They were not permitted deacons; they each had an elected 'overman'. Just like deacons, the elections were for a one year term. By 1739 there were only two hammermen societies in the suburbs of Edinburgh, as the Potterrow and Portsburgh hammermen finally joined into one society. The Leith hammermen was the second society. Some hammermen trades were not permitted in some suburban areas. On 20 September 1707, the Leith hammermen were given a stiff warning and threat of future fines if they worked the gunsmith or armourer trades.

Table 4.8 in the appendix shows the population of the suburban hammermen compared to the Edinburgh hammermen in 1717. There are also tallies of lists for 1663, 1681 and 1683, though they are not all complete. This information was taken from the Edinburgh hammermen minute books. The suburbs usually had about twenty hammermen, to Edinburgh’s 114 in 1717. Table 4.9 shows that Portsburgh, Leith and Potterrow all had blacksmiths and locksmiths. Portsburgh had the widest range of hammermen, with founders, beltmakers, a lorimer, a gunsmith, a saddler and an armourer. Leith had a saddler and a cardmaker, who made ‘cards’ for wool combing. All three had hammermen with no trade listed.

Canongate, though Edinburgh held superiority over it, managed to retain its own Incorporation of Hammermen. In 1856 there was still debate about Canongate craftsmen becoming burgesses in Edinburgh. Superiority over the Canongate did give

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139 Mowat, S., The Port of Leith, 1994, p. 151
140 EHMB, ED008/1/5, 19 June 1713
141 Ibid., ED008/1/4
142 Ibid., ED008/1/7, 1739 This was despite the fact that the two suburbs joined in 1649. Harris, Place Names, p. 463 - 4.
143 EHMB, ED008/1/5, 20 September 1707
144 Ibid., ED008/1/4, 5
145 Marwick, Guilds and Crafts, p. 234
Edinburgh's council some say in the running of their affairs, which could put pressure on the Canongate craftsmen, but otherwise they were independent incorporations.

**Growth of the Incorporation of Hammermen**

The ‘flight to the suburbs’ and the eventual inclusion of these areas under Edinburgh’s control, is not the only way in which Edinburgh grew. The population of Edinburgh in 1560 was around 12,500. By 1635 it had grown to about 20,000.\(^{146}\) By 1650 it had tripled from what it had been in 1550.\(^{147}\) The expanding population represents a numerically expanding consumer society. Not only did this mean an expanding market for metalwares, but also an expanding pool of labour to make them. In the seventeenth century, the hammermen grew to be the third largest incorporated trade in Edinburgh, with only the tailors and wrights being larger.\(^{148}\) According to Friedrich’s study on work and status, textile, clothing and apparel were the most important facets of urban production in early modern Europe.\(^{149}\) Ian D. Whyte’s table of manufacturing in his study of occupational structure in Scottish burghs shows that Edinburgh was likewise dominated by clothing and textile production.\(^{150}\) It appears that clothing, buildings and metalwares held an important place in the upper ranks in Edinburgh’s domestic economy.

Tax is another indicator of the rise of importance of the Incorporation of Hammermen. **Table 10** in the appendix shows that prior to 1574, the hammermen had been paying the fourth largest amount of tax out of the incorporated trades of Edinburgh. The deacon of the fleshers was forced to ask for a decrease in the taxation paid by his craft, as they were ‘so depauperat that they were not able to pay taxations according to the auld rolls’.\(^{151}\) The council, bailies and deacons considered the crafts that were

\(^{146}\) Lynch, *Medieval Town*, p. 279

\(^{147}\) Lynch, *Scotland New*, p. 171


\(^{149}\) Friedrichs, *EM City*, p. 153


\(^{151}\) Marwick, *Guilds and Crafts*, p. 109 - 10
having problems meeting the taxes and changed the rates accordingly, with the rich crafts taking up the deducted tax of the poorer crafts. The new roll was fixed on 15 September 1574. While the hammermen were not rich enough to pay more tax than the 13 lb. 5 s. 6 d. they had already been paying, the new roll made their taxes the third highest out of the incorporated trades. They were not richer, but they were not poorer either. They were stable in a difficult economic period.

The Roll of Edinburgh Burgesses and Guild Brethren, is an interesting source for examining the growth of the incorporated trades. Whenever a person purchased burgess-ship or guildry, his name was entered in the burgess and guild rolls. Focusing on the Incorporation of Hammermen, the burgess rolls show a marked growth. The number of hammermen who were listed is given in Table 1 in the appendix, with each burgess hammerman being given a tally-mark for the fifty-year period in which they were entered. The data does not represent a time-span of their working life; it merely indicates the number of entrants in a particular fifty-year period. As we can see in Table 1, from 1550 to 1600 there were 158 hammermen who attained burgess-ship. In the 1600 to 1650 period, the number increased to 190 hammermen. In the 1650 to 1700 period, the number reached 248 craftsmen. The 1700 to 1750 period shows the rate of growth dropped off sharply, with only 252 craftsmen attaining burgess-ship. Considering that the time-span covered by these four periods is only two-hundred years (see Chart 1), we see that the Edinburgh Incorporation of Hammermen experienced dramatic growth from 1550 to 1650 followed by a levelling off between 1650 and 1750.  

The problem with the burgess rolls, however, is that they are not complete. Servants, apprentices, journeymen and unfreemen are not included. They look only at the masters, or the freemen. Not even all masters are included. An example of this can be seen in L. Inglebee Wood's book, Scottish Pewter and Pewterwares. Wood listed all of the known Edinburgh pewterers. According to his research, there were nineteen pewterers from 1550 to 1600, forty-two pewterers from 1600 to 1650 and sixty pewterers from 1650 to 1700. As we can see in Table 1, the burgess rolls show fourteen

152 Edinburgh Burgesses, 1929
pewterers from 1550 to 1600, thirty pewterers from 1600 to 1650 and fifty-four pewterers from 1650 to 1700.\textsuperscript{153} Although this illustrates that the burgess rolls are not comprehensive, it also illustrates that they resemble the pattern of numerical growth and are therefore indicative of general trends. The burgess rolls can still be used as a rough estimate of the fluctuations in the hammermen population, but they should not be taken on face value. This said, Chart 1, which is based on the data from Table 1, shows a dogged increase of hammermen from 1550 – 1600 to 1600 – 1650, with an even sharper period of growth from 1600 – 1650 to 1650 – 1700. There is a defined plateau from 1650 – 1700 to 1700 – 1750.\textsuperscript{154} The actual number of craftsmen went from 158 to 252, indicating a trend of growth, but the rate of growth increased sharply and then fell off even more sharply, indicating that the growth was not sustainable.

Another source for looking at growth of the overall Incorporation of Hammermen, is the minute books, held in the Edinburgh City Archives. The burgess rolls would have been made by a town clerk who might not have necessarily known the craftsmen he was listing. Some known burgesses went unmentioned in the rolls. In contrast, the lists in the minute books were recorded by the Incorporation’s own clerk. He most likely knew each man on each list. They are meticulous. When a hammermen was absent from a meeting or funeral, it was recorded in the minute books. The lists are also more frequent than the single entry in the burgess rolls. While a burgess was only listed on the day he attained burgess-ship, a master in the incorporation was listed any time the clerk took a count of the masters; it was a tally of numbers, not a list of new members. While the burgess rolls are best viewed in fifty-year segments, the minute book lists can be viewed singly or in succession, giving a far more accurate view of the population of the Incorporation of Hammermen for a particular year or over a period of years. In Table 2 in the appendix, the numbers reflect a count of names of Edinburgh hammermen masters on the lists for the corresponding year. It should be noted that the list does not included the hammermen in the suburbs, only Edinburgh proper. It also does not include servants, journeymen, or apprentices. It is only the masters. Chart 2

\textsuperscript{153} Wood, L. L., Pewter, 1905?, p. 175
\textsuperscript{154} Edinburgh Burgesses
in the appendix gives a graphic presentation of the data for the period of 1494 to 1749. The overall trend of the data is growth. In the first years in which the Incorporation was recording minutes, their numbers were small. There were about twenty master craftsmen to supply the town with metalwares. Even with their servants, journeymen and apprentices who worked in their shops and all the imported goods which could be had from the merchants, twenty masters would not have been able to provide for a town the size of Edinburgh in 1650. In order to avoid a burgh dependency on foreign goods, the skilled craftsmen had to allow and encourage growth of the incorporated trades. As we can see in Chart 2, the growth did indeed happen.

The data in Table 2 and Chart 2 also illuminate that it was not a consistent rate of growth between 1494 and 1749. The time frame is spotted with six episodes of conspicuous growth and four episodes of marked decline, interspersed with three periods of relative continuity. The episodes of decline were from 1600 to 1612, 1629 to 1646 and 1693 to 1729. The first major decline took place just after the 1603 Union of Crowns. New opportunities were sought after by Scots in London. The 1612 list in the hammermen minute books states after several craftsmen’s names that they were away in London or England. By 1629 the Incorporation’s number of masters was back up to 104, but by 1640 it had plummeted to seventy-eight. In the 1640 list, added after 1644, is a note in the margin stating that Adam Steil, a master of the pewterer craft, was killed at Marston Moor near York. The Incorporation definitely contributed to the Covenanting war effort, but it is not apparent how much support was given to the Royalist side. With the outbreak of plague and the continuation of the war, the number of freemen dropped from 104 in 1629 to fifty-nine in 1646. It is not apparent how many of these were deaths by natural causes or mere absenteeism. At least one hammerman, James Boog, Younger, was killed by the plague in May 1645. The third episode of decline was just after 1693. Darien was not kind to the Scottish economy and combined with famine and extremely cold winter, Scotland was under much strain. While the Incorporation’s numbers undoubtedly dropped, going from 160 in 1693 to 145 in 1707, this area of the decline is not as striking as the period following the Union of 1707. The

155 Whitelaw, C. E., EHMB
number of freemen masters in the Incorporation of Hammermen dropped from the already low 145 down to ninety-three by 1717, less than two thirds of the number at the Union. With the Union came even more business opportunities. The areas of decline might reflect this.

Growth, the dominant trend, started within two years of the Incorporation’s first minutes being recorded. From 1496 to 1503 the number of hammermen masters tripled. The hammermen had only been incorporated for twenty years, so it is possible that not all craftsmen had come under their jurisdiction yet. The sudden growth might also be explained by journeymen, servants and apprentices being accepted into the fold and given freedom as a conscious step by the Incorporation toward meeting the economic demand for metalwares. As masters they would then have had the opportunity to take apprentices, servants and journeymen on, some of whom would then have also attained freedom as masters. The cycle thus perpetuated, growth occurred until the ruling aristocracy did something to curb the amount of incoming freemen making use of burgh privileges and creating competition in the market.

The numbers show a period of continuity from 1503 to 1565, with a slight increase to seventy-two masters in the year 1560. Considering the upheaval of the Reformation, it is interesting that the continuity lasted as long as 1565.

From 1565 to 1600 the number of masters increased from sixty-six to 115. From 1565 to 1576 there was a sharp jump from sixty-six freemen to ninety-one, but there is no data given for the period of the 1571 – 73 siege of Edinburgh. The number of masters might have dropped farther before climbing up to ninety-one. By 1592, almost a decade after the 1583 decreet arbitral theoretically increased the equality between the merchants and craftsmen, the number of hammermen masters had risen by only seven freemen. If the decreet was supposed to make the life of the average craftsmen fairer, it was certainly slow to do it in terms of attaining the freedom of the Incorporation, suggesting that a craft aristocracy was still enjoying the real privilege. By 1600 the numbers were considerably higher than they had been in 1560.

156 EHMB, ED008/1/1 - 8
From 1612 to 1629 the number of hammermen went from sixty-two to 104. Without war with England, Edinburgh seems to have prospered. The hammermen experienced dramatic growth.

After the decline around the time of the Bishops’ Wars and Wars of the Covenant, there was another recovery, interestingly, starting in 1646 before the ‘troubles’ were over. There was steady growth up to the Restoration, going from fifty-nine hammermen in 1646 up to ninety in 1663. While still not as numerous as in 1600, there was a period of continuity from 1663 to 1671. The numbers in this period fluctuated between eighty and ninety, before a dramatic increase to 129 hammermen in 1674. By 1693 there were 160 hammermen; 101 craftsmen more than in 1646.

While there was a severe decline after the Union of 1707, by 1739 the numbers were rising again, culminating in 161 hammermen in 1749. While there were undoubted periods of severe decline, the overall trend is growth; the numbers of hammermen in 1749 were almost eight times as many as in 1494.

At the beginning of the early modern period, ideas about how work should be organized were changing in European society. As what we now call ‘corporatism’ took hold, cities across Europe gave new legal statuses to craft groups. Edinburgh, like many other European towns, gave special rights and privileges to crafts or craft groups through seals of cause. Scotland, starting with its capital, experienced corporatism through the institution of incorporation. Inside corporatism was a hierarchy of society, and while the crafts were not as high in that hierarchy as the merchants, there was still a craft hierarchy. The Incorporation of Hammermen, who experienced marked growth and considerable political involvement over the early modern period, were part of this craft aristocracy. As the next chapter shall show, however, not all of the individual hammermen trades were as fortunate as others.

Chapter 2
The Crafts and Craftsmen

It has already been shown that the Incorporation of Hammermen as a single entity grew throughout the early modern period, but does this reflect accurately the demographic patterns of each craft within the incorporation? Just as there was a burgh hierarchy and inside that, a craft hierarchy to which the hammermen belonged, the Incorporation of Hammermen itself had an inner hierarchy. This hierarchy of crafts ranged from the numerous pewterers, down to the few swordslippers. There were also divisions of wealth ranging from the wealthy saddlers, down to the more humble spurriers. These divisions of wealth gave the Incorporation of Hammermen an aristocracy. Which crafts made up this aristocracy? Not all craftsmen in any craft were equal; there were wealthy locksmiths and poor locksmiths. These divisions ranged from servants up to guild brethren, with rich and poor divisions even in the masters of the crafts. What were the different levels to which a craftsman could aspire? How wealthy were the various
branches of the hammermen? What does this tell us about Edinburgh’s early modern metalwares market?

The Crafts

The Incorporation of Hammermen as a whole was expanding between 1483 and 1750. But what was happening to the individual crafts that made up the incorporation? Were they all growing like the overall incorporation? Growth of single metalworking trades was not uncommon in early modern Europe. It has shown that in Reval, Estonia, the coppersmiths, clockmakers and locksmiths outgrew the Reval metalworking guild. They were able to break away from it and form into new specialized guilds, just as the Edinburgh goldsmiths did.

While the burgess rolls are not complete, they do give an interesting view of broad trends affecting the crafts. The goldsmiths are not included in the data, as the tables in the appendix start with 1550 and they split off from the hammermen in 1525. The hammermen minute books are complete and there are lists of freemen masters throughout, but there are only thirteen years for which trade is listed with the name of the craftsman; the majority of the lists give only the master’s name. These thirteen years fall within a short time period between 1646 and 1717, providing a minute window which does not even cover one century out the whole 1483 to 1750 time frame. Albeit small, the data still give a definite window into the demographic trends of the crafts that made up the Incorporation of Hammermen over two or three generations.

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1 Soom, A., Zunfthandwerker in Reval, 1971, as quoted in Friedrichs, C. R., EM City, 2003, p. 155 - 6
2 It was common in larger European towns that the goldsmiths were separate from the other metalworkers. Frankfurt am Main had a smith’s guild and a goldsmith’s guild in 1614. From 1617 to 1631, when corporatism spread through the town, separate corporations for the saddlers, goldsmiths and smiths were formed. Soliday, G. L., A Community in Conflict Frankfurt Society in the 17th and Early 18th Centuries, 1974, p. 142 – 3. London was large enough that few of its crafts were incorporated together; single craft companies such as the armourers company or the pewterers company were more common. An account of London in 1598 describes a feast held at the Guildhall in which fourteen different metalworking companies attended. Stow, J., A Survey of London Written in the Year 1598, 1994, p. 442 - 3
3 Colston, J., Inc. Trades, 1891, p. 27
4 EHMB, ED008/1/1 - 8
Table 1 in the appendix was compiled from the burgess rolls. The sixth column shows the total numbers of craftsmen to become burgesses, which was necessary to become a master, for each individual craft. 848 hammermen took burgess-ship between 1550 and 1750. The pewterers were the most numerous, with 143 burgess craftsmen. The pewterer craft was so small in 1483 that it was not even mentioned in the first seal of cause, though they were later mentioned in the 1496 seal. Their omission in the former is a disjunction to their rise to the most populous single art in the 200 years covered by the burgess rolls.

The saddlers were the next biggest art shown by the burgess rolls, at 126. It would be interesting to see how many saddlers were admitted burgesses between 1483 and 1550. Unfortunately, the burgess rolls, which technically start at 1406, do not seem to be complete in the earlier sections. Many hammermen listed as masters in the earliest volume of the minute books are not listed in the burgess rolls. It is possible that the saddlers were more numerous than the pewterers.

The saddlers were followed by the smiths at 120, the locksmiths at ninety-nine, the armourers at seventy-one and the cutlers at fifty-four. The other sixteen arts did not reach fifty burgess entries, though they might have had more burgess craftsmen who were not entered in the rolls. It appears that the pewterers, saddlers, blacksmiths and locksmiths, armourers and cutlers were the largest crafts in the hammermen.

Looking at the second, third, fourth and fifth columns of Table 1, there are some more subtle, specific trends. In the 1550 – 1600 period, the largest trades were the saddlers and cutlers. The lorimers and smiths were also quite numerous, followed by the pewterers and locksmiths. Neither of these crafts was even half the size of the saddlers. Many crafts, like the white iron men and the watch- and knockmakers, did not even exist in Edinburgh yet. Many arts, like the damaskers, founders, sheathmakers and beltmakers only had one craftsman attaining burgess-ship in this period. Others had only slightly more.

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5 Edinburgh Burgesses, 1929
6 Smith, J., Hammermen, 1906, p. 181 and 184
7 EHMB, ED008/1/1
The 1600 – 1650 period saw the rise of the pewterers above the other arts, save the smiths. Closely behind them were the saddlers, armourers and locksmiths. The watch- and knockmaker trades started to provide burgesses and one smith took on the specialist description of ‘farrier’. The sheathmakers made a slight comeback with four burgesses, while other arts, like the damaskers and swordslippers disappeared, never to be seen again in Edinburgh.

The 1650 – 1700 period was dominated by pewterers. They provided over fifty burgesses, while the next most were the smiths and locksmiths, with thirty-four each. The saddlers, constant as always, made for thirty-one burgesses. The sheathmakers disappeared, while new trades like white iron men, or tinsmiths, pinmakers and stocking frame makers were introduced to Edinburgh’s list of occupations. Coppersmiths started to ascend to their 1700s place of importance, as did the watch- and knockmakers.

In the 1700 – 1750 period the pewterers were still the largest single craft. The saddlers came in second, with the smiths and locksmiths right behind. While the lorimers and beltmakers dropped sharply, the coppersmiths and braziers nearly doubled. The founders, though still only nine in number, had tripled from the previous period and the farriers and white iron men quadrupled. The armourers had less than half of the burgess entrants that they amassed in the previous period.

The saddlers remained fairly constant in numbers of burgess entrants across the 200 year period. The smiths and gunsmiths also displayed continuity in numbers of craftsmen taking burgess-ship. Considering the size of Edinburgh, it is interesting that the gunsmiths’ numbers were so low, though constant till the early 1700s. Other regions of Scotland specialized in the production of firearms. It is possible that the numbers of Edinburgh’s gunmakers show a reliance on other areas which specialized in this product; perhaps Edinburgh made only what was needed instead of competing.

Some crafts, such as the knockmakers, beltmakers, armourers, pewterers, coppersmiths, braziers and founders, showed growth. The locksmiths more than doubled the number of burgess entrants from the 1550 – 1600 to the 1700 – 1750 periods. Growth of the crafts might indicate a growing consumer society.

Doune is one example. Kelvin, M., Scottish Pistol, 1996, p. 91
While the cutlers were one of the biggest arts in the Incorporation of Hammermen in the 1550 – 1600 period, they soon declined rather severely. By 1715 the cutler craft was virtually gone, when John Duncan was allowed to work in Edinburgh to pay his father’s funeral expenses ‘chiefly in respect there is no other freeman cutler residing in Edinburgh at present.’ They did have at least eleven new masters in the 1700 – 1750 period. The lorimers, sheersmiths, swordslippers, sheathmakers and damaskers also declined.

Table 3 is a section of lists from the minute books of hammerman masters for various years between 1646 and 1749. They are mostly complete, except for a handful of craftsmen whose trade was not listed and a group from 1693 onwards that is missing (see Table 3 ‘missing’ row). The numbers here do not reflect new men coming in – they are only a tally mark of the existing craftsmen alive and working that year. The last five lists – for the years 1693, 1705, 1717, 1741 and 1749 – show the crafts in groups. Though only for a short time period, the data in this table does reinforce some of the general trends of the data from the burgess rolls.

Across Table 3, the pewterers are always the most numerous single craft. When the crafts joined together into groups, the locksmiths took over as largest ‘craft’. This might be because the craft included the knockmakers, who became more numerous in the early eighteenth century. The locksmiths themselves were growing and were usually the second largest single craft in Table 3.

Because these lists are more accurate, there are some subtler trends that appear. Notice that the smiths were very numerous in the burgess rolls, but in the minute books, the blacksmiths are usually not half the size of the locksmiths. ‘Smith’ is a general term and applies to both black- and locksmiths. Some of the smiths in the burgess rolls are actually locksmiths. The smiths are constant, though, just as the burgess rolls indicated.

10 EHMB, ED008/1/1 - 8
11 Certain crafts had work types in common and were therefore joined together under a broad heading. The gunsmiths, knockmakers and locksmiths were all part of the locksmith craft. See Chapter 3 for more discussion.
12 Edinburgh was not the only European town in which the number of locksmiths grew significantly. In Dijon, between 1643 and 1750, the number of locksmiths almost doubled from 13 to 24. Farr, J. R., *Artisans in Europe, 1300 – 1914*, 2000, p. 65
Another interesting trend is the shortage of saddlers in the section of minute book lists. While the burgess rolls show them to be the second largest craft, they had only five or six practitioners in the late 1640s, illustrating the disruption of trade brought by the Wars of the Covenant. By 1656 they started to pick up again and by 1674 they were up to twenty masters, though they fell away to eleven by 1717. The burgess rolls give an impression of stability, with a constant supply of between twenty to thirty-five new saddlers per period. Perhaps Scotland’s leather industry was a bit more volatile, but with enough reward to keep interest. With such a small window from 1646 to 1717, it is purely speculative though. The years with low figures might also represent old age or death pruning the saddlers’ numbers.

The last sheathmaker seems to have passed away around 1654. The burgess rolls and the minute books’ lists indicate that no more craftsmen took up this art. Other crafts such as the cutlers must have made their own sheaths. This was crossing over into another craft’s work, though and that was usurping their privilege.

Craft Privilege

Crafts guarded their privilege to work their section of the trade without others taking their business. In 1483 the seal of cause of the hammermen stated clearly that craftsmen were not allowed to ‘exercise or use any more crafts but alanerly ane and to live thereupon, so that his other brother and craftsmen of the said crafts be not hurt through his large exertion and exceeding bounds.’

This was aimed at the freemen of the incorporation rather than unfreemen. It was a source of much argument in the meetings of the Incorporation of Hammermen at the Magdalen Chapel. The minute books are full of records of crafts trying to get craftsmen from different arts punished for working in their mediums.

The coppersmiths in 1734 were upset because a white iron smith had added a brass handle to a siphon he had made. Brass is a copper alloy and therefore was the

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13 Smith, *Hammermen*, p. 182
14 The essay was a ‘siphon with a brass bow or curve’. EHMB, ED008/1/6, January 1734
coppersmiths' and braziers' domain. There were of course other arts that used brass. The rules were constantly bent, but sometimes they were bent too far.

Sometimes it was not the material being used, but the method in which it was worked:

Anent the complaint offered by the founders against the coppersmiths and locksmiths for encroaching upon their art and casting of founder work. The house upon searching into and hearing read the several acts of their incorporation, find that it is the uniform & useful practice of their incorporation that each art keep to and employ themselves in the exercise of their own proper art & branch of work they were admitted to...and locksmiths, particularly William Richardson and William Auld, have all and each of them encroached upon and exercised the proper crafts of the founders. Therefore the house do discharge the said persons from exercising the casting of founder work in time coming, or any art exercising or working the proper art or work of any other art in time coming whereupon this act is made ordered.15

With a forge, it would be easy to melt metal and found various parts. By 1748 when this happened, brass lock cases for rim locks were in vogue and it would have been cheaper to make them than to buy them from the founders. Unfortunately, the clerk did not mention what the coppersmiths had done to encroach on the founders' work.

One of the bigger disputes was between the locksmiths and blacksmiths. The locksmith craft probably has its origins in the blacksmith craft and the one is just a mechanical version of the other. Their work often crossed over and their techniques and tools were very similar. In 1647, the locksmith and blacksmith arts had banded together in a dispute against a lorimer.16 It was in both of their interests to stop the lorimers from doing work already covered by two crafts. The alliance did not last though.

In 1649 the blacksmiths started a dispute with John Tweedie, younger, who was a locksmith.17 In 1654, sometime after the troubles had calmed in Edinburgh, the blacksmiths made the dispute with all of the locksmiths:

The quilk day anent the supplication given in to the deacon and whole house be in the form ane elder blacksmith for himself and in name and behalf of the remnant blacksmiths upon John Wilsone locksmith make and mention, that

15 EHMB, ED008/1/8, 20 February 1748
16 Ibid., ED008/1/3, 8 February 1647
17 Ibid., ED008/1/3, 6 June 1649
where the said John against all equity and concern against his ___ ane act of admission and to the great hurt and prejudice of the said wt Qk ___ were hired daily to enter quays ane sells all sort of chimneys only proper to the blacksmiths their art as the said bill in itself as were ___ very which being heard read and considered be the deacon and whole house and being well and used therewith their ___ statute and ordain that nae locksmith within Edr. incorporation shall big any chimneys to the prejudice of the said blacksmiths to vent and sell again the same except so much as shall be for their ane proper use or what they shall work themselves of locksmith work____________________ and that under the pain of £10 totius quotus, or else they shall sell to the said blacksmith what chimneys they shall big that they work not themselves under the pain foresaid whereupon this act was made.18

The locksmiths were noted in the minute books in 1612 as making chimney irons; it was not a new type of work that they suddenly decided to take over.19 The judgement against the locksmiths did not go unopposed:

John Tweedie elder himself and in name of the locksmiths protested against the foresaid act and that they might have liberty to sell and big chimneys so that they made none conform to the decreet arbitral made betwixt the said blacksmiths and locksmiths Andrew Haliburton and the said John forenamed for themselves and in name of the blacksmiths protested in the contravene and adhered to the act above written.20

The argument about chimneys did not stop there. It came up again in 1656.21 Eventually the two arts came to an agreement. On 25 November 1682, there was an act appointing the agreement between the blacksmiths and locksmiths to be booked with the incorporation:

The contract and agreement betwixt the blacksmiths and locksmiths of Edinburgh being produced, the same was publicly read in presence of the whole house and approved of and ordained to be insert in this their act book, whereupon George Mitchell took instruments and that none objected against the same...22

The two arts found an agreement that not one craftsman objected to:

18 The blanks represent areas which could not be read. Thanks to Sherrylinn Theiss for help on the transcription. EHMB, ED008/1/3, 29 July 1654
19 Whitelaw, C. E., EHMB, p. 76
20 EHMB, ED008/1/3, 29 July 1654
21 Ibid., ED008/1/3, p. 206
22 Ibid., ED008/1/4, p. 340 – 3
At Edinburgh the tenth day of July Jmvi c fourscore two years. It is appointed, agreed, finally ended and contracted betwixt the parties following. They are to say John Forman, John Coish, John Lockie and William Gray as being the whole freeman blacksmiths within the burgh of Edinburgh for the time on the ane part. and John Callender, his Majesty’s Master Smith, James Michell, Alexander Braidwood, David Cockburne, Gilbert Thomson, James Prett, John Brown, John Balfour and Robert Neill, as being the whole freemen locksmiths within the said burgh of Edinburgh for the time on the other part in manner, form and to the effect underwritten. That is to say, forsameikele as there was ane decreet arbitral given and pronounced be the fourteen deacons of the several incorporations of Edinburgh upon the thirteenth day of September Jmvi c twenty-two years registered in the burrow court books of Edr. upon the fourteen day of the said month of September and year foresaid and which decreet arbitral was relative to, and did follow upon a submission made by the then blacksmiths and locksmiths of Edinburgh to the said fourteen deacons, whereby they after consideration had by them of the claims given in by both the said parties, answers made thereto rights reasons, writs and allegiants propound be either of them did discern and declare in manner following:

The tone of the agreement was very formal and legal. This was to be a binding agreement to solve the dispute permanently. The agreement continued:

viz, that the blacksmiths had good and undoubted right to the making of horse shoes, nails thereto and shoeing of horse, together with the making of chimneys and braces with racks thereto and [paterniks for the fire with couter sork and plough shoes] and that the locksmiths had good and undoubted right to the making and mending of locks and bands with all white work and filed work pertaining to the locksmith craft, with all sort of jointed bands and as for the door crooks and door bands then contraverted, they find the same to be ane indifferent and common piece of work to be wrought be both the said parties, as they should be employed therein and the mending of chimneys to be likewise common to both and the said fourteen deacons did discharge the said persons and parties and every one of them and their successors to intermell with or work ane other man’s occupation, conform to the restrictions and limitation before set down and whatsoever is not expressly set down nor distinguished in name above written, the same to be wrought be them or any of them as they shall be employed as points of calling found to be indifferent and discerned the said persons and ilk ane of them and their successors to observe keep and fulfil to others the above written decreet arbitral in the whole...and the party or person or their successors...bound and obliged in payment of the sum of ten pounds Scots money...as they should happen to transgress...and now seeing the said blacksmiths...and said locksmiths...for themselves and their successors in their art, are all of them earnest willing and desirous to put away and remove all strife controversies and debates presently standing or which may hereafter arise betwixt the said two arts and to be united and incorporate in ane amicable and
friendly society in all time coming, they all of them unanimously consent and agree to the following articles...that all and whatsoever work which was distinguished and used formerly to be wrought be them separately conform to the said decreet arbitral, shall now and in all time coming be indifferent and common to both the said arts and every one of them and their successors have liberty to work the same as they shall be hereafter employed; Reserving to the said...blacksmiths the horse shoes and nails to them allanerlie and to the locksmiths...the locks and all other work whatsoever to be common to both said arts...

The work they were arguing over, chimneys and door crooks and bands, were all parts of architectural hardware. It made sense for them to share domain over these work types and with the agreement sealed, the incorporation and the council did not need to worry about discord. By forming one ‘amicable and friendly society’, the governing was easier. It was a miniature incorporation in the incorporation. They did still keep separate eldest and youngest masters for aiding the deacon and they did keep several main items apart though; horse shoes and shoe nails for the blacksmiths and locks to the locksmiths. All other smith-work was from 1682 onwards, common.

This lasted about a year. On 23 August 1683, the clerk recorded an act in favour of the locksmiths, watchmakers and gunsmiths against the blacksmiths:

There being a petition read, given in by George Mitchell and William Brown, present masters of the locksmith art for themselves and in name of the remnant locksmiths, watchmakers and gunsmiths subscribers of the bond underwritten, make and mention that the petitioners being engaged in a process for defence of their privileges against the blacksmiths of this burgh, necessity required that money behaved to be disbursed to advocates, clerks and others for managing of the said affair...the petitioners did unanimously subscribe a bond empowering Deacon Callander and the deceased Gilbert Thomson to manage the said affair and disburse what money they thought requisite for bringing the said business to a close.  

The rest of the argument is lost in seventeenth-century legal jargon. It ended with the other locksmiths, watchmakers and gunsmiths having to pay money to be included in the bond with the blacksmiths. Not even on paper were they an ‘amicable and friendly

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23 EHMB, ED008/1/4, 1682, p. 340 – 3
24 Ibid., ED008/1/4, p. 351 – 2
society’, but the types of work permitted kept the 1682 delineation and the two arts shared meetings at the Magdalen Chapel from then on.

One such shared meeting took place in 1745. On 30 May, before both the blacksmith and locksmiths arts,

The deacon represented that the occasion of calling this meeting was to inform the arts that he had received a letter from Thomas Ainslie, smith in Calton of Edinbr…proposing that he would take it an honour done to receive him as freeman of this incorporation…and if found qualified he would pay to the house twenty-five guineas and the deacon desired the arts their resolution thereon and what answer in return should be made to the said proposal.25

The two arts formed a craft committee to review the case. On 15 June they met again at the Magdalen Chapel and,

The committee…reported that they had met…with Thomas Ainslie…and had brought him up to offer five hundred merks Scots in name of upset money and dues for the Trades Maiden Hospital and that he seemed…a proper person to be admitted a freeman locksmith among the incorporation.

The locksmith art reported that they had agreed to admit the said Thomas Ainslie to an essay and to appoint him essay masters, with a landlord, in manner and will the usual requisites, required of ordinary entrants, but a letter was produced…importing that unless the blacksmith art would allow Ainslie to make his own essay and in his own shop he withdrew his proposals.

Which being argued upon among the locksmiths they refused to alter the piece of work usually appointed for the essay to all entrants, or dispersing with essays being made otherwise than in the shop and under the eye and custody of some freeman, whereupon the said Thomas Ainslie’s proposals were withdrawn.26

The two crafts worked together to decide on an issue which affected them both. In the end tradition and guarding of privilege won out over money.

A dispute between the locksmiths and one of the other crafts in 1733 illustrates how dramatic these inter-craft disputes could get. On 4 March,

George Aitken protested that the house should immediately proceed to consider the injury done to the locksmith art in their last proceeding. Thomas Richardson protested that since the house would not proceed to consider the said injury that the art could not be blamed if they should carry it before another Judicatory.27

25 EHMB, ED008/1/7, 30 May 1745
26 Ibid., ED008/1/7, 15 June 1745
27 Ibid., ED008/1/6, 4 March 1733
What exactly happened with the threat of taking the dispute to another court is not apparent. There was more discussion a month later, though. The meeting included a reproach from the deacon for overstepping the house boundaries. Deacon Boswell protested ‘that when once a member of the house has begun to speak, he shall not be interrupted till he be done and the deacon allowing the next man that rose to speak next.’

George Aitken continued. He, protested that the locksmith art should as yet have the disposal of James Tweedy that was transferred to Deacon Dalgleish the sixth of March last, to whom Thomas Richardson adhered and craved a vote for it. Deacon Boswell protested that there should be no vote to therein regard it is already finished by the house by a vote where in George Aitken and the locksmith art voted, to whom adhered Deacon Gifford. Thomas Richardson protested that the locksmith art shall not be any further liable to any burden in this incorporation.

Sometimes the incorporations had trouble controlling the masses.

Not all of the disputes were between crafts. Occasionally the argument was between incorporations. In 1665 the hammermen made a protest against the masons and wrights for ‘building houses and furnishing the iron work thereto and saddlers’ work by way of upholstery’. Sometimes there were arguments between members of the same art. In 1740 Thomas Richard made a complaint for an unspecified master of the locksmiths against his craft,

against some of his brethren for exposing to sale in the market, locks that were not sufficient and made in a proper way for security against picking and otherwise and the same being considered by the house, they ordain the work seized upon that account to be returned to the proprietors and the subject matter complained upon to be remitted to the locksmith art to endeavour upon some rules for preventing the occasion of the faults complained upon, in time coming...

The crafts were another step in the social control of the incorporation, but they were also a part of the group which benefited from that social control.

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28 EHMB, ED008/1/6, 12 May 1733
29 Ibid., ED008/1/6, 12 May 1733
30 Carr, H., Mason, 1954, p. 84
31 EHMB, ED008/1/7, 3 May 1740
Craftsmen

In the incorporations, below the deacons and office bearers, was the spectrum of ordinary craftsmen. This consisted of the masters, journeymen, apprentices and servants. The life of a craftsman was quite strictly regulated. They were forbidden from becoming merchants, or buying and selling goods, unless they renounced working their trades and obtained guild brethrenship. If caught breaking this law, all of the craftsman’s merchandise was escheated, or confiscated. The council dictated prices and wages to them. If accused of charging exorbitant prices, punishments were handed out. The craftsmen worked from five in the morning until eight o’clock at night. They also worked ‘on Saturdays and other vigils until 4 p.m.’ The Sabbath, of course, remained work-free. To better understand the Incorporation of Hammermen, it makes sense to look at the smallest unit – the craftsman.

The career patterns of the trades were somewhat similar, so following the careers of two locksmiths in the early eighteenth century will give an indication of the experience of most Edinburgh hammermen. First, there are two fundamental steps in the career of an Edinburgh craftsman; both were types of freedom. A person was either a freeman, or an unfreeman. Freedom was also divided up into two types for Edinburgh’s craftsmen. The first was freedom of the burgh and the second was freedom of an incorporation. Both were necessary to practise a trade at the higher levels, but they were both separate institutions.

Freedom of the burgh was known as burgess-ship. This first type of freedom was not limited to craftsmen, but was open to all people in all occupations, provided they had the right connections and could afford to purchase it. Burgess-ship was early modern Scotland’s middle class, or ‘middling sort’. At the bottom of the proverbial ladder were the poor and indigent. Above the poor were the labouring classes - the servants, apprentices, journeymen and day labourers. Above them came the burgesses.

32 APS, General Index, 1875, p. 382
33 It is not clear if this was true in winter also. EHMB, ED008/1/8, 1 August 1750
34 APS, General Index, p. 382
35 Dingwall, H. M., Edinburgh, 1994, p. 2
Being a burgess in Edinburgh meant that the person in question had paid a set sum of money to the dean of guild for his admission. The cost depended on whether or not the person was related to a person already admitted as a burgess. He could be a former apprentice of a burgess, the child of a burgess, or even married to a burgess’s daughter. If he was not related to a burgess somehow, he was considered a stranger and the cost for burgess-ship was greater, to give an advantage to the Edinburgh burgesses over foreign traders. By making burgess-ship selective, it protected the trade privileges of the few. This was the core level that all journeymen aspired to. They wanted a shop, a house and the freedom to work their trade. In 1635, however, only 30 per cent of homeowners had managed to attain burgess-ship.

The second type of freedom sought by a craftsman was the freedom of an incorporated trade. This was obtained by becoming a master in an incorporation. When a craftsman was skilled enough, he would petition the house for admission as a freeman. If the incorporation judged that he was ready and felt that the market could sustain one more master craftsman giving them a controlled amount of competition, then an ‘essay’ would be set for him. Upon completion of a sufficient essay and payment of dues, the craftsman was then a freeman and master of the incorporation.

Freedom of an incorporation protected business interests for the craftsmen. It kept strangers from producing goods or buying foreign goods and selling them cheaper in the burgh:

The house desires the deacon to apply to the magistrates or council in order to get an effectual stop put to the hawkers and other persons going through the city and buying and selling old iron, brass and other things belonging to the hammermen and likewise to get a stop put to unfreemen exposing to sale hammermen’s work of the market day.

36 Friedrichs, _EM City_, p. 143
37 Lynch, M., _Edin. & Ref._, 1981, p. 10
38 Friedrichs, _EM City_, p. 144 - ‘Membership in the guild was to be restricted, so that not too many people would compete in the same market. Complete equality was never envisioned, but each guild master was entitled to a fair opportunity to earn a living as the head of an autonomous unit of production.’
39 EHMB, ED008/1/6, 22 April 1738
It also protected raw materials. If one was not allowed to work in iron then there was no point, other than personal profit, in buying up large quantities of it. This kept the available raw materials unofficially reserved for the craftsmen.

There was often some contention over the allowing of freedom to craftsmen. In 1736, Mr. Andrew Dickie, a ‘stranger’ clockmaker, sent a letter to the incorporation craving both freedom of the incorporation and burgess-ship. The house nominated, the old deacons, old boxmasters, present masters, clockmaker art James Gardner, William Armstrong, Edward Bunkle, yor. and Alexander Wright, whereof five to be a quorum to be a committee to meet at two of the clock in the afternoon to consider not only as to the answer to be given to Mr. Dickie’s letter, but also amin the possibility of admitting strangers to be freemen.40

The committee recognised that it was ‘a tender point to the generality of the arts to determine that point absolutely at present, but leaves it to the consideration of the particular arts when application is made to them upon that account’.41 If there was another clockmaker in the Edinburgh market, it did not affect the business of the lorimers, so why should there be blanket decisions over admission of strangers? Each art was to decide for itself on the distribution of freedom of its art. Dickie’s burgess-ship was provided for him by the incorporation. This was unusual. He must have had skills that Edinburgh needed, as he received both freedom of the burgh and freedom of the Incorporation of Hammermen.

Freedom was so jealously guarded that hammermen had to give an oath at their admission as masters. In 1685, James Gray was fined £20 ‘for packing and peeling42 with an unfreemen contrary to his oath of admission’.43 He was supposed to make ‘ane iron sway for aine sign’, for John Cope, periwigmaker. Instead, he bought one from James Horne in the Abbey, who was not a freeman of the Edinburgh Incorporation of Hammermen. He tried to make money by buying cheap goods from unfreemen and reselling them as his own work. If he had been a member of the guild and had gone through freemen craftsmen, this would have been fine. But he was only a burgess and a

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40 EHMB, ED008/1/6, 8 January 1736
41 Ibid., ED008/1/6, 9 January 1736
42 This means to ‘have dealings with (unfreemen)’ CSD, 1992, p. 467
43 EHMB, ED008/1/4, p. 408 - 9
master and he paid unfreemen to do the work. He abused the freedom and it cost him a considerable sum.

Unfreemen

If only 30 per cent of homeowners were burgesses in 1635, then there was a huge section of society that were lumped into the category of 'unfreemen'. Some of the unfreemen were 'foreign' unfreemen – merchants from unfree burghs, travelling craftsmen, apprentices come to the Edinburgh from other areas and other such people from outside the burgh walls. Some of the unfreemen were locals. The children of unfreeman paid a higher rate than the children of freemen for an apprenticeship with a burgess. The small section of unfreemen that apply to this study are the apprentices, journeymen and servants of the Edinburgh Incorporation of Hammermen.

Apprentices

While there were incidences of an armourer’s son and grandson also taking burgess-ship as armourers, it was not always the case that children followed in their fathers’ footsteps and took the same trades. As can be seen in the ‘Father’s Trade’ column of Tables 4.2, 4.3 and 4.4, many of the locksmiths, gunsmiths and knockmakers had fathers who were fermorers, merchants, tailors, wrights, writers, ministers, portioners and every other end of the occupational spectrum.

Apprenticeship was a contract combined with practical education. The master got help and the apprentice got skills, food, clothing and shelter. One of the rules for apprenticeship, laid out the 1483 seal of cause, was that ‘it shall not be lawful to any master of the said crafts to reset or receive ane other man’s apprentice as servant, nor give him any work, so long as he is bound to his master that he comes from and [is] paid

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44 Lynch, Edin. & Ref., p. 10
45 In York from 1397 to 1534, 83 per cent of locksmiths’ sons became locksmiths. About a third, or 34 per cent of Parisian locksmiths’ sons became locksmiths between 1742 and 1776. Farr, Artisans in Europe, 1300 – 1914, p. 248, 250. Unfortunately, the data in Table 4.2 are not complete enough to attain similar statistics for Edinburgh.
of his duty and fee. Because of this clause, an apprentice who was bored or felt mistreated could not abandon his apprenticeship and simply go to work for another master. The apprentice had no choice but to stay the course and do his work. Apprenticeship was a contract.

The apprenticeship, or indenture, started when the child was about thirteen or fourteen. It was supposed to last ‘seven years and nay less’. In 1739, a record in the hammermen minute books described how there was a period of two years after the indentures were over, in which the apprentice was to work as a journeyman for his master, to recoup lost money spent on his upkeep. The length of apprenticeship was extremely variable. Tables 4.2, 4.3 and 4.4 show the lengths from the date of the apprenticeship booking to the date of freedom of the incorporation for several locksmiths, knockmakers and gunsmiths. The time elapsed ranges from three year, eight months and eleven days, to twenty-two years. The latter probably represents a normal apprenticeship and a long journeymanship, before finally attaining freedom of the incorporation. The three-year apprenticeship had probably already spent some time as a journeyman and was therefore skilled when he started. After three years he married a burgess’s daughter and convinced the house to allow him freedom.

When an apprentice was ready for his essay, essay masters were assigned to him, as well as a booth to make the essay in. After 1653, it was decided ‘that it should not be lawful in nae time coming for nae prentices to make their essay in their masters’ booths and that because the locksmiths refused the above named William Jameson to make his essay in his said master’s booth.’ The incorporation ensured that there was no possibility of cheating. This could have been somewhat unnerving, especially after the young apprentice had become used to the feel of the handles of the tools in his master’s booth. Using someone else’s tools at someone else’s vice might have added a bit of pressure to the essay.

46 Smith, Hammermen, p. 183
47 Carr, Mason, p. 18
48 Marwick, J. D., Guilds and Crafts, 1909, p. 73
49 EHMB, ED008/1/6
50 Ibid., ED008/1/3, p. 191
Table 11.1 in the appendix was compiled by tallying the numbers of apprenticeships booked with locksmiths, gunsmiths and knockmakers, from 1550 - 1750.\textsuperscript{51} Note that these three are broad categories, which include 'dagmakers', which were pistol-makers, watchmakers, 'hourmakers' and all other varieties under the general categories. Just like the burgess rolls, there is doubt as to how comprehensive they are, but the general trends should be fairly reliable. The locksmiths booked at least 210 apprentices from 1550 - 1750. The gunsmiths had twenty-five and the knockmakers forty-five. When comparing this with the numbers of locksmith, gunsmith and knockmaker apprentices to obtain burgess-ship in Table 11.3, we see that there were more apprenticeships than incoming masters. The locksmiths produced only ninety-nine burgess entries and many of these were not apprenticeships. They produced more than twice that number of apprenticeships. While the gunsmiths and knockmakers are not as extreme in the difference, there were still more apprenticeship entries than burgess entries. If Table 11.1 and Table 4.2 are compared, the difference is even more apparent. Table 4.2 is a list of all master locksmiths listed in the Edinburgh Incorporation of Hammermen minute books.\textsuperscript{52} There are only sixty-one masters listed that attained their freedom of the incorporation by right of apprenticeship. What happened to the other 144 apprentices? While there probably would have been some loss to death and some might have tried to attain a master position in another town somewhere, it is likely that most of them simply returned home, with skills which could be passed on to others.

Table 11.2 shows a tally of the place of origin for the apprentices. At least 75 per cent of locksmith apprentices were not from within the burgh walls. Sixty-four per cent of the gunsmiths and 58 per cent of knockmakers came from other areas. These included a few entries from foreign countries, like Ireland and England, but the mainstay of the entries were from Scotland, including Lewis, Turiff, Hillhead, Dundee, Dunbar, Culross, Stirling, Falkirk, Kelso, Peebles, etc. Many were from the suburbs of Edinburgh, like Leith, Bristo, Portsburgh and Canongate. Others were from nearby

\textsuperscript{51} Edinburgh Apprentices, 1906 & 1929
\textsuperscript{52} EHMB, ED008/1/1-8
areas such as Gilmerton, Gorgie Mylne, and Dalkeith. It would seem that many of the boys from outside of Edinburgh were booked into an apprenticeship in the capital, spent their six or seven years learning the trade until completion of indentures, and then headed for home to set up as a master there and train the local youths as apprentices. Some of their masters in Edinburgh had either come from or spent time in Europe gaining skill which they, in turn, brought back and passed on. In this way craft knowledge and skill from other areas and countries were disseminated throughout much of Scotland.

Drop-outs, whether part-way through an apprenticeship or at the end before taking freedom, were common in Edinburgh. One estimate for the surgeons states that only one fifth of surgical apprentices reached their final examinations,\(^53\) and on average, only a quarter of apprentices in late seventeenth-century Edinburgh became burgesses.\(^54\) Drop-outs were not only an Edinburgh phenomenon; a study of Bristol also found that a high number of apprentices did not become freemen. One sample of forty-seven smith apprentices yielded only one who took the freedom of Bristol. It is possible that the others decided to seek employment in the countryside at areas such as the Forest of Dean or the coalfields of South Wales.\(^55\) In London, between 1540 and 1590, about 45 per cent of the apprentices in the carpenters’ company did not finish their apprenticeships, let alone become freemen.\(^56\) It was not guaranteed that an apprentice would carry on to become a burgess and freeman of a craft.

**Journeymen**

It seems that the term 'servant' referred to the journeymen. This is not as clear in the records as one would hope, but in a muster roll for the defence of Edinburgh in 1558,\(^57\) there are 151 hammermen listed, of which sixty-six were masters. Eighty-five of the

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\(^{53}\) Dingwall, *Edinburgh*, p. 191  
\(^{54}\) Ibid., p. 193  
\(^{56}\) Ibid., p. 155  
\(^{57}\) 1558 Muster Roll, Burgh Records, ECA, Council Minutes, Vol. III, Folios 126v – 137r
hammermen were listed as servants. If an apprentice started at fourteen and his indentures lasted seven years, then journeymen would have been in the twenty-one to thirty age group. They therefore would not have been missed out in town muster for defence. The word ‘journeyman’ does not appear in the 1558 muster roll, so servants and journeymen might have been the same thing.

Traditionally, Edinburgh journeymen were supposed to be preparing for the eventual outcome of attaining burgess-ship and then becoming a master in one of the incorporations. After apprenticeship, they worked for two to four years, earning money to set themselves up as masters. In actuality, many never became masters, but instead worked all their lives as paid journeymen. This might have been due, in part, to the incorporations restricting the number of incoming freemen in order to protect craft privilege.

In Edinburgh, the traditional roles of journeymen were sometimes altered. Journeymen of the Incorporation of Mary’s Chapel were at times allowed to take apprentices, so long as their booking fees were higher than that of booking with a master. Due to the nature of building work, it made sense for a journeyman mason or wright to be training apprentices. There is also a mention of this practice from 1741 in relation to the locksmiths:

Anent the complaint offered to the house by Thomas Richardson and Andrew Wilson masters of the locksmith art, complaining of the practise of some of the members of the house, their binding their journeymen as apprentices under indentures, entitling them to the freedom of the trade thereby and the taking of apprentices by some; while they work with others Masters under the pretence of transferring these apprentices themselves and craving the opinion of the house upon (thereupon). The house declared they find nothing inconsistent with the ancient practice in such usage nor that any thing derogatory or inconvenient can arise to the incorporation there anent and that every member may do therein as he pleases. Whereupon the said Thomas Richardson asked and took instruments.

The ‘ancient practice’ was being redefined. Journeymen were being given privileges that originally they had been denied. They were skilled enough to train others, but

58 Carr, Mason, p. 18
59 Ibid., p. 34
60 EHMB, ED008/1/7, p. 72
usually they were not economically fortunate enough to be in the burgess level of society.

When a craftsman was booked as a journeyman, his name and his master’s name were recorded in the minute books, such as the following 1704 entry: ‘William Slowman is booked journeyman to John Lethem locksmith and present deacon of the incorporation, he paid the boxmaster forty shilling of booking money, ten shilling for the maiden hospital and the other dues.’ 61 Fifty shillings was not too high, compared with the booking fee for Alexander Barclay in 1685. He paid three pounds; ten shillings more. 62

It was a common practice on Continental Europe for a journeyman to wander around from town to town, working in his trade and picking up experience. After his apprenticeship had finished, he would have been given papers certifying him as a journeyman. Various cities had different policies towards journeymen. Tallin, in Estonia, guaranteed every arriving journeyman at least two weeks work with a master. 63 In Nürnberg, incoming journeymen were forbidden from negotiating work with a master on their own. A deputized master received each journeyman and assigned him to a master. There would later be a banquet where the local journeymen would quiz the newcomer to investigate his background and qualifications. One of the rules for these banquets was that no journeyman was allowed to be armed at the table. Apparently, they could become heated events. 64

How common travelling was for Scottish journeymen is unclear. There are at least two references to journeymen settling in towns other than those in which they did their apprenticeships. The Aberdeen Incorporation of Hammermen’s minute books have a 1729 reference to journeymen joining the craft which states that, ‘no man shall be admitted as a freeman in this corporation until two years after expiring of his apprenticeship, and serving for that space as journeyman either in this burgh or

61 EHMB, ED008/1/5, p. 21
62 Ibid., ED008/1/4, p. 380
63 Friedrichs, EM City, p. 98
64 Strauss, Nuremberg in the 16th Century, p. 100
somewhere else. In 1664, Thomas Montcuir was admitted to burgess-ship and in 1665 to the freedom of the Glasgow Incorporation of Hammermen. He had been trained in Aberdeen, and worked as a journeyman in Edinburgh.

As Friedrichs points out, the blocked mobility of journeymen from protection of freemen’s privileges and frustrated expectations would have undermined craft solidarity. There was little incentive for the journeymen to be docile and keeping the journeymen in line proved to be a recurring problem for the Edinburgh council. One example of this can be found in the records for February 1686 and November 1688, when apprentices and journeymen were forced to sign a bond promising they would keep the peace. In December 1688, many journeymen participated in the anti-Catholic riots in Edinburgh and the sacking of Holyrood Abbey. The riots brought with them a loss of life, as well as a loss of property. While there were burgesses and other unfreeman who also participated in the riots, the 1686 and 1688 bonds indicate that the journeymen alone were a large enough cause for concern. The bonds were another form of social control.

It might have been incorporation authority that kept hammermen journeymen in line during the '45. There was only one journeyman from the Edinburgh hammermen, a watchmaker named John M’Naughton, who was out with Charles Edward. He boasted about having killed Colonel Gardner at Prestonpans and ended up a prisoner at Carlisle. There were, however, at least eleven other Edinburgh journeymen and servants out. If they misbehaved, they could be fined or barred from work. The twelve that rebelled in 1745 did not prosper from their adventure.

Incorporation was also used as a means of control when journeymen simply refused to work. There was a complaint against the locksmith journeymen in 1750:

The locksmith art represented that several of their journeymen had lately combined among themselves to give up working unless their masters would alter the hours of working from five to six in the morning and from eight to seven at

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65 Bain, E., Merchant and Craft Guilds: A History of the Aberdeen Incorporated Trades, 1887, p. 207
66 Lumsden, H. and Aitken, Rev. P. H., History of the Hammermen of Glasgow, 1912, p. 137
67 Friedrichs, EM City, p. 98
68 EHSAS, EDO08/2/26. This bears the signatures and marks of over 170 journeymen and apprentices.
69 Houston, R., Social Change, 1994, p. 306 – 10
70 Commissioners of Excise, SHS, A List of Persons Concerned in the Rebellion, 1890, p. 252 - 3
night. The locksmith art met and engaged to one another not to fee any journeymen who should not work the ordinary hours and that under the penalty of five pounds sterling to be paid by the master...71

Even non-violent rebellion was crushed by withholding wages. Sometimes the council used oaths and bonds; sometimes it was through incorporation control of privilege and work. The journeymen were an underprivileged group who were often a thorn in the side of the council.

The Career Ladder

The career ladder to the middle of Edinburgh society can be illustrated by reconstructing the lives of two Edinburgh locksmiths. While both ended up as Edinburgh burgesses and freemen locksmiths of the Edinburgh Incorporation of Hammermen, each took a slightly different path to get there.

Edward Bell was born in the first quarter of the eighteenth century. His father, James Bell, was a farmer in Craighall.72 Unfortunately, his early years are mainly obscure. He did grow up on a farm, so Edward would have become accustomed to hard labour. Somewhere around the age of six, he might have attended the parish grammar school to learn basic reading, writing and arithmetic,73 but being on a farm he might not have attended as regularly as he should have. After his education at the parish school was finished, if there was education given to him by other than his family, he went up into Edinburgh to take up a trade.

The details of his trade experiences have several gaps in them, but can roughly be put together. On 10 January 1733, Edward Bell was put into the register of Edinburgh apprentices.74 He was taken into the home and booth of George Aitkine, an Edinburgh locksmith. Aitkine had attained burgess-ship in 1720.75 He therefore would have had another apprentice in his charge before young Edward came into his care.

71 EHMB, ED008/1/8, 1 August 1750
72 Edinburgh Apprentices, p. 7
73 Smout, T. C., 1560–1830, 1985, p. 438
74 Edinburgh Apprentices, p. 7
75 Edinburgh Burgesses, p. 3
though the first apprentice was probably a journeyman by the time Bell arrived. Bell himself might have worked for him as a journeyman before his apprenticeship began in 1733.\textsuperscript{76}

Bell’s life as an apprentice would not have been easy; he would have expected to earn his keep. All work was done for food, lodging and education; there was no payment for apprentices. Each day, work began at five in the morning.\textsuperscript{77}

The master would give instruction at various phases of each new job set in front of Bell. At one moment, he would be swinging a sledgehammer while his master would move heated work - fresh from the forge box - around on the study, or anvil. In this way all the unskilled blows of the apprentice’s hammer would fall in the right place, guided by the master’s hand. At the next job Bell might have been stood next to the standing-vice at the workbench filing away at a crook band for some customer’s door. As Aitkine walked by and noticed how short and futile his file strokes were, he would have given him a scolding and thus lessons were learned. By eight o’clock in the evening\textsuperscript{78} - four on Saturdays\textsuperscript{79} - the day was done and the booth was shut for the night. As the days went by, turning into years, Bell’s hammer blows became more skilled and his filing technique more quick and efficient. His master found less and less to scold him for.

On 31 March 1739, six years after his indenture began, Edward Bell presented his bill to be admitted a freeman locksmith. The detailed account of this in the minute books of the hammermen gives some insight into the common practices followed in leaving apprenticeship and becoming a master. It is therefore expedient to reproduce the entirety of the account as follows:

Edward Bell late prentice to George Aitken locksmith presented his bill for being admitted a freeman locksmith against admitting of Edward Bell, William Young protested that the same should not be received, because if this bill should pass every prentice should be entitled to the same advantage to George Begbie adhered Simon Frazer counter protested that Edward Bell shall receive no damage from the above protest but admitted in the ordinary course and if stopped that he shall be liable for no damage that may follow their on to which George

\textsuperscript{76}On 19 May 1739 John Brown, elder stated that he had been a journeyman for four and a half years. See below. EHMB, ED008/1/6

\textsuperscript{77}This was in summer, but it is not clear if it was true for winter also. Ibid., ED008/1/8, 1 August 1750

\textsuperscript{78}In summer, but in winter? Ibid., ED008/1/8, 1st August 1750

\textsuperscript{79}APS, General Index, p. 382
Aitken adhered William Ormistoun protested that the bill may not be received in regard that the said Edward Bell has not served the two years prescribed by the acts of the house or immemorial custom after the expiration of his indentures and craves that a delay may be made until such time as the clerk be allowed to look into the corporation's records in order to satisfy the house anent the said acts...Anent the bill presented by Edward Bell and the objections made thereupon in regard its presumed that there are acts of the house against him and likewise the immemorial practice of the incorporation. The house puts it to the vote receive the bill or delay the consideration thereof; and it carried delay twenty six votes to twenty three...The house delays the consideration of the bill presented by Edward Bell against which the said Edward Bell protested that he should receive no damage by the @ delay [sic]\(^9\)

The account starts off by stating that Bell was the *late* apprentice of Aitkine - his formal period of apprenticeship was over at this date. The document then states that Bell was lacking the two years of service due at the end of an apprenticeship, which was often used to recoup money spent by the master on the apprentice during the indenture period. This amounts to an eight-year apprenticeship, which is odd, as a 1536 statute of Edinburgh apprenticeship states the norm as 'seven years and nay less'.\(^{81}\)

After just over a month, on 5 May 1739, the bill was again discussed at the Magdalen Chapel:

The house resuming the consideration of the bill presented by Edward Bell are of opinion that the same ought to be refused and that in consideration of the report made by the clerk that it was against the practice of the house in such cases and the house ordains the clerk betwixt and the next sederunt to draw an act in the strongest manner and terms declaring that for hereafter no prentice shall be admitted freeman of this house until eight years complete after the date of his indentures and that the said act shall ratify all former acts customs and ordinances of the incorporation relative thereto...\(^{82}\)

The workings of the house were based on previous legislation, sometimes centuries old. There was a dilemma that the house could not immediately answer. The incorporation records were consulted and the house reached its decision based on acts from those records. When the decision was reached, forbidding Bell from taking freedom of the

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\(^80\) EHMB, ED008/1/6
\(^81\) Marwick, *Guilds and Crafts*, p. 73
\(^82\) EHMB, ED008/1/6
incorporation until the eight years were complete, the Clerk was ordered to draw up another act before the next ‘sederunt’, or meeting, to have the decision on the books for future reference. Bell was going to have to keep working in Aitkine’s booth for two more years before he could even consider setting up his own booth or taking on apprentices.

Bell still persisted. Two weeks later, on 19 May 1739, there was another meeting of the incorporation in the Cowgate. Bell tried to get an essay assigned early so he could start working on it:

Upon the petition of Edward Bell, late prentice to George Aitkin locksmith craving that albeit the house would not admit him freeman immediately in respect of the usage of the incorporation in receiving none until two years expired after the date of the discharge of their indentures yet that they would please admit him in the mean time to the making his essay although the same should not be received until the house thought proper as the petition bears. The house taking the same to their consideration refused and hereby refuses the said bill and petition so presented by the said Edward Bell and delay judging thereof against which John Broun elder protested that whereas the said Edward Bell had served four years and six months a journeyman of this city, as would appear by the books of the house and six years an apprentice, whereby the petitioners conceived himself entitled to be received a freeman of this incorporation and seeing the house has thought fit to delay granting the petition, therefore the said John Broun protested that notwithstanding the said delay it should no ways hinder the said Edward Bell from the exercise of his business within any part of the privileges and liberties of this city in regard he is willing to make his essay to testify his sufficiency to serve his majesties lieges and to pay the ordinary money due by prentices...83

While it would seem that Bell was incessantly pestering, the actual case was that he had done his six-year apprenticeship after four and a half years as a journeyman. If Bell applied for freedom (1739) after his six-year apprenticeship (proven by his entry in 1733 in the register of apprentices as stated above), then the four and a half years of journeymanship (which John Broun elder states is recorded somewhere in the various incorporation records) had to have started in about 1728.

After a childhood on the farm in Craighall, Bell moved into the capital and started working for a locksmith. By 1728 he was a journeyman. How much skill he had

83 EHMB, ED008/1/6
in his early journeyman years is not evident. It would have required money for the
journeyman booking fee with the incorporation, which was £3 in 1685. By 1733 he
had become Aitkine’s apprentice, eight years after Aitkine himself had attained burgess-
ship. By 1739 Bell’s apprenticeship was over, so he applied to become a freeman.
‘Immemorial practice’ dictated that he serve two more years as a journeyman, though
Bell protested. The house was not swayed and Bell had to wait the two years, even
though on 22 February 1740 he was allowed to attain burgess-ship and was listed as
such in the burgess rolls. It is not certain when his freeman’s essay was assigned, but
on 7 February 1741 he walked down into the Cowgate to the Magdalen Chapel and
presented it:

Compared Edward Bell, late prentice to George Aitkin, locksmith, present
deacon and presented his essay viz. a crook and crookband, a pass lock, with a
round filled bridge not cut, nor broke on the backside and with brass knobs and
jamband...admitted freeman locksmith among them...

The essay was a very serious part of the initiation to the incorporation’s freedom. In
1718 there had been a protest made to the incorporation that no one should ‘be admitted
freeman blacksmith or locksmith hereafter except the essay be narrowly looked to by the
essay masters at the making and locked up at night and the essay masters strictly
examined at the presenting of the essay.’ Freedom was a very serious honour and was
not handed out lightly.

Bell then took the oath in front of the incorporation:

By my part of paradise so help me God and by God himself, I A.B. shall defend
the true religion of Jesus Christ presently professed within this realm both with
my body and goods and shall be well and true in my vocation and craft in serving
of our [Sovereign Lord’s] lieges without deceit and shall obey the deacon and
masters whatsoever for the time and shall purchase no lordship nor other judges
by them and shall skot, lot, watch and ward and bear all manner of portable
charges with my brethren conform to my ability; and shall defend the liberty of
the craft according to dignity at the uttermost of my power and shall keep all the
general acts, ordinances and statutes made or to be made for utility and

of the said crafts without any reclaiming there from and shall forth from no

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84 EHMB, ED008/1/4, p. 380
85 Edinburgh Burgesses, p. 14
86 EHMB, ED008/1/7, p. 66
87 Ibid., ED008/1/5, p. 190
unfreeman pack nor peel with them and shall take none of my brethrens houses, booths or works over their heads and shall not seduce nor tryst any of my brethren's prentices or servants from them nor reset nor free them without there license asked and given, lawful warning, compt and reckoning ab effeict and I the said A. B. binds and obliges me faithfully to observe and fulfil the whole premises under the pane of perjury and defamation conform to this my oath of fidelity in all points as I shall answer in the presence of God. 88

After the oath was sworn, according to the minute books, Bell would have taken 'the deacon by the hand'. The deacon that year, whose hand Bell happened to be shaking, was Bell's old master, George Aitkine. The essay to be inspected was a pass lock. This was a door lock that was meant to be worked by a key for an already existing lock. In this way, one key - a 'pass key' - opened several different doors. The warding in the essay, which was a series of obstacles inside the lock, could be varied so that another key, which was not a pass-key, would open only one of the doors and not both. The pass key would have been given to Bell to build the essay around. Aitkine would have taken this key and inserted it into the keyhole of Bell's pass lock essay. As he turned the key, it would have had to glide smoothly past the intricate warding inside. It then would have had to throw the bolt with minimal resistance, or else it would not have been accepted. The jamband, or keeper, brass knobs and bridge 89 would have all been checked. After the door crook and crook band had been deemed sufficient and the oath taken, Bell would have paid the dues, which were £10 Sterling and 20 merks Scots to the Trades Maiden Hospital and 'other dues' to the clerk and officer. 90 The last thing Bell had to do was produce his burgess ticket, which he attained the year before. After at least 12 and a half years of apprenticeship and journeymanship Edward Bell was officially a freeman locksmith of the Edinburgh Incorporation of Hammermen. How long he lived and worked as a locksmith in Edinburgh is uncertain, but he was listed in 1752 as being a

88 EHMB, ED008/1/4, 1662 – 1701 The oath is in between the 1674 & 1682 freeman lists.
89 The bridge probably refers to the warding, but possibly is a reference to the spindle, which connected the knobs through the lock and door. In the Accounts of the Masters of Works, there are several references to locks receiving new bridges, sometimes with a new key's bit. MWA, 1982, p. 98, 187 and 327. On 29 June 1728, for 'the more security of the lieges', the essay of the locksmith art was changed to include the round filled bridge. EHMB, ED008/1/5, p. 29 Not being cut or broke might mean not leaving out the warding on the back of the lock, which was a problem addressed again on 3 May 1740 EHMB, EH008/1/7
90 The payment was partly in Scots merks and partly in English pounds. Ibid., ED008/1/7, p. 66
"smith" at Mitchell's (land?) in Fishmarket Close. This also illustrates the fact that "smith" was often used as a generic term for various branches of the hammermen.

There were other routes to attaining freedom of the incorporation. Thomas Letham, like Bell, was born sometime in the early eighteenth century and, again, little is known about his early years. He might have been born outside the burgh, like Bell, but it is also possible that he was born inside the Edinburgh walls. If so, education would have been harder to get. T. C. Smout, citing Alexander Law's Education in Edinburgh in the Eighteenth Century, points out that municipal elementary schools in Edinburgh did not offer enough places to accommodate all the children who grew up there. There were only a few hundred seats between the High School, Heriot's, the Trade and Merchant's Maiden Hospitals and the Tolbooth Kirk Charity School, for the several thousand children in the area. He might have been lucky enough to attend one of the adventure schools, where education was paid for by the parents, but it is just as likely that he went without. We do know that he learned enough to write his name. When he presented his essay on 3 May 1740, he signed his own name in the minute book.

It would appear that Letham was never apprenticed to an Edinburgh locksmith, as his name does not appear in the Register of Edinburgh Apprentices. There was no entry of Letham being booked an apprentice in the incorporation minute books either. He learned locksmithing somewhere, though, which might indicate that he started off as unskilled labour, working for a locksmith. This locksmith who employed and taught him might have been Alexander Fairbairn, as Letham took his daughter Jonet for a wife.

It is also possible that he was born, raised and apprenticed in another burgh. He might have come to Edinburgh as a stallenger, or unfreeman allowed to sell wares in town, but not work. Maybe he was an apprentice in Glasgow, or Dunfermline. He might have attained a stallenger licence for an Edinburgh fair. While at his stall, selling

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91 Gilhooley, 1752 Directory, p. 6
92 Smout, T. C., 1560 – 1830, 1985, p. 439
93 EHMB, ED008/1/7, p. 29 and 30
94 Edinburgh Burgesses, p. 51
95 EHMB, ED008/1/7, p. 26, and Edin. Marriage Reg., p. 317
96 CSD, p. 661
his locks, he might have met Jonet. Once married, he would have been allowed to join
the incorporation as a locksmith, by right of her father, Alexander Fairbairn.

Whatever the case was, the first definite fact of Letham’s career was recorded on
15 March 1740, when he presented his bill to become a freeman:

Thomas Letham locksmith in Edinburgh presented his bill for being admitted ane
freeman locksmith by right of marrying Jonet Fairbairn, daughter to Alexander
Fairbairn, freeman locksmith, which was received accordingly. He paid the
treasurer three pounds twelve shillings two pence and two thirds or a penny
Stirling money as the half of his upset money and dues for the Maiden
Hospital.97

The above entry in the minute books tells us that, even though he was not mentioned as
being an apprentice in Edinburgh, he managed to become a freeman locksmith of the
Edinburgh Incorporation of Hammermen by taking a different route. He married a
freeman’s daughter. Also by his marriage, he was entitled to buy burgess-ship seventeen
days later, on 2 April 1740.98 He was given a fancily scribed burgess ticket, as was the
custom and entered into the burgess rolls.

A month later, on 3 May 1740, Letham went down to the Magdalen Chapel and
presented his essay:

Compared Thomas Letham locksmith in Edinburgh and presented his essay viz a
crook & crookband, a passlock with a round filled bridge, not cut nor broke on
the backside and with brass knobs and a jamband which was found to be a well
wrought essay able to serve his Majesties lieges and therefore they admitted him
to be ane freeman locksmith among them. His essay masters were James
Gardener John Wilson & Patrick Sibbald. His essay was made in Alexander
Fairbairns shop and he landlord. He paid the treasurer the other half of his upset
money making in whole seven pounds five shillings five pence one third of a
penny Stirling money including the twenty merks Scots for the Trades Maiden
Hospital and also paid the other dues to the clerk & officer and the said Thomas
Letham in token of his consent to the acts of the incorporation conform to the
oath taken by him there anent of the date hath subscribed these presents

Thomas Letham99

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97 EHMB, ED008/1/7, p. 26
98 Edinburgh Burgesses, p.120
99 His signature is in his own hand – not the clerk’s. EHMB, ED008/1/7, p. 29 – 30
His essay, which was made in his father-in-law’s booth, was the common essay. He too, shook the deacon’s hand and took the oath. Unlike Bell, he paid only seven pounds, five shillings, five and one third pence as upset, along with the twenty merks and other dues. Craftsmen who were apprenticed, such as Edward Bell, had to pay ten pounds. For those that married a freeman’s daughter, it was less. Could this have been to assure ease of disposal for female children? Perhaps this practice of a ‘tax-break’ for craftsmen who married the daughter of a freeman was a burgh-controlled dowry of sorts, to ensure that female children in a patriarchal society were not left to fall into the proverbial ‘cracks of society’.

Thomas Letham was listed as living in Selkirk’s (land?) in East Grassmarket in 1752.\textsuperscript{100} When he took his first apprentice is not clear, but we know that he took Robert Letham, son to one James Letham, tenant in Murehead, as apprentice on 7 February 1753.\textsuperscript{101} It is not clear if James was kin, or how many apprentices he had throughout his career.

As the locksmith craft grew in importance, it would have become easier for a locksmith to climb the incorporation hierarchy to deacon or council member, unless he was content with plain freedom of the incorporation. There were other directions to go also, such as attaining guildry.

\textbf{Guildry and Craftsmen}

Once a locksmith had attained burgess-ship in Edinburgh and subsequently become a freeman and master of the Incorporation of Hammermen, he was set up in a comfortable position in the burgh hierarchy. Freedom of an incorporation was a plateau of sorts in terms of a career in a craft. There were, however, higher rungs to climb on the proverbial ladder. The next step for a freeman was guildry. Guild brethren held a high position in burgh society. They had privileges and a degree of power. Henceforth, guild brethrenship can be used to illustrate the position of the various hammermen crafts in

\textsuperscript{100} Gilhooley, 1752 Directory, p. 30
\textsuperscript{101} Edinburgh Apprentices, p. 51
that society in terms of economic strength and status – in particular the locksmith craft. Records of guild brethrenship were included in the two volumes of ‘The Roll of Edinburgh Burgesses and Guild Brethren’, which were transcribed by Charles Watson in 1929. Data was taken from these for the period of 1406 to 1750, which represent the earliest burgess / guildry entry and the afore-mentioned pre-Industrial Revolution cut-off point. Were the hammermen wealthy? How did the various crafts rank in terms of wealth and status? What do these statuses tell us about the products and production of the hammermen? What does guild brethrenship suggest about the locksmith craft? The patterns of guild brethrenship in the Incorporation of Hammermen suggest answers to these questions and shed light on part of the hierarchy in the metalworking trades.

E. P. D. Torrie stated that the guild, 'was a society for mutual self-help, conviviality and support of the church, retaining much in common with the early socio-religious guilds.'\(^{102}\) The *Concise Scots Dictionary* defines the guild as 'an association formed within a burgh, enjoying exclusive rights of trading in it and taking a predominant part in its government.'\(^{103}\) The principal concept behind the guild system is that of a fraternal group of individuals from a burgh, given a monopoly in their town for the buying of raw materials, the regulation of trade and the right to trade abroad.\(^{104}\) It is important to note the difference between the guild and the craft guilds, or incorporated trades, which came about later in the fifteenth and sixteenth centuries. The guild to which burgesses became guild brethren, was an older, larger economic organization, dealing mainly with the wealthier overseas merchants and the craft aristocracy. The Edinburgh guild was supposed to protect the Edinburgh guild brethren from receiving too little money for goods and services - perhaps due to foreign competition - while at the same time protecting the consumers against fraudulent dealers. Protection of trade went hand in hand with local political power. By influencing and participating in the burgh council, the guild obtained the power to further its own interests. Also, guilds

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\(^{103}\) *CSD*, p. 252

took a fraternal role in burgh life, looking after guild brethren and guild brethren's families who were in need.\(^{105}\)

Before the decreet arbitral in 1583, when craftsmen joined the guild, they were supposed to renounce their trade. In an enactment of the Laws of the Four Burghs, before incorporations came about, was a statement that dyers, fleshers, shoemakers and fishers should not be in the merchant guild unless they abstained from the practice of their trade with their own hands and conducted it exclusively by servants.\(^{106}\) A craftsman that entered the guild was not to dirty his hands, but buy materials and employ servant craftsmen in his booth to make the wares for him; he was to be an employer. He effectively became a merchant of craftsman’s goods. Since guildry brought with it foreign trade privileges, craftsman guild brethren might have hired journeymen to make the same products they once made, only for export, instead of the domestic market. There are various lists of the customs rates for products leaving Scotland, including various metalwares.\(^{107}\) Some craftsmen who joined the guild as employers may have become exporters.

After the decreet arbitral of 1583 the regulations were slightly more relaxed. In 1585 it was stated that there were different assessments of wealth for craftsmen entering the guild: ‘the handy labourer using his craft in moveable goods to be esteemed worth five hundred merks of free gear by his craft and whatever he be that uses not the craft shall be worth one thousand merk free moveable gear...’\(^{108}\) It would appear that after 1585 a craftsman could enter the guild and continue to work his trade.

Attaining the status of guild brethren in the early modern period indicated wealth, with the possible exception of receiving guildry ‘gratis’ from the council. The association between guildry and wealth is indicated by several details of brethrenship. Most significant was the cost of attaining guild brethrenship as opposed to the price of burgess-ship. Guildry was a higher social plane than burgess-ship; it was more prestigious and more politically powerful and therefore more expensive. By 1508 the

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\(^{105}\) This was also true of the craft guilds, which are referred to as incorporations throughout.

\(^{106}\) Marwick, Guilds and Crafts, p. 25 - 6

\(^{107}\) LT ‘Rates of Customs’, 1867, p. 277

\(^{108}\) Marwick, Guilds and Crafts, p. 143
price for the eldest son and heir of a burgess to attain *burgess-ship* was six shillings eight pence, while *guildry* cost thirteen shillings four pence; exactly twice as much.\(^{109}\)

By 1564 burgess-ship for an apprentice cost five pounds and guildry cost ten pounds. For a 'stranger', or a person not from Edinburgh or related to a burgess, the price was much higher – twenty pounds for burgess-ship and forty pounds for guildry.\(^ {110}\) In 1647 burgess-ship for a stranger was one hundred and sixty pounds plus ten pounds for arms, while guildry for a stranger cost two hundred and forty pounds plus sixteen pounds for arms.\(^ {111}\) If a burgess could afford guild brethrenship, then he was indeed wealthy.

Further proof of guildry equating to wealth is found in the act of council from 6 January 1585 which lists the levels of assessment for incoming brethren. It declares that no one is to be received guild brother from then on unless they meet certain criteria, such as,

he that shall be of the merchant vocation shall be esteemed in moveable goods worth one thousand merks of free gear and the handy labourer using his craft in moveable goods to be esteemed worth five hundred merks of free gear by his craft and whatever he be that uses not the craft shall be worth one thousand merk free moveable gear...\(^ {112}\)

At the least, a craftsman had to be worth five hundred merks even to be eligible for guildry. If he did not practise his craft but only employed other craftsmen to work in his booth then he had to be as wealthy as a merchant guild brother.

One last indication of the connection between guildry and wealth is the arms that were required for burgess-ship and guildry in the sixteenth and seventeenth centuries. Every freeman in the early modern period was expected to ‘bear the burden’ with their neighbours of fighting as the burgh’s army. On 3 November 1591 a rule was set ‘that anyone being made burgess must be sufficiently armed with ane furnished musket.’\(^ {113}\)

From the late sixteenth century any burgess entered in the rolls has the word ‘hagbut’ or

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109 The prices for burgess-ship and guildry are separate from upset costs for incorporation freedom. *Edinburgh Burgesses*, p. 2

110 Ibid., p. 3

111 Marwick, *Guilds and Crafts*, p. 170

112 Ibid., p. 143. This was the new situation after the decreet arbitral. After this, craftsmen were individually assessed for taxation, instead of paying a group rate through the incorporations.

113 *Edinburgh Burgesses*, p. 15
'musket' listed after their name, until about 1644, when burgesses seem to have started giving money for the council to spend on arms instead of providing individual weapons and military service. While burgesses were expected to have only a musket, guild brethren were required to present an entire corset, which was a suit of armour. The corset is usually associated with pikemen in the military practices of the late 1500s and early 1600s. The pike was considered to be a more honourable weapon than the musket. It is possible that the guild brethren were supposed to make up the pikemen of the Edinburgh defences, while the burgesses used the muskets. Armour was expensive and not everyone could afford it. Muskets were considerably cheaper. Corsets were required for joining the guild for at least the first half of the seventeenth century, again indicating the level of wealth expected of guild brethren.

The guild was a highly selective group and it was considered both an honour and a privilege to join. The route to becoming a guild brother was easy, if one had the right connections and circumstances. The first step was to procure a burgess ticket. One could purchase burgess-ship and work for a while to save up money to purchase guildry at a later date. One could also purchase both burgess-ship and guildry at the same date. It appears that the costs remained the same, whether bought together or separately, but guildry was capital intensive and many could not afford both at the same time. Burgess-ship was a prerequisite to guildry, so when a person is listed as a guild brother, burgess-ship can safely be assumed.

As with burgess-ship, a candidate for guildry also needed connections. Marwick, in his indispensable book *Edinburgh Guilds and Crafts*, cites several examples of the various types of acceptable connections, which are similar to those linked with burgess-ship. Many acts of the Edinburgh council dealing with entry into the guildry mention candidates requiring 'right by their fathers, wives, or (as) apprentices'.

The first way that one could obtain guild brethrenship was to inherit it 'in right of father'. In the Guild Laws of Berwick it stated that no one was to be admitted guild brother for less than forty shillings unless they were the son or daughter of a guild

114 Reid, S., *All The King's Armies*, 1998, p. 8
115 Marwick, *Guilds and Crafts*, p. 145 - 6
brother.\textsuperscript{116} Price rates for guildry and burgess-ship written on 23 March 1508 start by listing that the eldest son of a burgess, entering as his heir, paid only thirteen shillings and four pence for guildry. This was far cheaper than the five pounds for an unfreeman to obtain the same.\textsuperscript{117} If a person was seeking guildry and their father had been a burgess or guild brethren, they automatically had an advantage in price over someone who did not have a family relation with a burgess or guild brother. The ‘right of father’ entries into guildry indicate the selectiveness of the guild and their reluctance to admit large numbers of new brethren. Hereditary connections helped reserve the privileges for the select few in the burgh.

Another route to obtaining guildry was by ‘right of wife’. This route was also semi-hereditary as it involved marrying a guild brother’s daughter and therefore obtaining as a dowry of sorts the right to join the guild himself. Daughters in the early modern period were often considered a burden. Who would care for them in a patriarchal society when the father became old or passed away? By offering the passage of burgess and guild privileges through a daughter upon marriage, incentive was given to marry local daughters of burgesses and guild brethren. On 7 October 1462 John Chapellane received guildry by right of wife, after paying twenty shillings.\textsuperscript{118} On 29 January 1478 Thomas Haliburton was made burgess and guild brother by right of wife after giving spices and wine along with paying the twenty shillings.\textsuperscript{119} This was still a common practice in 1750. An example of this from 1751 is the deacon of the masons, Patrick Jameson, being received guild brother by right of his wife.\textsuperscript{120}

Right of wife was sometimes obtained by marrying a burgess or guild brother’s widow. A famous example of this is the infamous Major Thomas Weir. In 1642 he married Isobel Mein, the widow of a merchant named Bourdoun.\textsuperscript{121} The marriage

\textsuperscript{116} Edinburgh’s guild was based on Berwick’s guild laws. \textit{APS, General Index, p. 612}
\textsuperscript{117} \textit{Edinburgh Burgesses, p. 2}
\textsuperscript{118} Marwick, \textit{Guilds and Crafts, p. 44}
\textsuperscript{119} Ibid., p. 49
\textsuperscript{120} \textit{Edinburgh Burgesses, p. 106}
\textsuperscript{121} See Stevenson, D., \textit{King or Cov.}, 1996, p. 64 – 77 for the details of his trial and execution for allegedly confessing to incest and bestiality. The case gained recognition from Walter Scott and R. L. Stevenson.
relieved the burgh of its duties in sustaining Bourdoun’s widow and for his pains Weir received burgess-ship and guild brethrenship gratis from an act of council.\footnote{Edinburgh Burgesses, p. 519}

Another way that one could attain guildry was through apprenticeship. On 8 November 1564 an act was passed stating that former apprentices could purchase guildry for only ten pounds\footnote{Ibid., p. 3}, while men who had not been apprenticed, or had not completed an apprenticeship had to pay forty pounds.\footnote{APS, General Index, p. 611} The reference to men who had not been an apprentice might refer to strangers only, not sons or sons in law of guild brethren, who attained guildry by the above-mentioned routes.

It would seem that prior to 1583, only those apprentices whose masters were guild brethren could join the guild. On 9 November 1583 the Edinburgh council passed an act which changed this:

\begin{quote}
After long reasoning upon the rights and privileges of the prentices to burgesses and freemen of this burgh, upon consideration of the consuetude of burgh, certain acts and statutes made heretofore and of the effect and meaning of the decreet arbitral and for good reasons moving them, they have declared, statute and ordained that when any manner of person shall be lawfully bound prentice to a burgess and freeman of this burgh and shall complete his apprenticeship and fulfil the points of his indenture and being found qualified and worthy in honesty and substance to be admitted in the society of the guild brethren of this burgh, whether his master was guild brother or not, he shall pay no more to the dean of guild for his guildry but the sum of ten pounds only, for the which he shall be made guild brother and this likewise to be extended to them that were prentices before the making of this present act.\footnote{Marwick, Guilds and Crafts, p. 135}
\end{quote}

After 1583, both guild brethren’s apprentices and regular burgesses’ apprentices had the option of purchasing guildry. Even if an apprentice’s master was not in the guild himself, but was a burgess, that apprentice could climb to a higher societal rank.\footnote{This was seen as socially questionable though and in 1585 the council decided that for any one to reach a higher station, such as guildry, while father, father-in-law, or master was only a burgess, they had to pay the highest entry price: ‘Item, because the son, daughter, or apprentice can be in no better estate nor their father or master was by their right, therefore, where the master or father was no burgess or guild brother, the said apprentice, the son, or yet the husband of the daughter, not to be received burgess or guild brother but for the uttermost duty before mentioned’. Marwick, Guilds and Crafts, p. 145 - 6}
Rather than making guildry even more selective, the 1583 act lifted a bar from guild membership.

Despite this, guildry retained a sense of hierarchy and privilege. Apprentices were subject to further legislation from the Edinburgh council in 1585 to ensure that the children of guild brethren enjoyed privilege over apprentices to guild brethren. On 28 April 1585 the council made the following act against apprentices seeking guildry:

Item, anent the apprentices of guild brethren and burgesses, first, for their better trial and proof of their guild conditions; next, in respect they ought to be far inferior to their masters' barns twitching their right through their master... therefore no apprentice be received burgess by right of his apprenticeship without he have served after the ische of his apprenticeship a freeman for the space of three year for meat and fie and than to be received burgess as an apprentice and also not to be received guild brother by that right without he have been a burgess for five year, so to abide thirteen year before he be guild brother by right of his apprenticeship.\textsuperscript{127}

While the 1583 act was upheld allowing regular burgesses’ apprentices to attain guildry, this act tempered the liberal entry regulations with a waiting period.

The 1585 act illustrates the position of apprentices in the guild entrance hierarchy - children of guild brethren, then sons in law of guild brethren and then apprentices. Thirteen years must have seemed like an eternity for apprentices when others gained entrance immediately due to family connections. Edinburgh’s guild was a select group and they wanted to protect their privileges, keeping them in the family. Apprentices attaining guildry enlarged the group, diluting the privileges.

The apprentices were given an alternative route to the much sought-after guildry if they did not want to wait. Guild brethren wanted decent, respectable and trustworthy husbands to care for their daughters when they no longer could. Apprentices wanted a way around the long waiting period for guild entrance. The act of council from 28 April 1585 set out to encourage apprentices ‘to take in marriage their masters' daughters before any others, which shall be a great comfort and support to freemen’. An apprentice could marry ‘his masters' daughter, or the daughter of any freeman burgess and guild and be found worthy and qualified, in that case to be received guild brother at any time by right

\textsuperscript{127} Marwick, Guilds and Crafts, p. 145 - 6
of his wife.\textsuperscript{128} Quid pro quo. The master got a suitable son in law and the apprentice got guildry immediately by right of his wife.

Another route to guildry included brethrenship being given ‘gratis’, often for services rendered to the country, town, or guild. In 1562 Alexander Weyland, a lorimer from the Edinburgh Incorporation of Hammermen, was given guild brethrenship free due to his being injured in a French ‘rage’ in Edinburgh.\textsuperscript{129} In 1459 Edward Boncle received guildry gratis for ‘his aid and counsel’.\textsuperscript{130} This continued throughout the early modern period, well beyond 1750. For example, in 1762 the five masters of the High School in Edinburgh were made burgesses and guild brethren ‘dispensing with the dues, for good services done by them’.\textsuperscript{131}

There are many examples of people being given guild brethrenship gratis at the request of various nobles. On 18 January 1555 Mr. Robert Glen was given burgess-ship and guildry gratis at the request of Lord Orkney.\textsuperscript{132} On 1 February of the same year, Robert Lindsay was given guildry gratis at the request of the queen.\textsuperscript{133} On 24 December 1563 a taverner named William Abercrummy was given burgess-ship and guildry gratis at the request of the abbot of St. Colme’s Inch.\textsuperscript{134}

Because it spread the lucrative guild privileges quite thin, there were many attempts to curb the use of ‘gratis’ guild entrance. On the same day that the taverner William Abercrummy received burgess-ship and guildry free, the Edinburgh council decided that there was to be no more burgess-ship or guildry given gratis for one year under penalty of ten pounds ‘to be taken of the consenter and given without favour’.\textsuperscript{135} On 26 September 1570 the council, bailies and provost considered all the gratis guild entries and declared that:

Understanding the great hurt that comes to the whole merchant estate of this realm by the solicitation of lords, great men and courtiers whose servants and kinsmen are made burgesses and freemen of burgh without paying of any duty

\textsuperscript{128} Marwick, \textit{Guilds and Crafts}, p. 145 - 6
\textsuperscript{129} Ibid., p. 96 - 7. This refers to the Siege of Leith in the spring of 1560.
\textsuperscript{130} Ibid., p. 44
\textsuperscript{131} Ibid., p. 211
\textsuperscript{132} The Lord of Orkney was the Bishop of Orkney.
\textsuperscript{133} Marwick, \textit{Guilds and Crafts}, p. 81
\textsuperscript{134} Ibid., p. 98
\textsuperscript{135} Ibid., p. 98 - 9
therefore to the great hurt of the common well of all burghs and because such requests cannot commonly be refused for eschewing of the displeasure of the said great men and courtiers. Nonetheless the said provost, bailies and council statutes and ordains that in all times coming the heirs of such as are made burgesses or guild brother in manner above written shall not be accepted nor admitted burgesses or guild [brother] without payment of the duty conform to the old acts notwithstanding their fathers freedom as said is and if the bailies, council or dean of guild consents or does in the contrary they to pay the said duty to the utmost but favour and that this act be observed for ever.\textsuperscript{136}

By declaring that the heirs of gratis guild brethren could not enter by right of father, the council ensured that the heirs would have to pay the full unfreeman price to join. As many could not afford this, the guild’s numbers were controlled. The ‘great men’ still got what they wanted, but the guild had to tolerate only individuals.

In the appendix, Table 7 shows the numbers generated by the \textit{Edinburgh Burgess Rolls} for the four main entry routes for guildry in the Incorporation of Hammermen - right of father, right of wife, apprenticeship and receiving it gratis from the council. The unknowns are those guild brethren where entry route was either not listed or unclear. These unknown entries are problematic in analysing the data. It is likely that the unknowns are a mixture of the first three types. Many entries for burgess-ship were via apprenticeship, with guildry coming at a later date with no entry route given. It would be easy to assume that these men attained guildry via apprenticeship, as they did their burgess-ship. The problem is that they might have attained a lower guildry price by marriage. If only the clerk had taken the time to mark down that it was in fact apprenticeship that entitled them to guildry the task would be much simplified. It is unlikely that a gratis entry would not have been marked down, as the practice of giving guildry gratis was discouraged by the guild. They would have wanted records of those who gained entry without paying, so they would know not to allow the gratis guild brother’s children in by right of father at the privileged price. Therefore, if all the unknowns were actually apprenticeship entries, right of father and apprenticeship would have been equally common as an entry route to guildry. It is unlikely that all the

\textsuperscript{136} \textit{Edinburgh Burgesses}, p. 4 - 5
unknowns were of one type though, so it is a logical assumption that right of father was the most common entry route to guildry in the Edinburgh Incorporation of Hammermen. The gratis figure in Table 7 is the only sure figure, as stated above. Twenty-three of the 134 hammermen, 17 per cent, received their guild brethrenship gratis from the council.

Just because someone had fulfilled the above requirements did not mean they could join the guildry at their leisure. As with burgesses, guild brethren were only admitted four times a year at the four head courts. Other than at these four times, the ‘locked book’, where the names of burgesses and guild brethren were written, was ‘put up in the charter house, not to be removed till two days before the said head courts, that the rights of fathers of applicants may be examined.’ This illustrates how keen the Edinburgh guild was to keep the numbers of guild brethren down to a controllable level.

On 22 March 1717 an act was passed by council in hopes of limiting the number of people taking guildry by setting a time limit on entrance. Throughout the early modern period there were complaints about people carrying on trade without taking burgess-ship or guild brethrenship. The act seems to indicate that the people targeted were procrastinating, with the intention of becoming burgess or guild brother at a later date:

The counsel, with the extraordinary deacons, considering that hitherto there is no space of time determined betwixt and which persons having right to enter burgess or burgess and guild brother should be obliged to enter themselves in the dean of guild books, or otherways loose their privilege, whereby several persons...carry on a private trade without entering, by which they reap the benefit of the burgesses but bear no part of the public taxes, to the great prejudice of the neighbourhood and so several persons by their delaying to enter, are prevented by death, to the great prejudice of their widows and children; for preventing whereof it is hereby statute and enacted that in all time coming every person having the right to enter burgess or burgess and guild brother, either by their father, or their wife, or as prentice, shall enter themselves in the guild books within the space of three years after their majority, or marriage, or the time of the expiring of their indentures; declaring hereby, that in case they do not enter within the space foresaid, they shall omit and lose their right and privilege of entering...
The act goes on to declare that each year that a person worked their trade without entering the guild, they would be fined twenty shillings. By setting a three-year time limit, they were forcing conformity and control.

There are also several instances cited by Marwick that illustrate how selective the guild could be when considering candidates for brethrenship. On 23 April 1563 John Paterson, the then deacon of the masons, asked the council to be made a guild brother. He stated that he had worked hard on the new Edinburgh tolbooth and other masons had received burgess-ship for their work. The council replied,

that they have not been in use to grant any such liberty or privilege to men unmarried; and therefore, when it should happen the said deacon to have ane lawful wife and married according to the order of the Kirk now present upon his good behaviour and service he should be considered in this his desire and satisfied to his pleasure.140

Marriage was also used against John Reid, servitor to James, Earl of Arran, when on 31 May 1581 he sought guildry. He was granted permission to,

Exercise the trade of ane guild brother within the freedom of this burgh, not with standing that he be not admitted, but only free burgess and further promises so soon as he shall be married to admit him free guild brother for the request of the said earl.141

The idea of not allowing a burgess to become a guild brother on grounds that he was not married illustrates a form of social control used to keep the privileges reserved to the select group.

On 6 March 1577, seven years before the decreet arbitral, Henry Blyth, a surgeon and John Couper, a tailor, tried to join the guild. The council refused them unless they 'refused their crafts and boar boarding with the merchants'.142 The decreet arbitral eventually brought equality in the guild for craftsmen and merchants, but this still illustrates how selective the guild could be.

There was also the ever-rising cost of purchasing guildry. Unfortunately, the recording of guild entry prices is random at best. In the ‘Statutes of the Guild’ of the

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140 Marwick, Guilds and Crafts, p. 98
141 Ibid., p. 123
142 Ibid., p. 114
late thirteenth century, the first mention of guild entry fees can be found.\textsuperscript{143} It says ‘no one to be admitted into the guild of less than 40 shillings, unless they be sons or daughters of guild brethren.’ This might mean that the person had to have at least forty shillings of wealth in order to be eligible to join, or it might mean that they had to pay the forty shillings as an entry fee. Either scenario indicates the wealth that guildry represents.

In 1407 a duty of ten shillings was required for one to be made a guild brother.\textsuperscript{144} By 1507 the price had been raised by three shillings and four pence for an eldest son and heir of a burgess to join the guild.\textsuperscript{145} Other prices were also laid out for other entrance categories such as twenty shillings for a second son of a burgess and twenty for a burgess’s daughter. For an unfreeman’s daughter it was five pounds to join the guild. Unfortunately, it does not state how much it cost for an unfreeman’s son to join the guild.

The entries on guild entry price for 1564 and 1574 in the council records state that the duty payable for guildry was forty pounds. It then states that for an apprentice it was only ten pounds.\textsuperscript{146} After the decreet arbitral the price for guildry through apprenticeship remained the same.\textsuperscript{147} This decreet may have opened up the privileges to a greater pool of Edinburgh burgesses, but it seems that the guild did not respond by increasing the entry fees.

In the next century, there are several council entries from 1647 to 1654 that deal with guild entrance fees. The 1647 act begins by talking about the ‘great damage and prejudice’ the town was suffering by admitting burgesses and guild brethren ‘at such low prices for the said freedoms’. The burgh was under much stress. The Bishops Wars of 1639 and 1640 and the Scots armies sent to England, Ireland and the Highlands had severe monetary repercussions. One way that the burgh dealt with this was to increase the price for burgess and guild privileges. On 27 August 1647 the council stated that the price of becoming a guild brother would from then on be £240 and £16 for arms. The

\textsuperscript{143} APS, General Index, p. 612
\textsuperscript{144} Edinburgh Burgesses, p. 1
\textsuperscript{145} Ibid., p. 2
\textsuperscript{146} Edinburgh Burgesses, p. 3 and Marwick, Guilds and Crafts, p. 110
\textsuperscript{147} Marwick, Guilds and Crafts, p. 135
1647 entry fees for guildry increased to a phenomenal amount and arms money replaced provision of arms and armour.\textsuperscript{148}

On 8 October 1652 the council passed another act. In it several people who had been booked burgesses and apprentices 'in the time of trouble' were listed as desiring the council to ratify their burgess standing. It mentions that they were allowed to purchase burgess-ship and guild brethrenship 'as if they had been booked after the form and manner used of before'.\textsuperscript{149} This was carried further in 1654:

Forsameikle as the price and rate of the burgess-ship and guild-ship has been altered from the less to more and more to less, according to the exigency of the time...and seeing their times has their own pressing reasons for diminution of these prices therein contained, as the long continued troubles of a calamitous time, the great indigence and poverty of the people, who are not able to pay for their freedom at the late prices...Therefore, to the effect the people may have ease for the time and these indirect ways and means may be prevented and removed and the guild box somewhat better supplied with money, the council has thought fit to reduce the price of the burgess-ship and guildship to the old rate during the councils pleasure; that is to say, the price of burgess-ship to be one hundred merks money and ten pounds for arms and the price of the guildship to be one hundred pounds money and sixteen pounds for arms, they paying the small dues over and above.\textsuperscript{150}

These measures seem to represent necessity in hard times rather than guarded trade privileges. In 1654 this was confirmed by the council when they described the prices as being altered from less to more and more to less 'according to the exigency of the time'.

Prices were set as a barrier to guild entry to keep the privileges reserved for a select group. They fluctuated as the council deemed necessary, in order to retain and maximise the effectiveness of those privileges. As shown in Table 6 in the appendix, the cost for guildry varied widely with each category of applicant. Male children of those already in the select group had a definite advantage over apprentices and children of unfreemen. The cost also followed a general trend of increase over the early modern period, with a few decreases due to pressures of contemporary events. Guildry cost money and therefore represented wealth.

\textsuperscript{148} Marwick, Guilds and Crafts, p. 170 - 3
\textsuperscript{149} Ibid., p. 172
\textsuperscript{150} Ibid., p. 173
Benefits of Guildry

There were various benefits that came with guild brethrenship. The most apparent of these guarded trade privileges of the guild brethren. One such privilege was that only guild brethren were allowed to have 'lot or cavil' with other guild brethren. This meant that a stranger, or unfreeman, could not come to an Edinburgh fair and set up a booth to sell wares in the best spots in the market place. The guild brethren were allowed to cast lots for the best positions first. Any remaining areas could then be divided up amongst unfreemen by lot and cavil amongst themselves.¹⁵¹

Only Guild brethren were allowed to trade abroad and they were also exempt from paying tolls in the king’s burghs.¹⁵² Certain goods were reserved for guild brethren to deal in. In the guild laws of Berwick, the buying of hides or skins for resale and the cutting of cloth were reserved.¹⁵³ In 1568, the doors of three booths were ‘closed up’ until their occupants purchased guild brethrenship, as they were selling spices that only guild brethren were allowed to sell.¹⁵⁴ The same had been threatened to those who sold wine, wax, velvet, silks, or other such fine wares in 1560.¹⁵⁵ While not all of these goods applied to the Incorporation of Hammermen, they do illustrate the privileges accorded to the guild.

Political power and prestige were other benefits of guildry. In 1681 the merchants of Edinburgh formed the ‘Merchant Company’ in an attempt to get a monopoly on retail for its members. This would have been an oligarchic, super-guild in the guild. The crafts made the point that ‘persons who wish may form voluntary societies, but a society on the lines proposed, destructive to other people’s liberties, is against all reason and without parallel. The governors of such a company would be masters of the town.’¹⁵⁶ As it was, the guilds had economic power in the towns and after

¹⁵¹ Marwick, Guilds and Crafts, p. 8
¹⁵² Lynch, Utrecht Conference, p. 2
¹⁵³ APS, General Index, p. 612
¹⁵⁴ Edinburgh Burgesses, p. 4
¹⁵⁵ Marwick, Guilds and Crafts, p. 95
¹⁵⁶ Houston, R., Social Change, 1994, p. 358
the Bishops’ Wars, the power of burghs was great enough that the covenanters reduced their voting strength in parliament.\textsuperscript{157}

Aside from guarding trade privileges and increasing political power, there were other benefits to becoming a guild brother. The guild was a fraternal organization; an extended family of sorts giving credence to the term ‘guild brethren’. It was therefore expected that guild brethren were to act in a brotherly manner. Abusive language from one guild brother to another was fined 40 d. for the first three offences. After that the matter went before the aldermen, dean of guild and the remaining brethren of the guild. More serious assault cases were also handled by the guild itself.\textsuperscript{158}

If a guild brother was in trouble with the law somewhere outside the burgh and his life was in jeopardy, three other guild brethren would go and stay with him, offering their services and support. He would have to pay for any extra errands he would have them go on, but it seems that the guild would pay the costs of the three brethren travelling to his aid. If it was decided that the guild brother was guilty, then the aldermen would decide whether or not the accused and condemned was liable for the expenses taken by his three guild brethren.\textsuperscript{159}

Another aspect of the fraternal side of guildry was a form of insurance for guild brethren. If a guild brother fell ‘sick or decayed’, he was cared for by the other brethren. While sick, a person was incapable of earning a living for his family. The guild made sure they did not starve to death.\textsuperscript{160} This is not to say that they alleviated all hardship for the family – going from a working state of wealth capable of affording guildry to a charity state of subsistence could not have been easy for the sick guild brother or his family.

When a guild brother died, all other guild brethren who were not out of the burgh on business were bound to attend his funeral. Failure to attend would have cost the absentee guild brother a boll of barley malt in the earlier times.\textsuperscript{161} If the guild brother

\textsuperscript{158} Marwick, \textit{Guilds and Crafts}, p. 31
\textsuperscript{159} Ibid., p. 31
\textsuperscript{160} Ibid., p. 31
\textsuperscript{161} Ibid., p. 31
died without leaving 'property sufficient for his burial and to 'sing for his soul,'" he was buried at the expense of the guild.\footnote{APS, General Index, p. 612}

Apart from physical presence at funerals, the guild also provided part of the safety net set up for orphans in Edinburgh. Any burgess’s child was eligible to gain entrance to Heriot’s hospital, which covered education. The guild then took up the cause of daughters of guild brethren who were sick, decayed, or had died in poverty. They were set up with a dowry for when they either got married or entered a convent.\footnote{Marwick, Guilds and Crafts, p. 31} The guild, though part of the higher strata of Edinburgh society, was still part of the entire social fabric of the early modern burgh.

\section*{Guildry and the Incorporated Trades}

In the earlier history of the incorporated trades, it was not common for craftsmen to join the guild. This changed after the 1583 decreet arbitral. This is illustrated by the number of hammermen who attained guildry prior to 1583. As can be seen in Table 5 in the appendix, only three hammermen had become guild brethren from 1450 to 1550. From 1550 to 1600 nineteen hammermen took guildry. Therefore, until the 1550 to 1600 period, guildry has little meaning as an indicator or wealth for the Incorporation of Hammermen. From the decreet arbitral on, it will give a reasonable indication.

So were the Edinburgh hammermen wealthy? One way to answer this would be to compare the number of hammermen guild brethren to the number of entries for other occupational division represented in the Edinburgh guild. This would involve taking a count from The Roll of Edinburgh Burgesses and Guild Brethren of every merchant, brewer, minister, glazier, farmer, shipmaster, bookbinder, gardener, cooper, baxter, naval officer, tailor, surgeon, wright, bonnetmaker and every other occupation to attain guildry from 1406 to 1750. This is beyond the scope of this thesis, so the guild membership numbers were taken for the hammermen only, from 1450 to 1750.\footnote{Edinburgh Burgesses} This data is presented in Table 5 of the appendix. While this will not allow a comparison to
other crafts it will still give a limited indication of wealth, first, for the hammermen as a whole and second, for individual trades in the incorporation.

As can be seen in Table 5, a total of 134 hammermen were listed in the burgess and guildry rolls as having attained guildry between 1450 and 1750. The same two volumes list 848 hammermen as attaining burgess-ship, which was equivalent to middle class and therefore not as wealthy as the one hundred and thirty-four of them who attained guildry.165 This would indicate that 16 per cent of the Incorporation of Hammermen was wealthy enough to afford guildry from 1483 to 1750.

Only two saddlers and a blacksmith managed to become guild brethren before 1550. From 1550 to 1600 the number of hammermen guild brethren rose to nineteen. As can be seen in Table 5, the number of hammermen guild brethren was fairly constant from 1550 to 1650. In the 1650 – 1700 period, the number more than doubled and then remained fairly constant until 1750. Table 1 shows that the population of hammermen masters – as shown by burgess-ship – increased in a similar fashion. From 1550 to 1750 the Incorporation of Hammermen was getting bigger and wealthier. More craftsmen could afford guildry.

Table 5.1 shows how the percentage of hammermen to attain guildry changed by half-century periods from 1550 to 1750. Using Table 1, the numbers of incoming hammermen burgesses were taken for the fifty year segments to give the data in the ‘Number of Freemen’ row of Table 5.1. Based on this, the percentage of hammermen to attain guildry climbed from 12 per cent in the half-century of the decreet arbitral, to 19 per cent in the 1700 – 1750 period. The largest jump seems to be in the 1650 – 1700 period, where the former 11 per cent rose to 18 per cent – a marked increase in wealth for the hammermen.

From 1550 to 1650, 90 per cent of the incoming freemen did not purchase guildry. While some of them might have had the capital to do so and did not, it would appear that only about 10 per cent of the hammermen held the amount of wealth

165 See Table 1 in the appendix. The 134 were also included in the 848 as you had to first have burgess-ship to attain guildry. The goldsmiths are not included.
required for joining. At this time period they had to have at least five hundred merks.\textsuperscript{166} From 1650 to 1750, only 80 per cent of incoming freeman hammermen did not purchase guildry.

The data indicates that overall the Edinburgh hammermen were not wealthy, though their wealth did increase from the sixteenth century to the eighteenth century. The wealth rested with 10 to 20 per cent of the craftsmen at any fifty-year period. The 1700 – 1750 period had the highest percentage of hammermen guild brethren, indicating that more hammermen had wealth in the latter days of the early modern period. Fourteen hammermen became guild brethren before 1583,\textsuperscript{167} meaning that 89 per cent of the hammermen who became guild brethren did so after the decreet arbitral.

Looking at hammermen guild brethrenship trade by trade will tell us much about the wealth and status of individual crafts in the Edinburgh Incorporation of Hammermen. \textbf{Table 5.2} in the appendix shows the hammermen crafts in descending order of number of guild brethren. This is for the whole 1450 to 1750 period and is based on data from \textbf{Table 5}. The pewterers had the most guild brethren. This would indicate that they were the most lucrative craft in the Incorporation of Hammermen. When compared to \textbf{Table 5}, though, it can be seen that this was a later development, as pewterers did not start taking guildry until the 1550 to 1600 period.

The second wealthiest hammermen craft, according to guild brethrenship, was the saddlers. This craft was stable in terms of numbers of guild brethren compared to the others. While most crafts started taking guildry after the 1583 decreet arbitral, the saddlers had a guild brother in 1463, twenty years before the incorporation of the metalworkers into the hammermen. While in the 1700 – 1750 period, the pewterers had almost twice as many guild brethren as the saddlers, over the whole early modern period the saddlers were a constant source of brethren and therefore a relatively wealthy craft in a hammerman context.

\textsuperscript{166} Marwick, \textit{Guilds and Crafts}, p. 143
\textsuperscript{167} This does not include the goldsmiths. There were one blacksmith, six saddlers, one lorimer and five cutlers who became guild brethren before the decreet arbitral. \textit{Edinburgh Burgesses}
The third wealthiest hammermen craft was the coppersmith / brazier craft. In the 1450 – 1750 time frame, they were the third wealthiest craft in the hammermen. Like the pewterers, they developed their wealth later – from 1650 onwards.

Tied for fourth largest craft were the locksmiths and knockmakers, though the knockmakers were technically part of the locksmith ‘craft’. The locksmiths started attaining guildry in the first decade of the seventeenth century; the knockmakers after 1650.

The fifth wealthiest craft would appear to be the cutlers. This is curious though, as the art was dying out in Edinburgh. In 1697 and 1715 measures were taken to bring this skill back into the burgh. The cutlers’ guild brethrenship might reflect the council’s making Edinburgh an appealing place for cutlers to settle.

These are the main crafts where guild brethrenship was attained. The saddlers were the main craft that show signs of wealth both before the decreet arbitral and after; mainly after. The others seem to have attained wealth after 1600. While the saddlers had some wealth before 1583, it was the pewterers which ended up being the wealthiest craft by 1750.

For the sake of tempering the idea that the pewterers were wealthy, which in a hammermen context they were, it will be interesting to look briefly at guildry for the Incorporation of Goldsmiths. According to the Edinburgh Burgess Rolls, from 1500 to 1750 there were 143 goldsmiths that attained guild brethrenship. This one craft, which dealt with luxury items, left the hammermen within the first century of incorporation and went on to have nine more craftsmen worth at least 500 merks, than all twenty-four hammerman crafts combined. As an incorporation, the hammermen were still not as wealthy as the one goldsmith craft. Of course, goldsmiths were always a wealthy craft all across Europe.

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166 Edinburgh Burgess, p. 458
167 Whitelaw, Scottish Arms, p. 107
170 Edinburgh Burgess
171 Ibid.
172 Stow’s 1598 account of a feast from the time of Henry VIII at the London Guildhall lists sixty companies. The goldsmiths were listed in fifth place, illustrating their importance. Blacksmiths were number fifty-four. Stow, A Survey of London Written in the Year 1598, p. 442 - 3
Products and Production

What do the rank and status of the individual hammermen crafts reveal about Edinburgh metalware products and production? What metalwares appear to have been lucrative? What metalwares were in demand in Edinburgh? Using guildry as an indicator of wealth, Table 5.2 would indicate that pewterware was a lucrative product. The pewterers had the wealth to supply thirty guild brothers from 1583 to 1750. The products that they were producing were not necessities. Wooden and horn table and flatware were easily available. The durability and aesthetically pleasing look of pewter makes it a very nice medium for table and flatware. As pewterware often followed the styles of silver, it could provide the common man with some of the style that would otherwise be limited to those who could afford silver. An American study of Maryland from 1650 to 1720 showed that over 90 per cent of the top two-thirds of society in terms of wealth owned pewter. Over 88 per cent of the households in the study owned at least one item of pewter. If the colonies were using that much pewter, it is likely that there was a strong demand for pewterwares in Edinburgh, a European capital. The trend of the numbers of pewterer guild brethren indicates a rise in demand for pewterwares in the seventeenth century, peaking at our cut-off date of 1750.

The saddlers’ wealth illustrates the necessity of horse tack throughout the early modern period. Horses were used for transportation as well as war, which necessitated horse tack in the form of saddles, reins, stirrups and the other hardware associated with the animals. Saddlers in Edinburgh were making money, which must reflect product demand.

The third wealthiest trade, the coppersmith / braziers, is interesting as the fifteen guild brethren they provided are limited to the 1667 – 1750 period, a late rise in wealth. Around the year 1700, there was a rise in the use of brass for lock cases and door knobs. The increase in importance of cheap durable tablewares such as pewter and white iron,

or tin, provided equal demand for copper, a medium just as malleable, durable and attractive. Again, rise in wealth illuminates demand.

The two trades tied for fourth wealthiest are the locksmiths and knockmakers. The knockmakers were making a luxury item, yet the amount of money the knockmakers were bringing in by 1750 illustrates that the trade was thriving. This matches general patterns, such as Lorna Weatherhill’s study in *Consumer Behaviour and Material Culture in Britain 1660 – 1760*, which indicates that, by 1715, clocks were mentioned three times more frequently than they had been in 1685.\(^\text{174}\)

The demand for locksmith work is obvious. Everyone needed locks for doors. In 1747 William Hogarth made an engraving (see Figure 2.1) entitled ‘The Idle ‘Prentice return’d from Sea, & in a Garret with a common Prostitute.’\(^\text{175}\) The single-room house of the prostitute is the extreme of poverty, yet the door is clearly fitted with a lock. The fact that the locksmiths were tied for the fourth wealthiest trade illustrates that though the locksmith trade was labour intensive, it could also be lucrative. The demand was there.

So what do the burgess rolls and minute books show in terms of products and production? Table 1 shows burgess entry and therefore indicates craftsmen becoming masters and setting up their own booths for producing metalwares. In the first of the four periods shown, the two most numerous crafts were the saddlers and cutlers, indicating the importance of horse tack and domestic utensils in mid-to-late 1500s Edinburgh. There were fifty-four hammermen who worked on horse equipment (saddlers and lorimers), out of the 158 hammermen listed in the burgess rolls from 1550 to 1600. The blacksmiths also would have produced shoes and nails. On a rough estimate, using half of the ‘smiths’ as blacksmiths\(^\text{176}\) and combining them with the saddlers and lorimers for an estimated total of sixty-five hammermen, this would indicate that 41 per cent of the incoming masters in the Incorporation of Hammermen from 1550 – 1600 produced horse tack. This figure is based on the burgess rolls, though and therefore is not completely accurate.

\(^{175}\) Hallett, M., *Hogarth*, 2000, p. 206
\(^{176}\) Some of the ‘smiths’ were actually locksmiths.
The cutlers accounted for 16 per cent of the hammermen. Knives were a common necessity. Most paintings of individuals in the early modern period show knives hanging from the waists of men and women.

In the 1600 – 1650 period the pewterers became the biggest craft, alone accounting for 16 per cent of the hammermen. Pewterware was on the rise. Horse tack in this period accounted for 24 per cent, using the same method as above.

In the 1650 – 1700 period the pewterers crafts boasted fifty-three burgess entrants; 21 per cent of the hammermen attaining burgesses. If the number of craftsmen working in the medium kept rising, there must have been a market for the product to feed the growth. Horse tack was only at 24 per cent, though this again is not a definite figure. It is still clear that the pewterers were growing, while the horse tack production was in a state of continuity, not growth.

The 1700 – 1750 period shows the pewterers, still the largest single craft, falling slightly to 18 per cent of the hammermen burgess entrants. Horse tack was down to 22 per cent. The locksmiths account for at least 12 per cent, though some of the smiths might actually be locksmiths.

The last column in Table 1 shows the complete totals for 1550 – 1750. The pewterers are the most numerous, followed by the saddlers, smiths and locksmiths. Cheap table wares, horse tack and architectural hardware, were the metalwares with the most producers as indicated by early modern Scotland’s burgess entrants.

Both Table 1 and Table 5.2 illustrate that early modern Edinburgh had a large demand for pewterware and horse tack. These trades were lucrative. Guildry shows that there was also demand for locks, clocks and cutlery. Most of the items produced by the hammermen trades that had the most guild brethren were either domestic related products, such as items for food consumption, architectural hardware and luxury timepieces, or horse tack.
Guild Brethren and the Locksmith Craft

So what does guild brethenership tell us about the Edinburgh locksmith craft? Eleven locksmiths, eleven knockmakers and four gunsmiths attained guild brethenership between 1406 and 1750. As individual trades, these are fourth and seventh wealthiest in terms of number of craftsmen who could afford guildry (see Table 5.2). They were not as wealthy as the pewterers, saddlers, or coppersmith / braziers. By 1693, the Incorporation of Hammermen minute books started to group related trades together. When this is taken into consideration and the locksmiths, knockmakers and gunsmiths, though separate trades, are viewed as one ‘craft’, the data is different. When the three trades are grouped together (see Table 5.3) and compared to the other trades in their 1693 groupings, the locksmith craft (i.e. the locksmiths, knockmakers and gunsmiths) is third wealthiest, just overshadowing the saddlers. Clockmakers in many European towns were part of the craft aristocracy. At Blois in 1666, the clockmakers were one of the first three crafts by prestige ranking in a general procession. The other two were the goldsmiths and drapers. Locksmiths, however, were not as prestigious, especially in the late medieval period. In 1422, in a ranking of London crafts in the Brewer’s records lists the ‘lockyers’ in ninety-fourth place out of 111 crafts. The goldsmiths were number five, the saddlers number nine and the soapmakers were last. The Edinburgh Incorporation of Hammermen’s 1483 seal of cause did not even mention the locksmiths. They did grow in importance and wealth though.

On their own, the locksmiths appear to be tied for the fourth wealthiest trade in the Edinburgh Incorporation of Hammermen. They accounted for 8 per cent of the hammermen who attained guildry. The Incorporation of Hammermen was not exceedingly wealthy, though certain trades, according to the number of guild brethren were lucrative. Locksmithing was labour intensive, but the demand for security provided eleven of the locksmiths with the means to attain the privileges of guild brethenership.

177 EHMB, ED008/1/4, 1693
178 Farr, Artisans in Europe, 1300 – 1914, p.259
180 Smith, Hammermen, p. 181
Craftsmen and Power

It has been argued that in the early sixteenth century the body that controlled burgh politics was a small, select oligarchy controlled by merchants.\(^{181}\) While it is true that the merchant/craftsman friction can be overplayed, the 1483 seal of cause which started the Incorporation of Hammermen listed that their first complaint specified that the craftsmen were ‘havely hurt by the daily market made through the high street in crames,’\(^{182}\) While a great deal of progress was made with the 1583 decreet arbitral, the council and guild were still ruled by merchants. When in 1681 the merchants of formed the ‘Merchant Company’ in an attempt to gain a monopoly on retail for its members, the crafts spoke out, saying that such a society would be ‘destructive to other people’s liberties,’ and ‘against all reason and without parallel. The governors of such a company would be masters of the town.’\(^{183}\) And so the merchants were. But the craftsmen did have a share in that power. So how powerful were the craftsmen? How powerful was the Incorporation of Hammermen? Which crafts in the incorporation wielded that power?

Power is a broad term and there were various types of power. In the Incorporation of Hammermen itself, there was an aristocracy. Table 4.6 shows the number of years a particular trade had one of its masters elected deacon. The highest rates of leadership go to the pewterers, saddlers, locksmiths and cutlers. Table 4.7 shows the office of boxmaster, which was also dominated by pewterers and locksmiths. Table 5.2 shows the highest frequency of guild brethrenship. Again, the pewterers were the most, with thirty guild brethren, followed by the saddlers, coppersmith/braziers, locksmiths and knockmakers. Table 3 shows that the largest crafts in terms of population of freeman masters, were the pewterers, locksmiths and saddlers. There was a craft aristocracy.

Compared to the merchants, incorporations were not very powerful. The decreet arbitral in 1583 was supposed to make the craftsmen equal to the merchants. This meant

\(^{181}\) Lynch, Edin. & Ref., p. 15

\(^{182}\) Smith, Hammermen, p. 181

\(^{183}\) Houston, R., Social Change, 1994, p. 358
equal representation in government, but this did not happen. On 9 May 1741 the Incorporation of Hammermen’s clerk noted in the minute books that, merchants and craftsmen are distinct bodies their number are restricted in council and their representation in parliament expressly provided to the separate and each body to have their own respective representative that by the Union, these two bodies of merchants and craftsmen are thereby restricted to one representative who has been ever since a merchant albeit it would appear a genuine construction that the representative for the city ought to be a merchant and tradesman alternately...184

The Union of 1707 had limited the number of representatives in parliament and instead of sharing, it was dominated by merchants.

Even though the burghs were ruled by merchants, the crafts had a voice, whether the council wanted to hear it or not. In 1737 the fourteen incorporated trades sent a petition to the house of peers:

There being a copy of a petition of the whole incorporated companies of Tradesmen in Edinburgh, which the fourteen deacons had resolved to send to the house of peers in Great Britain against a bill now depending before them for disabling Alexander Wilson esqr. Present Provost of Edinburgh from enjoying any office of Magistracy in Britain and abolishing the town guard and taking away the gates of the Netherbow and that they might be allowed to be heard by their Council against that will The deacon therefore asked the opinion of the house whether or no they would empower and give orders to him to subscribe along with the rest of the deacons of Edr. the said petition in their name and by their orders. The house unanimously empower and order David Hodge their present deacon to subscribe the said petition along with the Convener and his brethren.185

When the council would not listen, there were other channels to go through.

There were other ways in which the crafts were represented and even had a degree of influence. One example was the position of deacon convener of trades, who chaired the meetings of the fourteen deacons and represented their views to the council. From 1578 to 1730, thirty-eight surgeons acted as deacon convener, twenty-seven tailors, twenty-five skinners, twenty-two goldsmiths, nineteen hammermen, ten wrights

184 EHMB, ED008/1/7, p. 76
185 Ibid., ED008/1/6, 21 April 1737
and masons, three cordiners, three baxters and two bonnetmakers. Crafts like the baxters and bonnetmakers did not have much political clout. Goldsmiths, hammermen, tailors, etc. formed a craft aristocracy, which could have influence. Many were in the guild. It is also significant that the convenery met at the Magdalene Chapel, which was the hammermen’s meeting hall.

In 1508 the crafts were given two seats in the town council. Not all incorporations had representatives of their crafts as one of the two craft councillors. From 1551 to 1570 there were eleven hammermen councillors, seven goldsmiths, six skinners, five tailors, four barbers and furriers and one wright. The poorest trades, the weavers, waulkers and bonnetmakers, never had their craftsmen as councillors, though there were bonnetmaker deacon conveners of trades.

Some craftsmen even had royal positions, like the Mylnes’ acting as his Majesty’s Master Mason and John Callendar being his Majesty’s Master Smith in 1682. There were also Master Goldsmiths to kings, like George Heriot.

Overall, the craftsmen were not very powerful. They did have a political voice, though. The Incorporation of Hammermen seems to have fared better than many incorporations in terms of getting their masters into the town council. In the incorporation itself, there was a small craft aristocracy. They were wealthy enough to enjoy guild privileges, numerous enough to supply a capital and astute enough to take the majority in craft elections for deacon.

Incorporation was a social control, but considering the dramatic population increase across Europe in the sixteenth century, mirrored by the Incorporation of Hammermen’s rise in master craftsmen, it is intriguing that the governmental structure of incorporation remained as unchanged as it did. While the system was tweaked from time to time, with craft councillors added, deacons removed and replaced and the decreet

186 Municipality of Edinburgh, in Municipal Constitution, 1826, p. 75
188 Marwick, Guilds And Crafts, p. 61
189 Lynch, Edin. & Ref., p. 24
190 Lynch, Utrecht Conference, p. 4 & 5
191 EHMB, ED008/1/4, p. 340 - 3
arbitral bringing nominal equality between craftsmen and merchants, the system did represent continuity. It guarded trade privilege and kept peace in Edinburgh throughout the early modern period, with fairly equal parts of 'social' and 'control'.
Chapter 3

The Locksmith Craft

Historians, ancient and modern, not only record the martial achievements, but the singular sanctity of mechanics...

Alexander Pennecuik, Blue Blanket

There was a complex and dynamic relationship among the metalworking trades, not only in the Edinburgh Incorporation of Hammermen, but across Europe. In some cities, various trades or small groups of trades grew large enough to break away from the overall metalworkers' craft guild and formed their own corporations. This was the case with the corporation formed by the coppersmiths, clockmakers and locksmiths in Reval.\(^1\) In London, many of the metalworking trades formed individual units of crafts. The blacksmiths and spurriers were separate from the armourers and braziers. The farriers had their own charter, separate from the blacksmiths, by 1674.\(^2\) The clockmakers were also originally part of the Blacksmith's Guild, until they formed the London Clockmakers' Company in 1631.\(^3\) By 1601, the Geneva watchmakers had formed

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\(^2\) Melling, J. K., _London’s Guilds_, 1988, p. 26, 28 and 40

\(^3\) Clutton, C., _Britten’s Old Clocks_, 1982, p. 70
themselves into a corporation, answering only to the town council. Examples of this can be found in most early modern towns.

In Edinburgh, only the goldsmiths became rich and powerful enough to split away from the Incorporation of Hammermen; other trades did not reach the level of strength required for independence. The locksmiths grew in importance, but never to the point at which they could have splintered off to form their own incorporation. Quite the contrary, their large numbers in the first half of the eighteenth century were due to their association with the gunsmiths, watchmakers and clockmakers.

As the incorporation expanded, new technologies were introduced to Edinburgh. This led to consolidation of trades and partitioning into groups which were, in effect, miniature incorporations inside the Incorporation of Hammermen. In the 1693 list of hammermen masters, a previously unseen type of categorization was used for grouping the craftsmen in the lists. Previously, the lists were either only of names of the masters, or after 1646, occasionally with their trade listed also. The data from the lists with trades is in Table 3 in the appendix. For the years 1693, 1705, 1717, 1741 and 1749, the data is given in terms of association with like crafts. In the 1693 list, there were eight smaller lists with the titles ‘Blacksmiths,’ ‘Cutlers,’ ‘Saddlers,’ ‘Locksmiths and these joined with them,’ ‘Lorimers and these joined with them,’ ‘Armourers,’ ‘Pewterers and these joined with them,’ and ‘Deacons & Boxmasters…’ There was also a complete list of all the hammermen’s names, without mention of individual trade. With new trades such as white iron men, watchmakers, knockmakers, dagmakers and coppersmiths, the incorporation needed to find places for them in the existing structure. They became ‘allied’ to established trades of similar work types. The coppersmiths, founders and beltmakers were joined with the lorimers. White iron men, or tinsmiths, were joined with the pewterers. Gunsmiths, framesmiths, knockmakers, watchmakers and an

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4 Christianson, D., Timepieces, 2002, p. 68
5 Colston, J., Inc. Trades, 1891, p. 27 Colston states that the date is unknown, though their minute books, independent of the hammermen’s minutes, start in 1525.
6 EHMB, ED008/1/1-8
7 Ibid., ED008/1/4, 1693
'hourmaker' were all joined with the locksmiths. After 1750, there were also pinmakers and hookmakers joined with the locksmiths.\footnote{Colston, \textit{Inc. Trades}, p. 18 - 9}

This was not unique to Edinburgh; in Augsburg, clockmaking was associated with locksmithing.\footnote{Bruton, E., \textit{The History of Clocks \\& Watches}, 2000, p. 61} The locksmiths, spurriers, gunsmiths, clockmakers and jackmakers of Ulm united themselves into a separate group within the overall Guild of Smiths (see Figure 3.28).\footnote{Guild boards, Inv.Nr.A.B.344, Ulmer Museum, Ulm, Germany} Edinburgh termed this type of relationship as being 'joined' to a bigger trade. These associations were an interesting phenomenon; a sub-culture of the overall incorporation experience, which was itself a sub-culture of the early modern craft guilds. Every city had a slightly different approach to craft structure and Edinburgh followed a system of association. The various trades joined with the locksmiths were not randomly selected. They were joined for very sensible reasons. What was the nature of the locksmiths' relationship with the 'joined trades'? To what extent were they combined? Why were these trades associated with the locksmiths?

\textbf{Locksmiths}

In the 1728 edition of Ephraim Chambers' \textit{Cyclopaedia}, the entry for 'Lock' stated that,\footnote{Chambers, E., \textit{Cyclopaedia}, 1752, 'Lock'}

\begin{quote}
The lock is reckoned the master-piece in smithery; a great deal of art and delicacy being required in contriving and varying the wards, springs, bolts, etc. and adjusting them to the places where they are to be used and to the various occasions of using them.\footnote{Chambers, E., \textit{Cyclopaedia}, 1752, 'Lock'}
\end{quote}

One of the key factors that made it necessary for smiths to specialise in the production of locks is the fact that they had moving parts of a complicated, mechanical nature. While any smith could have made a pair of jointed tongs, a lock was considerably more complex. Temper of springs, precise travel of parts and proper contours of metal all had to be in complete harmony for a lock mechanism to work. On top of this was added the security measures taken, in the form of 'warding' in the lock, which was a series of obstacles that only the true key could pass. While this will all be discussed in detail
later, it is important to keep in mind the fact that a locksmith was in essence a mechanical engineer. This, however, took time to come about in Scotland.

Locks had been in use in Scotland many centuries before the Incorporation of Hammermen received its seal of cause. It is impossible to say when the first lock and key were used in Scotland. It is known that the Romans, who had taken Greek and Egyptian lock technology and improved on it, were quite adept at making them. They had settlements in various parts of Scotland, including Cramond and Mayfield, which are to the west and south-east of Edinburgh, respectively. Roman material has been found by archaeologists at Castle Hill, in Edinburgh, which at that time was occupied by the Votadini tribe. It is fair to assume that Roman locks and keys could have been known to the residents of the area we now know as Edinburgh.

It is known that the Normans made use of locks and keys throughout England. When marrying into Scottish families and building keeps, they would have brought their lock technology with them. Locks and keys were probably known in Scotland by the early twelfth century, if not earlier.

It is harder yet to ascertain when locks and keys were first produced in Scotland. As stated earlier, the actual concept of a ‘locksmith’ denotes a unique specialisation of skill. Early locks might have been produced by a clever blacksmith. By the mid-eighteenth century, the locksmiths and blacksmiths were still closely related. In Aberdeen blacksmiths produced locks as essays for becoming masters. The Edinburgh hammermen minute books give one example of a ‘meeting of the black & locksmith arts’ on 30 May 1745, indicating that there was business transacted that did not concern the other crafts, such as pewterers, armourers and saddlers. It is probable that the locksmith craft came from the blacksmith craft. The advent of a smith specialising in locks and keys was in itself a phenomenon. A locksmith requires a steady market for locks and keys. Early blacksmiths must have encountered such a market, as some did eventually specialise. There is a reference from 1264 – 66 AD in the Exchequer Rolls of

13 Bain, E., Merchant and Craft Guilds A History of the Aberdeen Incorporated Trades, 1887, p. 208
14 EHMB, ED008/1/7
Scotland to locks being used for the tower of Invernairn.\textsuperscript{15} Another reference, from 1326, mentions a locksmith in Tarbert.\textsuperscript{16} It can be established that locks were definitely in use by 1266. By 1326, if not earlier, there was such a smith specialising in lock and key production in Scotland.

There is an undated reference, somewhere between 1124 and 1423, in \emph{The Acts of the Parliament of Scotland}, to a half-penny custom being paid for a dozen locks ‘at the forth passing’.\textsuperscript{17} This is a very important reference, as it tells us that locks were being exported from Scotland by 1423, sixty years before the Incorporation of Hammermen received its seal of cause. Not only was there a domestic demand for security devices, but also a surplus that could be traded abroad.

Even with a market for locks and a surplus of production to the point of exportation, the locksmith craft was still one of the lesser metalworking crafts of Edinburgh when the Incorporation of Hammermen first received its seal of cause in 1483. The said document (see appendix) made a point of delineating the various trades that were allowed to be incorporated. It mentioned the blacksmiths, goldsmiths, lorimers, saddlers, cutlers, buckler makers, armourers ‘and all others’.\textsuperscript{18} No direct mention was made of the locksmiths, yet the very first page of the hammermen minute books, when started in 1494, mentions a hammermen called ‘William Loksmyt’.\textsuperscript{19} The locksmiths were there, incorporated with the other metalworking crafts, yet they were not important enough to mention by name in the seal of cause. The 1496 re-affirmation seal of cause did not mention them either.\textsuperscript{20} They were still one of the ‘others’. As time progressed, however, the locksmith craft grew in importance and size.

\textsuperscript{15} \textit{ER}, ‘Rotuli Scaccarii’, Vol. I, p. 29
\textsuperscript{16} Ibid., p. 58
\textsuperscript{17} APS, ‘Assisa De Tolloneis’, Vol. I, p. 670
\textsuperscript{18} Smith, J., \textit{Hammermen}, 1906, p. 181
\textsuperscript{19} Ibid., p. 1
\textsuperscript{20} Ibid., p. 184
Size and Growth of the Edinburgh Locksmith Craft

The growth of the locksmith art in the Edinburgh Incorporation of Hammermen is illustrated in particular by two sources. The charts and tables for the data from these sources, as stated in Chapter 1, has been compiled in the appendix. The first source is the *Roll of Edinburgh Burgesses and Guild Brethren*. It shows the number of locksmiths to attain burgess-ship in specific fifty-year periods. As we can see by Table 1 in the appendix, there was a considerable growth in the number of locksmiths from 1550 to 1750. From 1550 to 1600 only thirteen men attained burgess-ship as locksmiths. From 1600 to 1650 there were twenty-three. From 1650 to 1700 the number was at thirty-four and from 1700 to 1750 it dropped only slightly to twenty-nine. From 1550 to 1750, the number of locksmiths attaining burgess-ship more than doubled.

When put against the background of the overall growth of the total Incorporation of Hammermen as seen by the burgess rolls, we see that the locksmiths were growing at an even pace with the incorporation itself. Table 1.1 and Chart 1.1 show the relationship of locksmiths attaining burgess-ship and hammermen in general attaining burgess-ship. Table 1.2 shows these figures converted over to percentages. In the 1550 to 1600 period, the locksmiths accounted for c.8 per cent of the hammermen. In the 1600 to 1650 period they were c.12 per cent. In the 1650 to 1700 period they were c.14 per cent and in the 1700 to 1750 period they were 11 per cent. The percentages for all four periods were relatively close. From 8 per cent to 14 per cent is not a large jump, so it would appear that the locksmith craft from 1550 to 1750 was fairly constant in terms of percentage of the overall incorporation. Throughout, the average percentage of hammermen made up by locksmiths was 11 per cent. If the incorporation was growing and the locksmiths were constantly about 11 per cent of the incorporation, then the number of locksmiths had to be growing also.21

The second source that illustrates the locksmith craft’s growth can be found in the incorporation minute books.22 In Table 3 in the appendix, we see the data from the

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21 *Edinburgh Burgesses*, 1929
22 EHMB
fifteen freemen lists with denoted trade, as mentioned in Chapter 2. Tables 4 and 4.1 isolate the data from Table 3 for the locksmiths and several other related trades. From 1646 to 1674 both 4 and 4.1 give ten counts of individual hammermen trades for ten of the years given in Table 3. As seen by the data in Table 4, the average number of freemen locksmiths, between 1646 and 1674, was fourteen. In 1648, they accounted for 20 per cent of the hammermen. In 1674, although their number had grown by two, they accounted for only 12 per cent of the hammermen. From 1693 onward, in terms of listed names of craftsmen, the locksmiths are listed as joined with several other crafts; viz., knockmakers, gunsmiths and framesmiths.

The freeman lists only give exact numbers of locksmiths for ten years in the period of 1646 to 1674. Quantitatively, this is relatively weak evidence for growth of the locksmith craft from 1483 to 1750. Qualitatively, however, the freeman lists do show a growth of the locksmiths. In the 1483 and 1496 re-affirmation seals of cause, the locksmiths did not even warrant mention due to the small size of their craft. By 1693 (see Table 3) they had other trades included with them. As technology advanced in clocks and firearms, the locksmith craft was the trade that these arts fell under. The reason for their inclusion with the locksmiths was the technical and mechanical nature of their work. In 1693 the locksmiths and the trades joined with them were the biggest craft grouping in the hammermen. This trend, as we can see in Table 3, continued until 1749, if not later. While the numerical superiority is probably due to the watch and knockmakers (see Table 1), the locksmiths were still seen as being important enough to have the many watch and knockmakers listed under their name. When taken with the burgess roll data from above, it is clear that the locksmith craft grew both in terms of raw numbers and in terms of importance between 1483 and 1750.

Dagmakers and Gunsmiths

The first trade to be joined with the locksmiths seems to have been the dagmakers. ‘Dag’ is the Scots word for pistol. Dagmakers made various types of firearms and eventually became known as gunsmiths. Their origin does not trace directly to the
locksmiths though. They had roots in the melters, founders, potters, lorimers and locksmiths.

In the late medieval period, hand-held guns, or firearms, were rare. The first guns were more akin to cannon. The production of cannon in Edinburgh can be traced to the fifteenth century. In the 1470s there was a royal foundry near Blackfriars, which was on the south side of the Cowgate, near the town’s High School Yard. By 1511 a foundry was set up in Edinburgh Castle to make guns. Melters, or founders as they were later known, were metalworkers who specialised in the casting of various metal objects, both domestic and martial.

The mediums used by melters and founders were bronze and iron. The bronze used for cannon is known as gun metal. Sometimes misnamed ‘brass’, gun metal was made up of nine parts copper, one part tin and occasionally a part of zinc. It was a strong alloy that could withstand the massive pressure of exploding gun powder.

In 1505 a Frenchman named John Veilnaif was allowed to work in Edinburgh, because he ‘...said he could make guns...’. James IV, who is often referred to as a renaissance king, went to great lengths to bring in skilled craftsmen to bolster Edinburgh’s trades. As artillery was the latest technology, he brought in craftsmen who had knowledge of making it.

In 1513 the term melter was applied to a craftsman who was casting guns. Robert Borthwick was the ‘gunner master melter of the king’s guns’. He had six servants working under him, including a Frenchman named Peris Rowane who would, in 1532, take over as master melter. In 1515 mention is made of a ‘gunhouse’, which was probably the Edinburgh Castle gunworks, formed in 1511. A list of materials delivered to the gunhouse in 1515 includes: ‘furnace stokkis, iron, charcoal and other necessaries for founding of certain guns in the castle...

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24 Harris, S., Place Names, 2002, p. 93
26 Maryon, H., Metalwork, 1971, p.304
27 Whitelaw, C. E., Scottish Arms, 1977, p. 138
28 Ibid., p. 138
29 Ibid., p. 136
30 Ibid., p. 138
In 1542 the gunhouse worked on a double culverin. This was made by the master, John de Lyon and four servants. They were paid £16 10 s. and it took them about three months for ‘casting thereof...boring and cleaning...’ Boring and cleaning refer to the finishing processes involved in casting cannon. When the molten metal for a cannon is poured into a mould, the outside cools faster than the inside, forcing the impurities towards the still molten core. After it is completely solid, the centre is bored out, leaving the hole where the charge and ball are put for firing. In this manner, the impurities are removed from the metal, leaving a strong cannon which can endure the massive forces of being discharged. This was the same method used for casting brass pistol barrels, like the ones made by some dagmakers. Cleaning, or ‘clenging’ refers to the outside being polished and made presentable. Polished surfaces resisted rust.

In 1541 there was a Dutchman who worked in the castle making iron guns. This is another example of the diversity of craftsmanship brought into Edinburgh by James IV (1488 - 1513) and his son James V (1513 - 1542). Within the next century French, Dutch and English melters and founders were allowed to work in Edinburgh. They also would have been exposed to the latest technology in ignition mechanisms on the continent and might have brought new ideas into Edinburgh.

Dagmakers

While mainly known for their pistols, dagmakers also produced other firearms such as hagbuts. A hagbut is simply an early type of hand firearm, the predecessor to the larger matchlock musket. In France they were called arquebuse, in Germany Hackenbüchse and in England either hackbut or harquebus. Scotland, being linguistically and geographically closest to England, used a word similar to theirs – ‘hagbuit’.

Illustrated in Scottish Firearms are two pairs of dags of supposed Canongate craftsmanship, which date from 1589 and 1615. Both bear maker’s marks on barrel and lock, which might indicate that the same person who made the barrel also made the

31 Whitelaw, Scottish Arms, p. 137
32 Ibid., p. 136
The locks which the dagmakers built had to have moving, mechanical parts. Henceforth they needed steel for springs and steels. The springs provided the tension and potential energy to create sparks for ignition of the powder. If the springs were not of correctly tempered steel, they would wear out and not function properly. If the steel was not correctly tempered, the flint would not make sparks, as the metal would not be brittle enough to chip away in small, heated shavings. It is doubtful that every blacksmith could correctly temper springs, as this was a fine art, however locksmiths considered this a daily part of their job. Dagmakers’ and gunsmiths’ work was therefore closely related to that of locksmiths.

As we can see in the appendix, at least six dagmakers became burgesses between 1550 and 1600. In 1570 David Cass became a burgess as a locksmith. In 1579 Gilbert Cass, who was listed as apprentice to ‘David Cass, dagmaker’, took burgess-ship. In 1594 Gawine Furde, another of David Cass’s apprentices, gave an essay which consisted of ‘ane hagbut, ane dag and ane snap to be all perfectly outrad’. A ‘snap’ is a snaphaunce lock for ignition of the powder in a firearm. It had moving parts of a mechanical nature, very similar to a locksmith’s type of lock. From early on, there was some correlation between dagmakers and locksmiths.

There were many dagmakers who did their apprenticeship with a locksmith, or started out as a locksmith themselves. William Nasmyth worked under Patrick Kennedy, a locksmith. John Watt was admitted burgess as a ‘smith’ in 1575, a freeman of the Incorporation of Hammermen as a ‘locksmith’ in 1575 and a guild

33 Blair, C., *Firearms*, 1995, p. 5 and 7
34 Dr. David Caldwell of the National Museums of Scotland is of the opinion that the brass barrels were being bought from Dundee and stamped later by the dagmakers who made the locks and stocks.
35 *Edinburgh Burgesses*, p. 100
36 Whitelaw, *Scottish Arms*, p. 142
37 *Edinburgh Burgesses*, p. 285
brother as a ‘smith’ in 1590. In 1595 he was described as a ‘dagmaker’. This could represent either changes in trade or generalisations from the clerk.

Mathew Watsone was booked apprentice to Peter Spens, a lorimer, in 1584. In 1594 Watsone gave his essay of ‘ane hagbut, ane dag and ane snap’ and was admitted freeman of the hammermen. Lorimers also would have had the skills to make locks, as their trade involved hand filing, one of the necessary skills of dagmakers, locksmiths and any metal working craft which involved fine work or moving parts.

It seems that the dagmakers came about by combining skills and knowledge from the melter and founder craft, the locksmith craft and the lorimer craft, along with new technologies. The snaphaunce lock, or ‘snap’, was recorded in Glasgow as early as 1578. Whether or not it was produced earlier in Scotland is unknown. What is known is that by the 1590s dagmakers were making the snaphaunce locks, dags and hagbuts after being trained by locksmiths and lorimers who turned into dagmakers themselves, later in their careers. This might have represented the teacher learning as they taught. It is possible that they passed on skills and new technologies that they were just learning themselves. However this is based on the assumption that ‘locksmith’ meant a person who produced mechanical devices for preventing burglary and not a craftsman who made gunlocks.

There is one entry in the records of the Edinburgh hammermen, which gives an insight into the nature of a ‘locksmith’. In 1586 Patrick Kennedy, apprentice to Hew Brown, locksmith, was admitted freeman to the Incorporation of Hammermen with his essay of ‘ane kist lock’, or a chest lock. By 1587 he had burgess-ship as a locksmith. In 1592 he was described as a dagmaker. In 1593 two of Kennedy’s colleagues, Alexander Adamson and David Edgar, who were both locksmiths, were fined for buying unfreeman’s hagbuts and finishing them. In 1596 John Kennedy, Patrick’s son, gave his essay of ‘ane kist lock’ and was admitted freeman dagmaker. The locksmiths had

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38 Whitelaw, *Scottish Arms*, p. 161
39 Ibid., p. 160
40 Blair, *Firearms*, p. 7
41 Whitelaw, *Scottish Arms*, p. 158
42 Ibid., p. 150
the skills required for making gun locks. The question is, did the dagmakers come out of the locksmiths, or did they simply join with the locksmiths? Maybe it was both.

At least one pair of John Kennedy’s dags have survived. The barrels, locks and belt clips have intricate engraving on them. It is possible that engraving could have been done through subcontracting with another craftsman, who specialised in it. If Kennedy did it himself, it is a tribute to the many skills possessed by a dagmaker. Seeing as how Scottish pistols would become known for their metal construction and intricate floral engraving in the next few centuries, it is tempting to say that it was the dagmakers themselves who decorated their work. Much of the locksmith work from that time period is richly decorated, so it is possible.

The term dagmaker survived into the late seventeenth century, when it was replaced by the term gunsmith. The latter had been in use before the mid-seventeenth century, but rarely. John Miller, senior, was admitted as a burgess dagmaker in 1646. That same year he was listed as a freeman gunsmith in the Incorporation of Hammermen. In 1693 he was again referred to as a dagmaker in a reference to his son, Archibald. His other son, James Miller, became a freeman in 1668 with an essay of ‘ane brazine buckle with ane arrow head’. This shows another necessary skill for a dagmaker – brazing. Brazing is a form of welding used for brass or steel. It is an extremely strong version of soldering. This would have been used to join the various plates that made up the hollow body of an all-metal pistol, or dag. This skill was also needed by locksmiths, who made hollow bodies for padlocks, rim locks, boss locks, kists and other such items.

In 1674 James Miller was again listed as a dagmaker in the records of the Incorporation of Hammermen. This probably is representative of an old man unwilling to use, or be labelled with new-fangled terminology, as the term gunsmith by this time was the norm. The gunsmiths are simply a continuation of the dagmakers.

After 1662 the term gunsmith came into normal usage. In 1662 Joshua Shushan received burgess-ship as a gunsmith. In 1668 he gave an essay of ‘ane pair of sufficient

43 Kelvin, M., Scottish Pistol, 1996, p. 153
44 Ibid., p.152 - 3
45 Ibid., p. 153
pistols' and became a freeman in the Incorporation of Hammermen.\textsuperscript{46} The appearance of the gunsmiths represented a change in terminology for firearms, not a new and separate craft.

In 1675 John Simpson was admitted freeman to the Incorporation of Hammermen with his essay of 'ane mounted pistol with ane carbine buckle and ane arrow head'.\textsuperscript{47} In 1668 the dagmakers' essay had been a buckle and an arrowhead. A carbine buckle must have been part of the arrangement for hanging a carbine at a mounted trooper's side while riding. If he needed to shoot, he had his carbine hanging at his side.

In 1689 Simpson supplied samples of arms – thirteen firelocks and two matchlocks.\textsuperscript{48} Matchlocks survived late in Britain. The mechanisms were basically the same as they were at the beginning of the century, though the shape of the lockplates followed the latest styles and the stocks resembled those of the more modern firelocks.

In 1677 Francis Henderson, as mentioned above, of the Canongate gave his essay of 'ane mounted pistol of the Scots fashion, ane carbine buckle and ane arrowhead' and was entered into the Edinburgh hammermen. The 'Scots fashion' refers to a pistol of all-metal construction. Unfortunately, the clerk did not go into detail about the pistol. It would be very interesting to know what kind of lock they were using at that time and what style of butt was used on the handle.

Many of the gunsmiths were involved in the re-mounting of old barrels into new guns. Military firearms are constantly exposed to the elements and therefore in constant need of repair. In 1690 John McLurg was issued twenty-eight barrels to make into muskets.\textsuperscript{49} James Gibson, in 1691, made up 206 firelocks from old musket barrels.\textsuperscript{50} This was a common practice.

The gunsmiths employed by the Edinburgh magazine also cared for the arms that did not need remounting. In 1688 John Simpson was employed at Stirling Castle for

\textsuperscript{46} Whitelaw, \textit{Scottish Arms}, p. 156
\textsuperscript{47} Ibid., p. 157
\textsuperscript{48} Ibid., p. 157
\textsuperscript{49} Ibid., p. 157
\textsuperscript{50} Ibid., p. 152
dressing arms ‘that was spoiled with rain and salt water’.  

There were many instances of gunmakers being employed to care for functioning arms. The military, as well as the civilian markets needed reliable weaponry.

In 1696 Robert Henderson produced an essay of a mounted pistol with a ‘brigged’ lock, a carbine hanger and an arrow head. There were several craftsmen who gave the same essay. The bridged lock is particularly intriguing. Its meaning is elusive and requires further research. It obviously had something to do with a flintlock mechanism. Bridged might have referred to the fact that the frizzen (striking surface for flint) and pan cover were one connected piece. In the earlier snaphaunces, they were two separate pieces.

The gunsmiths also made use of imported skill. In 1669 James Gullan was given £10 sterling ‘in consideration of his coming from Holland and towards his maintenance until such time as he was settled in keeping of his Majesties magazine in Edinburgh Castle’. Not only does this show an interest in Continental gun technology, as the flintlock was about to make its appearance in the next few years, but also it shows early links between Scotland and England’s currency.

Sterling seems to have been the normal currency paid out to the magazine in Edinburgh Castle. From 1681 to 1682 Peter Sochon (Shusan) was paid in sterling for his work there. In 1670 his father, Joshua Shushan, had been paid in Scots. Throughout the last quarter of the seventeenth century the money used for the gunmaking in Edinburgh Castle was in pounds sterling. Before the 1707 Union, English money was used by the king for his Scottish kingdom. These references, curiously recorded in English currency, illustrate this fact.

In 1711 Edinburgh again took interest in Continental gun technology, this time favouring imported firelocks to locally produced pieces. James Gibson imported firelocks from Holland instead of making them himself. It is possible that he was out of old barrels.

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51 Whitelaw, Scottish Arms, p. 157  
52 Ibid., p. 157  
53 Ibid., p 146  
54 Ibid., p. 156 - 8
Not all gunsmiths worked for the magazine, but this was one of the biggest markets for guns. Civilian guns were more decorative. It would have taken more time to produce a decorative gun. The military guns would have been easier to produce than those for civilians and therefore easier to make money from. There were craftsmen, known as 'gunstockers' who specialised in assembling the metal parts onto wooden stocks. They were more akin to the wright trade, not the hammermen. In 1692, Francis Henderson was paid 'for mounting up of fifty-five musket barrels with new firelocks and stocks...' This seems to indicate that the gunsmiths made not only the metal parts, but also the wooden stocks.

The dagmakers, or gunsmiths, were included in the craftsmen under the section of the 1693 list entitled 'Locksmiths and these joined with them'. Though unofficial, this association seems to have outweighed any previous associations with the founders or lorimers. Even before 1693, the gunsmiths had been in this association. On 15 September 1677, in a list of the two masters for each craft for that year, one of the locksmiths was Francis Henderson, a gunsmith.\(^{55}\) On 23 August 1683, there was an act in favour of the 'locksmiths and watchmakers and gunsmiths', in an argument between them and the blacksmiths.\(^ {56}\) Though not labelled until 1693, the association, which would last well beyond 1750, had started by the mid-seventeenth century.

None of the crafts seem to have been subordinate to the locksmiths, though. The house did on occasion deal directly with the gunsmiths, instead of the locksmith craft. On 17 May 1682, there was an act in favour of the gunsmiths recorded in the minute books. 'The house taking into their consideration a petition presented into them, by the gunsmiths of Edinburgh freemen amongst themselves...'\(^ {57}\) There were occasions when the gunsmiths were seen only as gunsmiths 'freemen amongst themselves' and not as part of the overall locksmith craft.

\(^{55}\) EHMB, ED008/1/4, p. 248
\(^{56}\) Ibid., ED008/1/4, p. 351 – 2
\(^{57}\) Ibid., ED008/1/4, p. 321 – 2
Progression of Scottish Gunlocks

From the introduction of mechanical ignition to firearms in Europe to present day, there have been many innovations on the mechanisms. Scotland demonstrated the sophistication of her local craftsmen by the contribution of the ‘highland lock’ with its laterally-moving sear.\(^{58}\) The production of several types of gunlocks throughout the early modern period also shows that Scottish craftsmen were not dependent on Continental craftsmen for production; most types were made in Scotland’s burghs. So far, the best study of lock mechanisms used on Scottish guns was done by Charles E. Whitelaw. His work was first published as a supplement in 1923 to Herbert J. Jackson’s *European Hand Firearms of the Sixteenth, Seventeenth and Eighteenth Centuries*.\(^{59}\) There was a later supplement published posthumously in 1977.\(^{60}\) Whitelaw’s original classification for pistols had two classes of pistols – snaphaunce and flintlock – with several types in each class. The later work published in 1977, elaborated on the second class and generalized Scottish gunlocks into the following four categories: \(^{61}\)

<table>
<thead>
<tr>
<th>Types:</th>
<th>Early snaphaunce</th>
<th>early sixteenth – c.1686</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td>Late snaphaunce</td>
<td>c.1647 – c.1702</td>
</tr>
<tr>
<td>II.</td>
<td>Doglock</td>
<td>c.1665 – 1700</td>
</tr>
<tr>
<td>III.</td>
<td>Flintlock</td>
<td>c.1700 – c.1820</td>
</tr>
</tbody>
</table>

\(^{58}\) Blair, *Firearms*, p. 17  
\(^{59}\) Whitelaw, C. E., *Treatise*, 1923, p. 53 – 85  
\(^{60}\) Whitelaw, *Scottish Arms*, p. 315 – 8  
\(^{61}\) Ibid., p. 315
For sake of clarity, the two systems can be combined and added to several other types of gunlocks on both pistols and long-guns to give a clearer picture of gunlock technology in early modern Edinburgh:

Types:
I. Sear matchlock
II. Trigger matchlock
III. Wheellock
IV. Early snaphaunce
V. Late snaphaunce
VI. Doglock I
VII. Doglock II
VIII. Doglock III
IX. Highland lock
X. Conventional British lock

It should be noted that not all of these types have been proven to have been produced in Scotland, but for the sake of forming a picture of the material culture of the trade, they merit mention. The various types often overlap in time of production.

The first lock is the sear matchlock. Mechanically, this is the simplest of the ten locks. A matchlock is a gunlock which held a burning cord, or match, in an arm mounted on the lockplate. Extending from the bottom of the hagbut was a lever. Upon the lifting of the lever, the arm would be thrust forward, putting the lit match into a small pan of powder. The match would in this manner ignite the powder, which was connected via a touchhole to the powder in the barrel and therefore fire the gun. See Figure 3.1.

The trigger matchlock retained most of the previous mechanism, but with the addition of a trigger and trigger guard. The long lever of the sear type could easily have snagged on anything, causing an accidental fire. By reducing the size down to a simple trigger (see Figure 3.1, top), a trigger guard could be added underneath the gun stock for safety. There was of course, another part added to the mechanism, showing early stages
of the increasing complexity of gun locks. Matchlocks were not used on pistols, only long-arms such as hagbuts, calivers and muskets.

Another type of gunlock that might have been encountered by Edinburgh gunsmiths for repairs, was the wheellock. There is not a single reference known to a Scot making a wheellock, but there are references to them being used here. They were possibly the most complex gunlocks of the early modern period and therefore likely to need repair. While it is possible that they were shipped off to a continental gunsmith, it is far more likely that a local dagmaker repaired them. A clergyman named Father Blackhill, writing in 1643, said ‘I had behind my saddle a great cloath bag in which were my new clothes – and at the bow of my saddle two Dutch pistolettes with wheelworkes and at my side two Scots pistolettes with snap works.’

It is interesting that the Father kept the Scottish snaphaunces by his side instead of the wheellocks.

The earliest known Scottish references to ‘snapwork’ being produced were in Edinburgh and Glasgow. In 1575 in an English intelligence report, Edinburgh was said to have supplied the most part of the gentlemen and horsemen of the realm with dags, otherwise called snaphaunces. On 3 July 1578 in Glasgow, John Hannay, snapmaker, was ordered to serve John Barry, lorimer, in the making of snaps. There were earlier references to it being known in Scotland, as in the following modernized translation of a 1568 satirical poem: ‘Now you are lamed from labour, I lament it,/Your pistols emptied and sprung back like a wand:/Snapwork, adieu, for dagmen do not stand,/And worse than that, you lack your priming-powder.’

The mechanisms of snaphaunce locks were set upon thick plates of steel or brass. On this plate were mounted two arm-like pieces, various springs and a pan (see Figure 3.4). Snaphaunce locks were very complex mechanisms. The early snaphaunce lock had a characteristic sear which protruded through the lock plate to arrest the cock in the ‘cocked’ position. The cock, which was spring-driven, held a piece of flint in a pair of

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62 Kelvin, Scottish Pistol, p. 179, quoting Grant, J., British Battles on Land and Sea, 1897
The jaws illustrated by Whitelaw in Figure 3.4 are of the characteristic ‘half-moon’ shape which dominated Scottish early snaphaunce locks. The English equivalents were usually flat, as in the late snaphaunce lock in Scotland (see Figure 3.4).

When the trigger was pulled, the sear was pushed backwards, which caused it to withdraw into the lock plate. This released the cock, which swung forward, scraping the flint against the hardened steel ‘hammer’, or ‘frizen’ in modern parlance. As the cock moved forward, an internal rod connected to the tumbler (‘R’ in Figure 3.4) pushed open the pan cover, exposing the gunpowder to the sparks generated by the flint and steel. As the powder ignited in the pan, it spread through a small hole into the barrel and ignited the main charge behind the ball.

Compared to a match lock, the snaphaunce was far superior. Matchlocks had a constant open flame, whereas snapworks only ignited when triggered. Snaphaunces were issued to detachments guarding gunpowder in the Civil War.65 Matchlocks also had to be kept lit, which was tricky in inclement weather and expensive for consuming match or ‘lunt’.

Early snaphaunces did have two setbacks. First, there was no bridle to strengthen and brace the inner workings of the lock. Second, there was no half-cock. When uncocked, the pan cover was automatically open and therefore it could not be carried primed. The gun was either uncocked and unusable, or cocked and ready to fire. If something accidentally tripped the trigger, then the piece would indiscriminately discharge.66

The late snaphaunce was used from c.1647 to c.1702. The predominant difference between late and early snaphaunces was the disappearance of the protruding sear. While this type of laterally-moving sear would be used late on the ‘highland lock’, in late snaphaunces, the sear interacted only with the tumbler on the back of the lock (see ‘N’ and ‘T’ in Figure 3.4). The cock toe was removed, as the sear no longer came

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65 Edwards, P., Dealing in Death the Arms Trade and the British Civil Wars, 1638 - 52, 2000, p.1
66 Whitelaw, Treatise, p. 62 - 3
through the lock plate to engage it. The late snaphaunce had the same problems as the early snaphaunce, though.67

By 1612, in France, the snaphaunce had been evolved into the flintlock.68 While the principle remained the same, the mechanism became much less complicated. In Scotland, the earliest flintlocks were of a type known as doglocks, due to a 'dog' catch which held the cock at the half-cocked position. This was a form of safety. The doglock was in use in Scotland from c.1665 to c.1700.69 The first doglock, as can be seen on the right in Figure 3.5, has the pan cover and steel combined into one piece – the distinguishing characteristic of the flintlock mechanism. Not only did this keep the powder in better, but it also simplified the mechanism by removing the parts that connected the pan cover to the lock plate and the cock to the pan cover lever. When the cock fell on a flintlock, it pushed the pan open as it ran the flint against the steel. Gravity and inertia replaced a series of complicated parts, to make for a mechanism that was much easier to produce and maintain. Types I and III of the doglocks (Figures 3.5 and 3.6) had sear and tumbler setups similar to the late snaphaunce lock. These show signs of the future conventional flintlock. Type II retains the laterally-moving sear from the early snaphaunce, though it is now catching on the breast of the cock (in front) as opposed to the toe (behind). By shifting the contact point to the front, a half-cocked position was achieved. This would later be an integral part of the highland lock. The doglock demonstrates that there was not one line of development in Scottish locks, but two simultaneous lines of development; one based on a sear and tumbler setup (Figure 3.6 right side) and one based on a laterally-moving sear (Figure 3.6 left side). The earliest known example of a highland lock is dated 1678,70 though by Whitelaw's estimation, this would be a Type II doglock. This represents the link between the doglock and the fully developed highland lock.

67 Whitelaw, Treatise, p. 64
68 Ricketts, H., Firearms, 1965, p. 43
69 Whitelaw, Scottish Arms, p. 315
70 Blair, Firearms, p. 17
The final two stages of development were also flintlock mechanisms and were used from c.1700 to c.1820. The first of these stages was the so called highland lock (see Figures 3.7 and 3.8). With the laterally-moving sear catching the cock in the half-cocked position, there is a safety for the pistol. When the pistol is fully-cocked, or ‘bended’ in Scots, the sear and tumbler act very similar to a conventional flintlock. When the trigger is pulled, the sear is moved inside the lock plate and the cock is free to fall forward once the sear disengages the tumbler (see Figure 3.7).

The term ‘highland’ should not be taken to mean that it was produced by highlanders as opposed to lowlanders. The very term has become something of a myth, with much of Scottish arms and armour currently being labelled as ‘highland’ or ‘lowland’. The term ‘highland’ was used in conjunction with Scottish weapons by their makers in the early modern period, but only to denote the clientele base. Edinburgh armourers produced ‘highland hilt’, or basket hilt swords for sale to a market based on Highland cattle drovers. They were meant to be sold to them; they were not made by them. Almost all of the production of weapons happened in the burghs, not the Highlands and therefore all Scottish weapons are lowland. Who it was that coined the name, ‘highland lock’, is uncertain but it was a lowland-produced item, just as highland hilt swords were.

The conventional flintlock is illustrated on the upper left-hand side of Figure 3.7. This type would eventually become the standard lock on all British military firearms, such as the famous Brown Bess (see Figure 3.9). It is much simpler than previous locks and was easily mass produced.

Initially, there was an increase in the complexity of gunlock mechanisms. As can be seen in Table 12 and Chart 5 in the appendix, the number of parts increased dramatically from the matchlock to the snaphaunce lock. While wheellocks were never produced in Scotland, they were used and their complexity, along with that of the

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71 Whitelaw, Scottish Arms, p. 315
72 A ‘half-bend’ pistol is a pistol capable of the half-cock position, or safety. Kelvin, Scottish Pistol, p. 184
73 Even Whitelaw makes this mistake: ‘...may, therefore, be looked upon as a Lowland type.’ Whitelaw, Treatise, p.63
74 Whitelaw, Scottish Arms, p. 86
snaphaunce, made for delicate firearms that needed much looking after. Throughout the early modern period, the approximate number of parts in a Scottish gunlock decreased slightly and levelled off. While still more complex than a matchlock, the later flintlocks were not as complex as the snap and wheellocks. They were also more sophisticated and easier to produce.

From the adoption of the snaphaunce in the sixteenth century, there was a line of Scottish gunlocks unique to Scotland. The snaphaunce was used across Europe though and it is possible that there are connections between Scottish snaphaunces and those of other countries. In the book, *Firearms*, there is some discussion of a fishtail pistol of ‘undoubted English origin’, which resembles a Scottish fishtail pistol.⁷⁵ In a painting of Captain Thomas Lee from 1594 (see Figure 3.10), the ‘English’ pistol is shown hanging from Lee’s belt. It should first be noted that Lee is posing for this painting, wearing the dress of the ‘wild’ Irish which he was sent to conquer. If the pistol is English, as is stated by the author of *Firearms*, then there is a form-based connection between Scotland’s and England’s gunsmiths in terms of the fishtail-butt with snaphaunce lock. The styles do differ, though, as the lock of the Lee pistol is characteristically English, with the cock jaws being straight, instead of half-moon shaped. Examples of this type of gun can be found in various parts of Northern Europe. Whether they were made in other countries or merely used by Scots in other countries is unknown. Most likely, there was spread of decorative ideas as well as technological innovations.

**Tools and Techniques**

Dagmakers would have needed a smithy for heating metal, a study or anvil, several sizes of hammers, tongs, clamps for setting springs in locks and many files. They also would have needed long steel rods for welding barrels together. A bar was wrapped around the rod, all the time impact welding the seam. It became a barrel formed like a paper-towel tube. Some type of device would have been needed for polishing the inside of the barrel. The mainstay of a dagmakers’ work was probably done around a post-vice.

⁷⁵ Ricketts, *Firearms*, p. 52
which was a large vice mounted to a post in the ground. All parts for a lock would have been hand-filed and hand-fit to each other, as parts were not interchangeable at this point in time.

Brazing would have been done in the smithy, by encasing the parts in clay with bits of brass by the desired joints. The lump was then heated to the proper temperature and the braze material ran into the joint. This provided a strong bond. In this manner, the body plates were joined together.\textsuperscript{76}

Hardening and tempering of springs and frizzens would have been done in the smithy. Once the parts reached the proper temperature, which was gauged by the colour of the metal, they were quickly quenched in oil or water. This made them extremely hard and brittle. They were then tempered back to the proper level, much like an edged blade. Springs required a fair amount of skill to make properly.

Gun-barrels were case-hardened.\textsuperscript{77} This was a hardening method which left the outside of the work-piece extremely hard, while the inside of the metal was still soft. This made for a better polish, which lasted longer and therefore was more resistant to rust. Case-hardening was described by Joseph Moxon in 1678 in the following manner:

Take cow horn or hoof, dry it thoroughly in an oven and then beat it to powder. Put about the same quantity of bay-salt to it and mingle them together with stale chamberly, or else white-wine vinegar. Lay some of this mixture upon the loam...and cover your iron all over with it; then wrap the loam about all and lay it upon the hearth of the forge to dry and harden. When it is dry and hard, put it into the fire and blow up the coals to it, till the whole lump have just a blood-red heat, but no higher, lest the quality of your mixture burn away and leave the iron as soft as at first. Then take it out and quench it. Or, instead of loam, you may wrap it up in plate iron, so as the mixture may touch every part of your work and blow the coals to it, as foresaid.\textsuperscript{78}

This was another skill needed by gunsmiths, which required specialized knowledge not needed by arts such as pewderers or coppersmiths.

Their booths would not have been large, as was the custom of all craftsmen's workshops in early modern Europe. Unfortunately, no contemporary illustrations of a

\textsuperscript{76} Moxon, J., \textit{Mechanick}, 1989, p. 12 - 3
\textsuperscript{77} Ibid., p. 56
\textsuperscript{78} Ibid., p. 56
Scottish gunsmith’s booth survive. Luckily, there are surviving European counterparts. Figures 3.11, 3.12, 3.13 and 3.14 are all of gunsmith shops, from 1568 in Nürnberg, 1613 in Nürnberg, c.1660 in Paris and c.1694 in Amsterdam. All of these shops have one or two workbenches, usually with at least one standing vice. All have stock hanging in the shop, waiting to be sold. Production and sales would have had a direct correlation; if items were moving slowly, there would probably have been little rush in finishing work. All are well lit and open, with windows by the workbench, providing light for the workers. The forge would not have needed as much light, so it is farther away from the windows. The shops are small, because vast amounts of space were not needed. When work was taken out of the forge, it had to be put on the anvil immediately. If the anvil was on the other side of the shop, the work-piece would be cool by the time it got there.

The 1613 Nürnberg shop (Figure 3.13) has only one worker, while the others have either two or three. The Parisian shop is interesting for the amount of detail it goes into. Each of the three workers, a master, a journeyman and an apprentice, perhaps, has his own standing vice. The apprentice is helping the master set up a small, bow-driven lathe in the standing vice, while the other worker uses a double-handled wrench to screw a breech plug onto a barrel. Like the locksmith trade, there was a lot of bench work involved in the gunsmith trade and a lot of the tools were common to both arts; the standing vices, the hand vice, the hammer, the files and the callipers could all be found in an Edinburgh locksmith’s booth.

Like the locksmiths, the gunsmiths seem to have had no desire to stamp their mark on their work. Out of all the pistols that survive from 1550 to 1650, only five70 pistols can be ascribed to Edinburgh craftsmen.80 Perhaps the craftsmen did not think it important to sign their work, until 1740, when the locksmiths were told to do so by the house.81

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70 The five are thought to be from Edinburgh. Caldwell, ‘A Wooden-stocked Fishtail Pistol’, p. 320
80 There is also a lock plate with the initials ‘GT’ from the 1653 wreck of the Swan. It might have been made by George Thomson of Edinburgh. Martin, C., Scotland’s Historic Shipwrecks, 1998, p. 50
81 EHMB, ED008/1/7, p. 37 – 8
The dagmakers and gunsmiths had links to locksmiths, lorimers and possibly melters. New technologies entered Scotland and were incorporated into the Edinburgh hammermen by joining them with the trade that had the most in common with them. Taking knowledge of moving parts from the locksmiths' art, they produced lock mechanisms that gave ignition to their firearms. Terminology was taken as well; 'lock', 'tumbler' and 'lock plate' are integral parts of both types of mechanisms. They also had skill in brazing and filing. The connection to the melters lies with the use of gun-metal barrels. It is uncertain as to whether the dagmakers cast the gun metal barrels themselves, or bought them from the melters. By 1693, they were firmly joined with the locksmiths only.

Clockmakers and Watchmakers

Clockmakers and watchmakers were also joined with the locksmiths. As with locks and gun locks, clocks and watches had mechanical, movable parts and often incorporated brass, iron and steel. Mechanical clocks had been in Europe since medieval times. There are two types of clocks that apply to this study; weight-driven and spring-driven. The oldest known surviving weight-driven clock is in Salisbury Cathedral, in England. It dates to at least 1386 and is functioning today.\textsuperscript{82} In the early stages of clockmaking, these simpler weight driven mechanisms were often made by blacksmiths (see Figure 3.15). In London, the early clockmakers were in the blacksmiths' guild.\textsuperscript{83} The problem with weight-driven mechanisms is that they depended on gravity and were not easily transported. If the mechanism could be turned upside down, the force driving the clock was interrupted and the mechanism slowed down. This type of clock had to remain still to work.

Spring-driven mechanisms had the advantage of a self-contained, easily moved power source. While gravity still affected the accuracy slightly, it was not as extreme. The earliest known spring-driven clock was made by Jacob Zech (or Jacob the Czech) in 82 Duley, A. J., \textit{The Medieval Clock at Salisbury Cathedral}, 1997, p. 5 – 6
83 Melling, \textit{London's Guilds}, p. 33
though there are descriptions and illustrations of spring-driven clocks from the late fifteenth century. The introduction of the spring might have been the link from locksmithing to clockmaking. One of the locksmiths' necessary skills was proper tempering of springs.

Spring-driven mobility opened up the possibility for smaller mechanisms. Smaller mechanisms were more easily transported. The spring brought about the watch. The earliest known watch still in existence dates to 1548 and is probably German. The watch is an early modern invention.

Edinburgh Knockmakers

Clockwork was an imported skill, brought into Edinburgh, probably after 1483. Many of Edinburgh’s more famous horologists were of French and English origins (see Table 4.3 in the appendix). Yet this is not to say that Edinburgh was void of clock- and watchmaking skill. Once it was established in Edinburgh, a thriving market for horologists grew and a sophisticated base of skill existed until the practice of importing and assembling bought parts prevailed. Several specimens of Edinburgh craftsmanship are still functioning today, in the National Museums of Scotland. It is also worth noting that Scotland had its own jargon for the parts of a clock, or ‘knock’ as they were called up till the 1670s. ‘Horologe brod’ was Scots for the dial, or face of the knock; ‘tows’ were the knock ropes attached to the driving weights, which were known as ‘pases’ and ‘sails’ was the Scots word for the quatre-foil fly, which looked like a pair of paddles and were used to cause wind-friction to slow the wheels.

Prior to 1600, there is little evidence of clockmaking in the Edinburgh hammermen. One craftsman named William Purves was known to have worked in Edinburgh, Aberdeen, Stirling and Dundee. In his Dundee contract, it is stated that he

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84 Clutton, Britten’s Old Clocks, p. 20
85 Ibid., p. 16
86 Cutmore, M., Watch Handbook, 1985, p. 9
87 Knock and clock will be used interchangeably from here on.
88 Dareau, M. J., 500 Years of Scottish Clockmaking, 1997, p. 5
was a burgess of Edinburgh.\textsuperscript{89} There is a William Purves listed as having one of the three keys for the incorporation’s box in 1542 and in 1546 he is given as William Purwes in a list of masters paying four shillings to the hammermen.\textsuperscript{90} No mention is given that this Purves made clocks, but it has been pointed out that the minute book records accord with William Purves’s movements as recorded in the Aberdeen notes.\textsuperscript{91} Seeing as Scotland did not have the horological resources of a larger country like France, or the Holy Roman Empire, it would make sense for a Scottish clockmaker to have the freedom of its largest metal working guild in its capital city.

After Purves, there were no clockmakers listed in the hammermen minute books until the early 1600s. On 23 April 1585, a smith from Blantyre, with the surname of Smith, was brought to Edinburgh ‘for repairing the knock of Lindores bought by the town, setting up thereof and dressing the same’.\textsuperscript{92} Edinburgh had to bring in specialized craftsmen, because they did not have anyone in their local incorporation to do the job. There was a dearth of horological skill in Edinburgh.

On 4 January 1594, commission was given to the dean of guild and ‘his council’ to,

Agree with [ ] Fleming, for guiding and temperating of the town’s knock in the steeple...for the which cause they grant him liberty to use and exercise his craft of monteris making...and to hold an open booth...notwithstanding that his is no burgess nor free with any craft...\textsuperscript{93}

It was recognised that the town needed clockwork skill and the rules protecting the privileges of the crafts were set aside to attain it. Not only would Fleming look after the common knock, but also he would be producing individual knocks, or ‘munters’, for sale in the burgh. As clock technology was moving out of the medieval period, blacksmith-made clocks were becoming a thing of the past. New specialists in spring-driven, personal clocks were coming in. They could work in steel for the springs of personal clocks as well as the iron for the larger tower clocks.

\textsuperscript{89} Smith, J., \textit{OSC 1453 – 1850}, 1975, p. 304 - 5
\textsuperscript{90} Smith, J., \textit{Hammermen}, 1906, p. 107, 130
\textsuperscript{91} Smith, \textit{OSC 1453 – 1850}, p. 304
\textsuperscript{92} \textit{Edin. Recs.}, p. 412
\textsuperscript{93} Ibid., p. 107
Knockmakers and the Incorporation of Hammermen

On 19 December 1604, a Canongate knockmaker named William Smith ‘obliged himself [to] repair and uphold the town’s knock in the steeple in all necessaries thereto’. The fact that the council was using a Canongate craftsman, a stranger, could not have sat well with the Edinburgh incorporated trades. On 11 December 1607, another clockmaker named James Smith was given a salary of £10 a year to inspect the town’s great clock twice a week and keep it in repair. The council using an Edinburgh unfreeman was just as bad. At some point around this time, James Smith joined the Incorporation of Hammermen. His name was mentioned in a list of masters in 1606, but this is confusing, as he was still an unfreeman at that point. On 8 August 1610, by an act of Council, James Smith was given burgess-ship. It just would not have done to see the rules broken, even if his skill was necessary to the burgh. But what about the Incorporation of Hammermen? Even with freedom of the burgh, he was still an unfreeman of the craft and an unfreeman with servants working for him. For the sake of keeping everything neat and tidy, Smith was made a master in the Incorporation of Hammermen. The problem was that there was no knockmaker craft to put him in. Aside from Purves, seventy years earlier, this was new territory for the incorporation. He could have been put in with the blacksmiths, because the mainstay of his known work was the older type of weight-driven mechanism. The incorporation must have considered even these simple mechanisms too complex for the blacksmith art, so he was attached to the locksmiths. On 7 September 1613 ‘the deacon and masters with consent of the art of locksmith craft, admitted James Smith to his essay, to wit ane kist lock to be made in Abraham Hamilton, his booth...’ His essay masters were Thomas Duncan and Thomas Brown, who were both locksmiths. They knew he could make clocks, but he had to prove himself on kist locks. He passed his essay, paid his upset of £40 and was the first knockmaker in the locksmith craft of the Edinburgh Incorporation of

94 Edin. Recs., p. 8
95 Ibid., p. 36
96 Edinburgh Burgesses
97 Edin. Recs., p. 65
98 EHMB, ED008/1/2, 7 September 1613
Hammermen. The council continued to give him work on the town knocks. In 1614 he built a new knock for the town weigh-house. In 1619 he was given by the council a new salary of £100 a year, for tending the town clocks, the great clock, the Netherbow clock and the weigh-house clock ‘providing always [he] attend the tempering of the same by day and night and keep the same in good order so that they answer one to another in striking of the hour and keeping the just hour and measure winter and somer…’ He certainly had his work cut out for him. Until 1641 he was never referred to as a knockmaker in the incorporation minute books; he was referred to only as a locksmith. An unofficial association that would last well past 1750 had begun.

The practice was not immediately taken on as protocol in Edinburgh. There were still other knockmakers around the area. In the Canongate, William Smith became a Canongate Hammerman on 17 June 1615. By 1627 he was joined by an English watchmaker named Cornelius Zet. The Canongate records for 20 March 1627 state that before he was a freeman of their hammermen, he already had his own booth in which to make his essay. In Edinburgh, a French knockmaker named Nicolas Funtanet attained burgess-ship in 1611, by marrying the daughter of a burgess. He does not seem to have joined the Incorporation of Hammermen, though. The new technology brought with it a period of transition, where the incorporation had to adjust in order to incorporate it.

It was not until 1647 that knockmakers other than James Smith were recorded in the minute books of the Incorporation of Hammermen. On 11 August 1647 George and Robert Smith, both sons of James, attained burgess-ship of Edinburgh as knockmakers. On 6 September 1647 they both became freeman locksmiths and

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99 Whitelaw, EHMB, p. 76
100 Edin. Recs., p. 118
101 Edin. Recs., p. 196
102 Smith, OSC 1453 – 1850, p. 352
103 CHR
105 CHR
106 Edinburgh Burgesses
107 Ibid.
knockmakers in the Incorporation of Hammermen.\textsuperscript{108} George Smith is often given the honour of being the first hammerman admitted as a ‘knockmaker’,\textsuperscript{109} but this is quibbling over terminology. George was not the first knockmaker in the incorporation and Robert was made a freeman ‘knockmaker’ on the same day as George. The same day they became freemen of the incorporation, the brazier art asked that the two brothers should not work in brass or copper ‘but that allenerlie appertain to their essay’.\textsuperscript{110} The incorporation was trying to make this new technology fit its established structure.

The first watchmaker in Edinburgh might have been the previously mentioned Fleming in 1594. It was stated that he had a booth for making ‘monteris’, which was another variation of the Scots word for watches and he was given council permission to not join the Incorporation of Hammermen.\textsuperscript{111} He was a legal unfreeman, the perfect position to have been in. The first watchmaker listed in the minute books of the incorporation was the Frenchman, Paul Romieu, Senior.\textsuperscript{112} Romieu is believed to have come from Rouen\textsuperscript{113} to Edinburgh in the 1670s. He became a freeman clock and watchmaker of the incorporation on 2 June 1677, with his essay having been the movements of a watch. His essay masters were George Neill, a locksmith and Andrew Brown, a clockmaker.\textsuperscript{114} It is doubtful that Neill had any technical expertise in regards to Romieu’s essay; he probably was just a representative of the locksmith craft to ensure that Romieu made the essay himself.

Watchmakers continued in Edinburgh throughout the early modern period, though not in large numbers. In 1711, a clockmaker was given time off of his indentures due to his master’s death and ‘especially considering there are few watchmakers in this city at present’\textsuperscript{115} When a skill was needed, both the council and the incorporation were willing to bend the rules.

\textsuperscript{108} EHMB, ED008/1/3, 6 September 1647
\textsuperscript{109} Smith, OSC 1453 – 1850, p. 350, and Whyte, D., Clock & Watch Makers of Edinburgh and the Lothians 1539 – 1900, 2001, p. 73
\textsuperscript{110} Smith, OSC 1453 – 1850, p. 366
\textsuperscript{111} Edin. Recs., p. 107
\textsuperscript{112} Smith, OSC 1453 – 1850, p. 322
\textsuperscript{113} Loomes, B., Brass Dial Clocks, 1998, p. 298
\textsuperscript{114} Smith, OSC 1453 – 1850, p. 322
\textsuperscript{115} EHMB, ED008/1/5, p. 97
From 1613 on, all knockmakers, clockmakers, hourmakers and watchmakers were part of the locksmith craft, though the association usually went unspoken. In 1667 there is evidence that the practice continued, when Humphrey Milne, an English knockmaker in the incorporation, was listed as being one of the two masters for the locksmiths for that year. In 1693, the practice became definite and recorded in a list of masters.

The section of the 1693 list entitled 'Locksmiths and these joined with them', listed several clockmakers and one 'hourmaker'. Several of the craftsmen had 'dead' after their name, but this is most likely a later addition to the 1693 list for finding the 1695 tally of living masters. It is also interesting that no craftsmen were listed as watchmakers in 1693, although Paul Romieu, Senior, was in fact a watchmaker. Perhaps the clerk was not bothered about the technical details.

The association between the watchmakers, clockmakers and locksmiths was never officially set down in the minute books. The most recognition it got was the 1693 entry of 'Locksmiths and these joined with them'. The association did not equate to the clockmakers being ruled by the locksmiths; they were not subordinate to them. In 1736 there was a reference in the minute books to Mr. Andrew Dickie craving admittance as a freeman clockmaker:

The house delays the giving an answer to Mr. Dickie's letter till Saturday next and in the mean time nominates the old deacons, old boxmasters, present masters, clockmaker art James Gardner Willam Armstrong Edward Bunkle yor. and Alexander Wright whereof five to be a quorum to be a committee to meet at two of the clock in the afternoon to consider not only as to the answer to be given to Mr. Dickies letter, but also anent the possibility of admitting strangers to be freemen.

This reference illustrates the clockmaker art choosing independently from the locksmith craft about the admittance of a stranger to their privileges. The locksmiths were not involved.

116 EHMB, ED008/1/4, p. 101
117 This is an arbitrarily picked, post-1693 date for example only.
118 EHMB, ED008/1/6, 8 January 1736
The committee having taken into their consideration the foresaid remit to them are unanimously of opinion that as to the last part of it to with the possibility of admitting strangers to be freemen. It being a tender point to the generality of the arts to determine that point absolutely at present but leaves it to the consideration of the particular arts when application is made to them upon that account and as to the giving an answer to Mr. Dickie’s letter They upon desire of clockmakers present delay giving their opinion till the clockmakers meet with Mr. Dickie this night and give in their report and opinion after they have communed with Mr. Dickie against tomorrow mourning.

The house being met upon the deacon’s reporting from the meeting of the clockmakers that they were willing to receive Mr. Dickie in the terms of his letter, John Brown clockmaker protested that in case this house is not able to protect the clockmaker art in their privileges against any stranger the house shall be obliged not only to refund the money paid by Mr. Dickie but also what money has been paid by any of the art to whom Patrick Gordon Alexander Brand and Hugh Barclay adhered

The incorporation having considered the letter from Andrew Dickie clockmaker craving to be admitted a freeman clockmaker upon his paying the house thirty pound sterling providing the incorporation will provide him his burgess-ship and free him of all the expenses of getting it and also the report from the clockmakers of their being willing and unanimously agree to receiver him upon these terms and recommend to the deacon to get him made burgess as easy as possible.119

The clockmakers made decisions that affected only them. They asked the incorporation, not the locksmith craft, for protection of their privileges from strangers coming in. The house then provided Dickie with a free burgess ticket and, with the consent of the clockmaker’s art, admitted him as a freeman.

Progression of Scottish Clocks and Watches

Early modern horology is not a field in which Scotland made any groundbreaking technological innovations, though one of Britain’s finest clockmakers, David Ramsay, was from Dundee. He was given in 1618 the office of Chief Clockmaker to the King and was in 1631 one of the first masters to hold office in London’s Clockmakers’

119 EHMB, ED008/1/6, 9 January 1736
Company. But while Scots were far from unskilled in horology, the technology was imported. This can be said for most countries in the world, though and it is rather fortunate for Scotland that clockmakers from England and France settled in Edinburgh. In 1660 Humphrey Milne came from England to Edinburgh, where he produced many brass lantern clocks with balance wheel and verge escapements. It has been pointed out that Milne was rather conservative, as he tended to carry on producing the lantern clocks he knew instead of incorporating the latest technology from London. It was pointed out at the same time that Milne’s real contribution to Scottish horology was taking a large number of local apprentices. He may not have used cutting-edge innovations, but he did help establish a base of skilled clockmakers.

One of his apprentices, Andrew Brown, went to great lengths to incorporate the latest clock technology. The lantern clock in Scotland died with Milne. Brown kept up with London trends, making dependable mechanisms with the latest escapements. One of his clocks from c.1690 is capable of keeping time to within one or two minutes a month.

While the new innovations from England, France, Germany, Holland and other European countries did help improve Scottish clockmaking, it is beyond the scope of this chapter to describe the entire technological history of Scottish horology, though it should be pointed out that this is a research project that needs to be done. Some of the more obvious technological details merit mention, however.

The most important component of horology was wheel cutting. If the ‘wheels’, or gears, were off by a fraction, the clock would not work. Precision was of the utmost importance. The series of wheels in a clock was known as the train (see Figure 3.20). To achieve precision-cut wheels by hand-filing, the clockmakers had to have incredible amounts of skill. This was achieved by first marking out a wheel-blank on a division plate (see Figure 3.21). The problem of dividing up a circle into even parts for cutting of the teeth was originally dealt with by geometry. By the 1500s Europeans had devised

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120 Smith, OSC 1453 – 1850, p. 307 - 8
121 Dareau, 500 Years of Scottish Clockmaking, p. 6
122 Ibid., p. 6
123 It should be noted that early modern standards were not as precise as those of today, or even of the nineteenth century.
a type of gauge for dividing a circle of metal with a known circumference. A division plate had various concentric circles with known numbers of teeth to be cut for that size. A metal disk would have been attached and marked out accordingly. Then it would have gone to a vice for cutting and filing.\textsuperscript{124}

In 1609 there was a reference to an ‘instrument to cut wheels’. By the 1670s there were references to engines that could cut wheels.\textsuperscript{125} Figure 3.22 is such an engine. The division plate was incorporated into this hand-cranked milling machine. The oldest surviving illustration of a wheel-cutting engine, is from France, in 1709 (see Figure 3.23). When wheel-cutting engines first came to Edinburgh is impossible to say. They might have come with a Frenchman, like Paul Romieu, or with an Englishman, like Milne. If Andrew Brown cut his wheels by hand, then he was amazingly skilled.

Escapement was another area in which innovation was quite prolific. The earliest escapement was the foliot (see Figure 3.16). With a foliot escapement, there was a vertical crown wheel with teeth projecting forward. Resting right next to the wheel, was a rod with two flaps, or ‘pallets’, mounted at about a ninety degree angle to each other. The top of the rod had a ‘T’-shaped section with weights. As the clock moved, either due to weights or springs, the wheels would move the crown wheel, which would make the foliot oscillate from left to right. The pallets of the foliot would be caught by the teeth of the crown wheel; first one and the foliot’s pallet would be pushed back, out of the way. As this happened, the bar rotated and the other pallet would be pushed into the path of a tooth on the bottom of the crown wheel. As that pallet was stopped and pushed back, the process started again with the top pallet again arresting the vertical wheel. The escapement meant that the train could only move one tooth-space at time; it slowed the mechanisms down. The ‘tick, tock’ sound of a clock is actually the escapement putting the train in check.

The invention of the pendulum brought about a new type of escapement. It is debatable who invented the pendulum. Some say it was the famous astronomer

\textsuperscript{124} Wild, J. M., \textit{Wheel and Pinion Cutting in Horology}, 2001, p. 11
\textsuperscript{125} Ibid., p. 9
Galileo, while others say a Dutch mathematician named Christian Huygens (1629 – 1695), invented it. Others yet say it was Ahasuerus Fromanteel in 1658, who was born in Norfolk, of Dutch descent. Whoever it was, the pendulum greatly increased the reliability of timekeeping.

The verge escapement was invented around 1660. Figure 3.24 shows that the crown wheel was no longer vertical and that the rod with the pallets was placed across the top of the clock and attached to a pendulum. Instead of the foliot oscillating, the pendulum would swing. With each swing, a tooth of the crown wheel would be allowed to pass, slowly releasing the wound tension of the clock.

Eventually the system was simplified into a flat wheel with sharp teeth and an ‘anchor’ shaped escapement instead of the pallets. The anchor escapement was still used with a pendulum and is still in use today (see Figure 3.25).

After 1750, clock and watchmaking continued to advance. Mechanization took the art to new levels of ability. Machines were made for ‘uprighting’ the barrel, fusee and train wheels of a watch. To upright was to cut a work piece in such a way as to ensure the squareness of the parts to the movement plates in order to minimize friction and ware. Uprighting gave perfect ninety degree angles at the edges of the parts. Without such a machine, it is hard to see how early watchmakers achieved this. The earliest known illustration of a tool for uprighting parts is in Diderot’s Encyclopedia from 1765. The earliest English mandrel is also from 1765. The mandrel represents society moving over from cottage industry to the Industrial Revolution’s mechanization and standardization of parts, which happened to the gunsmiths and locksmiths also.

Clockmakers’ shops on the continent were very similar to gunsmiths’ shops. Figures 3.17 to 3.20 in the appendix show a series of four shops in Germany, Holland

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126 Bray, S., Making Clocks, 2001, p. 35
127 Greenlaw, J., Longcase Clocks, 1999, p. 9
128 Darauc, 500 Years of Scottish Clockmaking, p. 6
130 ibid., p. 415
131 ibid., p. 419
and France. Note how refined the 1748 shop is to the c.1600 shop. Clockmaking was becoming part of a European craft aristocracy. The 1748 shop (Figure 3.20) illustrates the need for mathematical skills and the clean, elegant shop environment. Figure 3.17, from 1568, shows hard, physical labour at the study, or anvil, with the forge blazing away behind. Clockmaking betrays hints of blacksmith roots, whereas the watchmakers in the pictures show signs of goldsmith roots.

The multitude of parts from the various periods of horology was extremely technical. It only made sense that clockmakers in Edinburgh were joined with the locksmiths, as they were the only trade that had anything near as complicated. In the Canongate Incorporation of Hammermen, in 1619, there was a ten-year apprenticeship for a knockmaker, compared to the six years for a blacksmith.\textsuperscript{132} The craft rules in Nürnberg also illustrate the complexity of clock and watchmaking. In 1629, a locksmith or a gunsmith was allowed to work as a clockmaker, but a clockmaker was forbidden from working on locks or guns.\textsuperscript{133} If the smith was skilled enough, the town had another horologist at its disposal, but in practice, the skill level required would have limited the number of craftsmen doing this. The easier trades of locks and guns were forbidden to the clockmakers, because they could have done these jobs. Most smiths could not make a clock, so it did not matter if they were all allowed to. Skill kept the craftsmen in their respective places; rules were not necessary.

Framesmith

The third art joined with the locksmiths in the 1693 list is that of the framesmith, or stocking frame maker, of which only one craftsman is mentioned in the Incorporation of Hammermen minute books, Mathew Downing. Though he was mentioned as a freeman in an earlier 1682 list and then again in the 1693 one under the locksmiths,\textsuperscript{134} Downing did not officially receive burgess-ship until 1698. He is listed in the burgess rolls as a stocking frame maker, gratis, by act of Council on 4 Sept. 1698 'in respect there is none

\textsuperscript{132} CHR, 1 January 1619
\textsuperscript{133} Clutton, \textit{Britten's Old Clocks}, p. 70
\textsuperscript{134} EHMB, ED008/1/4
of his art can make these frames...’ The entry in the rolls states that ‘the Incorporation of the Hammermen...condescended to admit him freeman, gratis, he paying the clerk and servants dues and the poor box money’. The condescension was due to the nature of the stocking frame, which was a wooden loom for mechanically making silk or woollen stockings. The frame was a wooden mechanism, with the only iron parts being the back and front joints and their arms and standards. Wood was a medium for wrights, not commonly used by hammermen, but it was again the very nature of the stocking frame which allied it to the locksmiths. The trade was accepted into the incorporation because it was mechanical. It had moving parts like locks, clocks and guns. Framework knitting was of great importance in Scotland in the late seventeenth century and early eighteenth century and Edinburgh needed the skills to maintain the frames.

To better understand the one framesmith’s relationship with the locksmith craft, it is sensible to take a look at the origins of the stocking frame, which is an early glimpse of the Industrial Revolution of the eighteenth century. There are two versions of the story of the invention of the frame. One printed in 1831, by Gravenor Henson, is a written version of an oral history recorded from two stocking makers who served their apprenticeships in the early eighteenth century. Henson’s version of the events has the inventor of the frame as a minister and curate of Calverton, Nottinghamshire, in the late sixteenth century. Apparently the Rev. Lee was wooing a lady who dodged his advances by claiming to be too busy knitting stockings. Henson states that Rev. Lee, became disgusted and he vowed to devote his future leisure, instead of dancing attendance on a capricious woman, who treated his attention with cold neglect, in devising an invention that should effectually supersede her favourite employment of knitting.

The lady eventually realized her folly, as Lee then spent all of his time in the pursuit of an engine to remove the labour from the stocking maker trade, apparently even the time that should have been spent as a Reverend.

135 Edinburgh Burgesses, p. 159
136 Henson, G., Framework, 1831, p. 41
137 Ibid., p. 39
138 Ibid., p. 38
The technical side of his idea gave him some problems. He learned the basic principles of knitting from spending so much time with the lady as she knitted the series of loops into a web. Henson states that it was the round shape of the stocking that confounded him:

making a whole series or course at once, having as many needles as loops; it seemed impossible to construct a machine to make a round web. Pondering in his mind the difficulties of his task, on one of his visits he found her knitting the heel of a stocking and using only two needles; one was employed in holding the loops whilst the other was engaged in forming a new series; the thought struck him instantly that he could make a flat web and then, by joining the selvages with the needle, make it round.139

As Henson’s account, dramatic as it may be, shows, the frame was a highly complex mechanical device, as were locks, clocks and guns.

There is another account of the invention of the stocking frame from 1747, contemporary to the old stocking makers interviewed by Henson, though printed eighty-four years earlier. R. Campbell, a Scot, published his account in a book on the various occupations in London in the mid-eighteenth century. Chapter XL ‘Of the Stocking Weaver’, starts out by stating that the stocking weaver:

is but of late invention; found out, as the story goes, by a young gentleman of Oxford. This gentleman happened to fall in love with a young woman, of fortune and family inferior to himself and married her without the consent of his relations, who abandoned him upon this undutiful step. The young couple were soon reduced to difficulties and in a little time had nothing to subsist on but a mere trifle the young woman earned by knitting of stockings. As this was their main support and that one hand could get very little by it, necessity set the young gentleman upon finding out a method more expeditious. He proved so happy in his enquiry as to fall upon the invention of the stocking loom, which he brought to great perfection and by it in a short time put himself in circumstances independent of his... inexorable parents.140

Much of the two accounts are similar, though the 1747 version is not as colourful. Some credence is given to the minister aspect of the 1831 version, by the arms of the London based Worshipful Company of Framework Knitters. In the centre of the arms is a frame, with a minister on the left and a woman on the right. Sheila Mason, in her book on the

139 Henson, Framework, p. 40
140 Campbell, R., London Trades, 1747, p. 214
company, shows an illustration of these arms from the seventeenth century.  

Whether or not Lee was a minister, it would appear that he did invent the stocking frame by the year 1589. He then took his idea to London, seeking patronage from Queen Elizabeth. She was excited at the prospect of such a machine, but disappointed when she found out that it only worked in wool and not silk, as it was not until the seventeenth century that modified frames were used to make silk goods. Though royal patronage did not come as easily as expected and Lee died in 1610, framework knitting did eventually become a common enough trade for its London practitioners to incorporate. In 1655 the framework knitters in England petitioned Oliver Cromwell for official recognition. The necessity of incorporation was so that the ‘just right to the invention may be preserved from Foreigners’. While they did in 1657 attain recognition and form themselves into the Worshipful Company of Framework Knitters, they did not manage to preserve the stocking frame from foreigners. As early as 1608, Lee had shipped frames and workmen to France.

In 1681, the Scottish parliament made the ‘Act for Encouraging Trade and Manufactories’, to provide protection for local wares by prohibiting the importation of various items, such as silk and woollen stockings. A company was formed under the protection of this act at New Mills in East Lothian, for the production of fine woollen cloth. By 1683 they had four silk-stocking frames, which had been purchased from Sir James Stanfield. They later bought more frames from England. Unfortunately, there were not enough orders for the company to thrive. In 1686 the company auctioned their frames. These frames and the frame-work knitters that ran them went to Edinburgh.

By 1682 Mathew Downing, the stocking-frame maker, was listed in the Edinburgh hammermen’s minute books. He did not receive burgess-ship until 1698.

141 Mason, S. A., *Co. Framework.*, 2000, p. 4
142 Ibid., p. 15
143 Henson, *Framework*, p. 43
145 Henson, *Framework*, p. 52
146 Mason, *Co. Framework*, p. 25 - 6
147 Ibid., p. 22
149 EHMB, ED008/1/4, 1682
by act of Council ‘in respect there is none of his art can make these frames…” The entry in the rolls states that ‘the Incorporation of the Hammermen...condescended to admit him freeman, gratis, he paying the clerk and servants dues and the poor box money’. Downing had been in the incorporation for sixteen years. The burgh establishment had been willing to turn a blind eye because they needed his expertise. He was not the only unfreeman in the burgh associated with frames; in 1690, John Burton, one of the New Mills framework knitters, was listed in the Register of Deeds as an ‘indweller in Edinburgh’.

While there was only one framesmith identified in the minute books prior to 1750, the use of knitting frames in Scotland became established enough to contribute to the decline of the Aberdeen hand-knitting trade after 1793. In 1775, David Loch, who was concerned with promoting the native woollen industry, made a tour around Scotland in order to provide a report for the Board of Trustees on manufactures of textiles. He reported that there were frames throughout Scotland, such as at Stirling, which had thirty, Dumfries, which had thirty, Linlithgow had nine and Ayr and Irvine had twenty-five. Edinburgh and Leith had stocking frames which were ‘increasing daily’. Scotland had more than 119 stocking frames in 1775.

Frame Technology

Due to the mechanical nature of the frames, Downing’s art was listed as ‘joined’ with the locksmith craft in 1693. The complexity of the framework knitting can be seen by comparing Figures 3.26 and 3.27. The first of these shows hand-knitters at work on the various laborious phases of the operation. This was much simplified by mechanization of one of the stages by the stocking frame. Figure 3.27 shows a booth with a frame operating. It is of a much more serene environment, as the frame was a labour saving...

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150 Edinburgh Burgesses, p. 159
151 Bennett, ‘Thesis’, p. 175
152 Ibid., p. 168
153 Ibid., p. 178
154 Ibid., p. 179
155 EHMB, ED008/1/4, 17 January 1693
device, but it was also far more technical. The frame of the frame was made out of wood. Iron parts were added to this in a very complicated fashion. The following account of Lee’s first machine gives the best possible description of the technical side of stocking frames:

His first operation was to drive his needles, eight to an inch, into a firm piece of wood, fixed upon a wooden frame (from which the machine has since taken its name): his next attempt was to form a wooden bar to press the end of the hooks into the groove at one motion; this he effected with facility and had the patience to make several inches by the hand with his new machine. However ludicrous such an apparatus may now appear, Mr. Lee thought he had effected wonders. Having thus become enabled to loop a series at once, his next attempt was to gain the thread to form the loop this presented still further obstacles, all attempts to gain the length of thread at the head of the needle, which he tried to effect by pins fixed upon levers, proved abortive; at length he determined to gain the thread for the loop at the stem of the needle. Having constructed a lever made of wood for each needle, he found little difficulty in making an indented spring, from his needle wire, to balance the lighter end against the heavier and to prevent their falling. But to make an instrument to catch the thread, by passing between the needles and then, after carrying the thread to the head, to quit the work, presented no slight obstacle. Several ludicrous circumstances are related respecting his unsuccessful essays to frame the arch as well as the neb of the sinker; at length he succeeded in framing from pieces of tin the present jack sinker. The only parts of the carcass of his frame made of iron, were the back and front joints and their arms and standards. The first frame ran only upon two trucks, whilst the half jack, which connected the movements of the jacks, combs and springs, was fastened to the verge bar, which stopped the heads of the jacks when the locker bar pressed them up after they had fallen. Mr. Lee’s frames had no lead sinkers. The locker bar, to force up the jacks, was worked by the foot, as was also the frame, when sinking, to bring the thread to the head of the needle. The slur cock* to force down the jacks, was worked by a lever, first by the hand, afterwards with the foot. The slur wheel is a later improvement.

* The slur cock is an apparatus made to ride upon a long bar, called the slur bar, which is flat and the slur, having two sides like flaps and two wheels in the top to ease the motion, rides on the upper edge of the bar. In the middle of the cock, which is about six inches long, is a piece of iron, having two sides, cut a proper slant, which being forced against the jacks, from side to side, pushes them down in rotation and causes the hissing noise which frames make in that process.156

156 Henson, Framework, p. 40-2
Downing's occupation was every bit as technical and mechanical as that of a locksmith, gunsmith, or clockmaker. He would have had skills very similar to any of these trades.

In January 1693, the term 'locksmith craft' took on a new, broader definition. It became an incorporation inside the Incorporation of Hammermen, made up of mechanical trades. While this practice had been happening for some time, the first written proof of it being labelled is in 1693. The locksmiths, gunsmiths, clockmakers and the one framesmith all had specialist know-how in mechanical areas. Their products were absorbing new technology and becoming more complex and sophisticated. Incorporation control was already complex. To avoid spreading out the power and control, new sub-incorporations were unofficially formed. New trades were joined into older, more established trades along work types. New associations based on identity as a particular type of craftsman or similar materials and techniques, were formed and lasted well beyond 1750.
Chapter 4

Security and the Edinburgh Locksmith Craft

In the early modern Scottish burghs, security was a shared responsibility of all burgesses. Without a standing army or police force, responsibility for defence and protection was the civic duty of each burgess. The issue of security is particularly poignant in relation to the Edinburgh locksmith craft, as they provided or helped to provide security on three levels – home, burgh and nation. Their impact on early modern security manifested itself in technological advances which they made available to their fellow burgesses, as well as the civic responsibilities shared by all.

Early modern Edinburgh had several civic duties required of its burgesses. One such civic duty was keeping arms for the defence of the burgh. Until the 1660s, there was no standing army,¹ which is an army in constant training for combat. Soldiers in such an army lived in barracks where they were regularly drilled and were usually under the control of a central government. A non-standing army was made up of common people who trained only occasionally and fought only if totally necessary. Edinburgh

burgesses keeping arms was a militia – a group of ordinary civilians whose one objective was protection of their homes, rights and trade.

Wappenshaws and Town Companies

The idea of ordinary people taking up arms for defence of the nation was the basis behind the late-medieval institution of ‘Scottish service’. This was set up for national security – men were expected to serve for forty days a year in times of war. In the centuries before a standing army, the people were the army. The national level was not the only military service expected of Scots, though. In towns, burgesses were expected to keep weapons in their homes or booths.

In 1318 the parliament held by Robert the Bruce decided that men worth £10 were to have a sword, spear, gloves of plate, aketon, which was a type of padded jacket and some type of helmet. Those men who were only rich enough to own a cow were to keep a spear or bow. By the early modern period keeping arms became a constant practice. In 1494 and 1498, acts of the town council declared that all ‘neighbors and inhabitants’ of Edinburg ‘both merchantmen and craftsmen’, were ordained to keep arms and armour in their booths - ‘at least...ax or sword, with sallet and gloves of plate’ at the ready to come to the aid of the town magistrates whenever trouble arose. In 1529 the burgesses of Edinburgh were ordered to keep ‘an axe or two or three, after as they have servants’ and to go immediately with them to the provost and bailies, ready to defend the town under fine of 40 s. for not showing up the first time. In 1565 the council ordered the bailies and town officers to visit all dwellings to ensure that all fencible men were sufficiently armed.

To ensure that its burgesses were properly armed, the council made use of another burgh institution known as the ‘wappenshaw’, or weapon-showing. In theory,

2 Caldwell, Wars, p. 26
3 Ibid., p. 35
4 Marwick, J. D., Guilds and Crafts, 1909, p. 55
5 Ibid., p. 68
6 Ibid., p. 101
wappenshaws happened four times a year, but in reality they were sporadic. The records in Edinburgh indicate this from the entry on 2 November 1554 of a wappenshaw and the lack of another until 24 February 1556. In 1554 the records state that wappenshaws were to be held twice a year. By the 1590s, they seem to have been held every four to five years. They did get somewhat more regular in the early 1600s; from 1607 to 1637 they were held annually, often in June. There is of course the possibility that they did happen at the prescribed intervals annually, but were not recorded.

Wappenshaws would have been notable events. Every fencible burgess man was expected to take his armour and weapons either to the Burghmuir, Greyfriars Kirk-yard, or the Links down at Leith, depending on where it was being held that particular time. The Edinburgh standard would be borne through the town in a procession of the armed men, with trumpeters and musicians. Once at the meeting place, the men would be formed up into the military formations of the day.

By the middle of the 1500s, military formations were evolving to suit new technologies and fighting was taking on an increase in range. While the pike had been used since the time of Robert the Bruce to offset the advantage of heavy cavalry, by the sixteenth century firearms were increasing in importance and eventually, they offset the need for pikes. New weapons and new tactics had to be taught. This was part of the purpose of the wappenshaw. By the time of the Bishops’ Wars of 1639 and 1640, the military formations of Sweden were entering Scotland through Scots returned from military service in the Thirty Years War, such as Alexander Leslie, the Scots commander. It is most likely that in any wappenshaws from 1639 onwards, the Swedish infantry formation would have been taught to the burgesses of Edinburgh.

7 Mair, C., Market Cross, 1988, p. 156
8 Edin. Recs., p. 202, 237
9 Ibid., p. 199
10 Ibid.
11 Furgol, E. M., Regimental Hist., 1990, p. 1
12 Edin. Recs.
13 Ibid., Index, 1892, p. 191
14 Reid, S., Civil Wars, 1999, p. 10
From c.1571 to 1644, in the burgess rolls for Edinburgh, weapons were listed after the names of men attaining burgess-ship. From 1571 to 1579 there were occasional entries. From 1591 to 1627, the entries became regular; usually a hagbut—a type of long gun. From 1625 to 1644 it was usually a musket—a more advanced version of the hagbut. Guild brethren were listed from 1596 to 1644 with a corslet—a stand of armour that covered the torso and upper legs. A solitary listing of a guild brother with a corslet was recorded after 1644, in 1648, which might be a mistake in the typing of the 1929 transcription, or a single corslet provided for the Scots army in the ‘Troubles’. Corslets and pikes were listed together in several entries and a few guild brethren were listed as having only a pike. It is possible that the entry of ‘corslet’ meant that the guild brother supplied both corslet and pike, with only a few entries bothering to record the obvious. Contemporary prints in military manuals illustrate that the corslet was traditionally used by pikemen; musketeers did not wear armour, save helmets. Table 9.1 in the appendix was compiled by taking a count of all weapons mentioned at burgess entries from 1571 to 1648. In this period there would have been several generations and weapons would have been passed on as burgesses grew old. Even if there are two generations represented by these entries and the numbers of real weapons halved (one weapon being entered twice for father and later son), there still might have been as many as 1,702 firearms and 535 corslets. This would not have sustained the common practice of two musketeers to one pikeman, but could have armed a militia of 2,237 men, with a predominance of firepower over defensive pikes. In 1643, Rae’s regiment of foot, which was raised in Edinburgh for service in England, numbered only 1,200.

Considering the time-span and the practicality of using a weapon that had been listed with a previous burgess, the numbers of weapons are conjectural. The weapon entries in the burgess rolls give an interesting look at the locksmith craft’s contribution to burgh defence. From 1591 to 1644 the locksmiths contributed fifteen hagbuteers, eight

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15 Edinburgh Burgesses, 1929
16 Ibid., p. 232
17 Reid, Civil Wars, p. 15, 18
18 Edinburgh Burgesses
19 Reid, Civil Wars, p. 19
20 Furgol, Regimental Hist., p. 133
musketeers and two pikemen.\textsuperscript{21} The locksmiths made more use of new firearm technology than old armour technology. This might have been due to the cost of armour, compared to the cheaper musket. In the Edinburgh records, the armour house was visited in 1638 to account for what arms were available. 200 double muskets, 190 half muskets, sixty-six hagbuts, 420 musket rests, 443 bandoliers, 207 pikes, 219 corslets and head-pieces and two bundles of lunt, which was match for firing the muskets.\textsuperscript{22} By the eighteenth century all the weapons went into the town armoury instead of being kept by burgesses.

The locksmiths, like all other burgesses, would have carried their weapons through Edinburgh on the way to the Burghmuir. Once there, a roll probably would have been taken and those missing fined. With that out of the way, the town would then have begun practising formations and drills. Both pike and musket had their own set of 'postures', which were a series of motions to be copied by all for loading and firing a musket, or handling of pikes in a co-ordinated and efficient manner. If the burgesses could be taught to all make the same motions gracefully and dexterously, in unison, then they would be effective as a fighting force. The postures were choreography for battle. A pikeman had to learn eighteen different postures.\textsuperscript{23} With these they could manoeuvre and change directions fluently, as a unit, producing a moving wall of spikes. If they were not all in unison, there would be holes in the line where the enemy could break through. A musketeer had to learn thirty-four postures.\textsuperscript{24} In this way, all men in one line fired at the same time, went to the back of the square, reloaded and stepped forward to shoot again all in unison. With each line firing at once, continuously, the volleys became a constant battering of lead, which would have affected the enemy psychologically. At wappenshaws, when all pikemen and musketeers did the same motions over and over, with the man to the left and right of them doing the same, learning, courage and discipline were promoted. For a militia, it was better than no training, but they were still not as effective as a standing army that drilled daily.

\textsuperscript{21} Edinburgh Burgesses
\textsuperscript{22} Edin. Recs., p. 204 - 5
\textsuperscript{23} Kitson, F., Prince Rupert, 1996, p. 32
\textsuperscript{24} Ibid., p. 33
To what extent the burgesses of Edinburgh trained with cavalry drills is not mentioned. In 1644 one Edinburgh hammerman – a pewterer named Adam Steill – ‘was killed and laid in a bed of honour as a valiant cavalier at Marston Moor near York’.

When Steill became a burgess in 1631, he was listed as having a musket. He did not fight in the infantry, though, as he died a cavalier, or horseman. This might indicate that the pewderer trade was wealthy enough that he could kit himself out for cavalry. How much cavalry tactics played a part in wappenshaws is unknown.

Occasionally, the wappenshaws were used for conscription and war. In 1643 the Estates decided to assist the Parliamentsarians in England. Wappenshaws were held at various times throughout Scotland and roles of fencible men were taken. Copies of these rolls were sent to the central government, who then decided which areas to take men from to fill the levies. Every fourth and eighth man were to be conscripted for Scots service. As for the rest, when the wappenshaw was over, the locksmiths, merchants, baxters and tailors, went home to their beds, no longer soldiers. In the morning they were ordinary burgesses again.

With the knowledge from the wappenshaw that all of its burgesses were sufficiently armed, Edinburgh had in its power to raise a militia for defence. One example of the need for this was the May 1544 Hertford raid by the English of Edinburgh. In the midst of the defence was the deacon of the Incorporation of Hammermen, Thomas Schort. Before the English invasion, on 9 August 1543, Schort and ten other deacons of Edinburgh crafts went before the provost and council to protest restrictions that favoured merchants but hurt craftsmen. As a show of seriousness, they drew their swords in front of the council. All eleven deacons were arrested and taken to the castle, but the Governor, the Earl of Arran, did not want to upset the burgh. He had the deacons released.

Within the year Schort found himself in arms trying to fight off the English invasion at the Netherbow Port, where he died. It’s not clear how badly damaged Edinburgh was, but the burgesses did put up resistance. In 1546, Thomas

25 Whitelaw, EHMB
26 Edinburgh Burgesses, p. 468
27 Reid, Civil Wars, p. 10 – 1
28 Merryman, M., The Rough Wooings, 2000, p. 144
29 Smith, J., Hammermen, 1906, p. lxxxiii
Schort’s widow was listed in a roll of masters. This would indicate that Schort’s servants kept working after he had died, in the employ of his widow.\textsuperscript{30} While there was damage done to the town, trade did resume and the burgh kept going.

With the Union of Crowns in 1603 there was peace between Scotland and England and Edinburgh’s arms became antiquated. A hired watch was formed in 1607 and lasted until 1625.\textsuperscript{31} There was peace and the burgesses surely wanted to pursue their trades, instead of watching for an enemy that was not coming, so the council hired a watch. With the advent of Scottish involvement in the wars of the continent and Edinburgh burgesses being sent along with the Duke of Buckingham to relieve the French Huguenots at La Rochelle,\textsuperscript{32} the danger of war became vivid again to Edinburgh. In January 1626 it was realised by the council that ‘if any foreign invasion should happen this burgh should be found un-provided with sufficient armour for resisting of suchlike invasion’.\textsuperscript{33} The council decided to revamp their old system of armed burgesses. The various wars which had been raging on the continent since the Reformation had brought about new ideas in military technology, many of which had been published in military training manuals. Many Scots had fought as mercenaries in the Thirty Years War. Examples of the new technologically advanced arms were attainable through merchants in the Low Countries which could be replicated by Edinburgh craftsmen.\textsuperscript{34} In order to keep the burgh secure, Edinburgh was forced to progress along the new European lines of military technology.

After the town’s hostellers and lodgers had been reminded to notify the bailies of each stranger entering the burgh, as ‘there can be small difference had betwixt civil and evil disposed people,’ there was a review of the fencible men of the burgh. It was decided that it would be expedient for the whole inhabitants of Edinburgh to be divided up into eight companies of 200 or more men each, with two companies coming from each quarter of the burgh. A company of youth and two companies from Leith were added later in the year. Leadership and training of the town companies was concerning

\textsuperscript{30}Smith, \textit{Hammermen}, p. 130
\textsuperscript{31}Skinner, W., \textit{The Society of Trained Bands of Edinburgh}, 1889, p. 13
\textsuperscript{32}\textit{Edinburgh Burgesses}, p. 282
\textsuperscript{33}\textit{Edin. Recs.}, p. xxxviii
\textsuperscript{34}Blair, C., \textit{Firearms}, 1995, p. 8
to the council, as they did not want to appear to be favouring either the merchants or the craftsmen. To resolve this, each company was to be led in token by two persons – one craftsman and one merchant, with the one who trained the company to actually lead it. Few burgesses were actually qualified to train an army, so professional drillers were later hired to train the companies. Each company was to have an ensign, or flag-bearer. It was a great honour to carry the ensign, so four companies had craftsmen as ensigns and four had merchants. Each company also had a surgeon assigned to it.35

Once the quarters of Edinburgh had been divided up into the eight companies and the council had elected the eight merchants and eight craftsmen that were to lead the companies, these officers were set about their work. They first had to visit every house of every man in their company to make note of their arms and armour for the bailies. With this information they redistributed the weapons and armour according to stature.36 Bigger men were put to the corslet and pike. Pikemen had to be able to hold three quarters of a fifteen to eighteen foot long wooden pole with an iron head parallel to the ground for long periods of time, which demanded a strong upper body. If one man could not keep his pike up to an effective level, there was a hole and the entire line was weakened. Men of smaller stature were given the hagbuts or muskets. In 1625, the first Edinburgh burgess was recorded as having a musket instead of a hagbut. By 1627 all firearm entries were muskets. In the early 1590s many burgesses were entered into the rolls with ‘jack and spear’. This was replaced by corslet and pike as early as 1596.37 The new town companies would standardize their weaponry and training, either in corslets with the latest pike-manoeuvres, or as musketeers with the latest musketry-drills. The convention on the continent was musket and pike, so Edinburgh was following suit.

The town companies, which all burgesses participated in, show provision of security on all three levels. Not only did the militia defend home and burgh, but they also were active on a national level, having taken part in the crown’s wars abroad. In 1629, Edinburgh burgesses were sent along with the Duke of Buckingham to occupy the

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35 *Edin. Recs.*, p. 297-304
36 Ibid., p. 300
37 *Edinburgh Burgesses*
Isle of Ré, by La Rochelle. The burgess rolls mention two tailors, a stabler, a cordiner and a ‘post’ who all received burgess-ship gratis for ‘service done in his Majesty’s wars’. In 1642, Edinburgh sent men to England, with an entire regiment of foot being raised from Edinburgh and the surrounding presbytery in 1643. When Edinburgh was attacked, or when the government needed soldiers for Scots service abroad, the militia system provided security for home, burgh and nation.

Watch and Ward

Aside from being part of the town’s militia, the locksmiths were also expected to share in policing the burgh. The terms, ‘walk and ward’, and ‘watch and ward’, were used to delineate the practice of burgesses forming the nightly town watch; a practice dating at least to the reign of David I (1124 – 1153). In the earlier days, if a burgess’s door was knocked on, a watchman was to come immediately with two weapons to watch the town from curfew till dawn. By 1442 the town was walked each night with six person watches, taken and set by the town bailies at the cross. On 12 October 1547 the number of watchmen was increased to twelve, but by 3 January it was increased to as many as the bailie of each quarter pleased. In 1568 it went as high as a hundred men walking the town at night. Walk and ward applied to all able men of the town under the age of sixty years. Each night at curfew, the ports in the town wall were closed and locked. From 8:00 till the ports opened in morning, the town was watched as a deterrent against crime and enemies coming up to the town in stealth. The arrival of strangers was noted by the watch, as well as taverners, innkeepers and stablers and reported to the bailies. Discipline was threatened to keep the men of the watch from bothering honest

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38 Edinburgh Burgesses, p. 222, 282-3, 309, 323 and 465
39 Furgol, Regimental Hist., p. 133
40 Marwick, Guilds and Crafts, p. 74
41 Ibid., p. 154 - 5
42 Ibid., p. 10
43 Edin. Recs., p. 6
44 Ibid.
45 Ibid., p. 248
46 Ibid., p. 131 - 2
burgesses and fines were issued to those who failed to make the watch. At times the watch had musicians and drummers, no doubt to the chagrin of the sleeping burgesses.\textsuperscript{47} At first the watch was gathered door to door. Later they met at the market cross. In the second half of the sixteenth century, a house by the town wall was set aside as a watch house, providing a municipal focal point, as well as shelter and storage space. At times it was deemed necessary for men to be put to watch on the town wall and in church steeples.\textsuperscript{48}

In times of trouble, such as after the Ruthven Raid, or during the absence of the army, such as at the time of Flodden or during the Bishops Wars, the watch would be increased, often watching the town night and day.\textsuperscript{49} When factious nobles were causing problems for the nation, or the pestilence was raging, the watch was called on to increase their effort. The watch was once told to prevent the people of Leith from entering at the West Port, probably due to their anger at subjugation to their powerful neighbours.\textsuperscript{50} Much the same as the civic duty of keeping arms leading to the formation of the town companies in 1626, the practice of watch and ward eventually formed into the town guard.

**Changes**

It was the English Civil War, or the ‘Troubles’, that marked changes to the Edinburgh town companies. There was a decline in the use of wappenshaws. There was an increasing shift from private weapons to public weapons held in the town armoury.\textsuperscript{51} In 1644 burgesses and guild brethren stopped providing themselves with muskets and corslets and started paying arms money for the burgh to fund the existing soldiers instead.\textsuperscript{52} With the Civil War, military experience was visible in the veteran soldiers; militias who had attended a few wappenshaws were not as useful as the provision of

\textsuperscript{47} Edin. Recs., Index, p. 192 - 3
\textsuperscript{48} Ibid., Index, p. 192 - 3
\textsuperscript{49} Ibid., Index, p. 192 - 3, and 1642 - 1655, p. 255
\textsuperscript{50} Ibid., Index, p. 192 - 3
\textsuperscript{51} Goodare, J., State and Society, 1990, p. 136
\textsuperscript{52} Edinburgh Burgesses, p. 15
money to buy arms. The wappenshaws and town companies, or trained bands as they soon came to be known, did survive, but a standing, permanent army and watch were in the ascendancy. With the Cromwellian invasion of 1650, there probably would have been an unofficial wappenshaw to prepare for the defence of Edinburgh, but after Scotland fell to the English, they seem to have disappeared from the records. With the Restoration in 1660, the wappenshaw was apparently revived. On 5 June 1661 a proclamation stated:

Forsameikle as be the auld custom and constitution of this kingdom established by acts of parliament in all ages it was the constant practice of burghs and shires (even in the most peaceable times) and especially here in Edinburgh the principal city of the kingdom to keep a general muster day or weaponshowing to evidence their affection to their native country in the defence thereof against foreign invasion or intestine uproar quilk these years bygone has been born down by the oppression of the English and seeing it is incumbent for all the neighbours of this burgh in example to others to keep the auld use and custom and to furnish themselves sufficiently with all manner of arms and ammunitions according to their degrees and quality, therefore ordains proclamation to pass through this burgh and liberties thereof to command and charge all the inhabitants within the same fencible persons to provide themselves with sufficient arms...requisite and to be in readiness at all occasions and especially at the first adventeisment for keeping of the general muster or weaponshowing within this burgh quilk is intended to be in the month of July nixtocome at farthest...54

Edinburgh was rid of the English army and the town companies were revived through the practice of wappenshaws. Somewhere in the mid-seventeenth century they began to be known as the trained bands, just as their London equivalent was known.

In the mid-seventeenth century there was a metamorphosis of the armed burgess militia and watch. From 1607 the watch had been a hired watch, under pay, but in 1625 the council reverted to the burgesses watching. In 1627 the old practice of burgesses keeping arms for militia service was reorganised into the ‘town companies’, bringing in standardization of weapons and tactics. Wappenshaws remained the preferred method of training. While the militia system remained in use in Edinburgh through the town companies, later becoming known as the trained bands, there was a split in burgess

53 Edin. Recs.
54 Ibid., p. 245
duties through the practice of watch and ward. By 1648 a permanent or standing watch was set up in Edinburgh. It originally had sixty men under one captain, but as time progressed it grew. In 1690 William and Mary confirmed the town guard and relieved all inhabitants and burgesses of the duty of watch and ward, without prejudice to the council’s right during extraordinary occasions and emergencies calling out the trained bands for watching as they saw fit. By 1736 the town guard had a hundred men, as well as sergeants and captain-lieutenants. This previously militia-based watch became the standing town guard, with professional soldiers in uniform. The trained bands, separate from the new town guard, continued on as a burgess-based militia, whose captains formed themselves into the Society of Trained Bands in 1663. There is an act in the minute books of the Incorporation of Hammermen from 1682 stating that when burgesses became freemen of the Hammermen, they had to provide a sufficient firelock and bandolier made by an Edinburgh gunsmith for use of the incorporation. While militias continued, weapons were increasingly centralized and less often in the hands of individuals.

In the 1660s a standing army was formed in Scotland, separate again from the town guard and trained bands. Lessons had been learned of the value of professional soldiers in an unsteady political climate. When burgh interests came into conflict with national interests, the town companies, renamed the ‘trained bands’ by the time of the Restoration, were called on to defend the burgesses against the army. In December 1688 there were anti-Catholic riots in Edinburgh. The army of James VII, a Catholic king, was in Edinburgh, under Captain Wallace, guarding the Abbey at Holyrood. When an armed gang of youths decided to sack the Abbey and destroy the Catholic iconography, they were fired upon by Wallace’s men. Some of the rioters tried to obtain weapons from the town guard, who refused them. When the magistrates tried to get Wallace to surrender, there were more shots fired and eventually the trained bands overpowered the soldiers. The trained bands were defending the riotous burgh against the nation’s

56 McNeil, R., The Porteous Riot, date unknown, p. 5
57 Skinner, The Society of Trained Bands of Edinburgh, p. 17
58 McNeil, The Porteous Riot, p. 5
59 EHMB, ED008/14, p. 322
60 Caldwell, Wars, p. 89
standing army, while the town guard stood by, refusing to arm the already uncontrollable rioters. The professional soldiers of the town guard probably sympathised with the professional soldiers of the army, while the burgesses of the trained bands probably shared the opinions of the rioters.\(^{61}\)

Edinburgh did not always appreciate the professional soldiers of the town guard. In the 1690s, there were frequent riots and attacks on the town guard, who as professional soldiers were seen as outsiders in the burgh. At one point, the council disbanded the town guard, only to realize that the trained bands could not fulfil the burgh’s security requirements as they had jobs or trades at which to work themselves and could not be constantly on militia call throughout the day and night. As Houston commented in his book, Social Change in the Age of Enlightenment, the trained bands were less likely to provoke antagonisms because they were ‘of the community’, but this also made them less effective.\(^{62}\) As time progressed, more emphasis was put on professional soldiers and a standing army.

In 1745 when Charles Edward Stuart’s army threatened Edinburgh, the trained bands were no longer as prominent in terms of security, being merely a supplement to the professional soldiers of the now British army. About 400 students formed up in the College Yards one Sunday morning and marched to the Lawnmarket, where they cheered on some Dragoons. They served as a watch in areas where the town defences were weakest, at Leith Wynd.\(^{63}\) The town guard was increased by thirty more soldiers and in a range of high to melancholy spirits, the town prepared to resist the rebels.\(^{64}\) One of the student volunteers wrote down how another student in the ‘company’ compared the situation to ‘a passage in Livy when the Gens fagii march’d out of Rome to prevent the Gauls from entering the city and the whole matrons and virgins of Rome were wringing their hands and loudly lamenting the certain danger’. Another student

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\(^{61}\) Houston, R., Social Change, 1994, p. 306 – 10
\(^{62}\) Ibid., p. 310
\(^{63}\) Gibson, J. S., Edinburgh in the ’45, 1995, p. 13
\(^{64}\) Ibid., p. 4
pointed out to the first that the Roman militia was slain to a man, which brought laughter and possibly desertion.65

When the army decided to retreat to East Lothian for tactical purposes, the Lord Provost decided to surrender the burgh without a fight. The company of student volunteers surrendered their arms to the castle and went their separate ways to await the Jacobite army,66 which took the town by stealth, without resistance. Throughout the early modern period there was a trend towards professional, standing protection. The town turned away from armed burgesses towards the more organized trained bands, which in turn gave way to a standing army. They went from nightly burgess watches to a paid town guard. As government became more centralized, so did security.

**Defensive Structures**

Another civic duty of all burgesses was the building and upkeep of defensive structures. Smaller burghs, such as Inverkeithing and Haddington did not have such a grandiose fortification as a castle,67 but Edinburgh’s was its most prominent feature. The defensive location on which the castle sits is probably the reason the town was settled where it was. Evidence of fortified settlement on the Castle Rock goes back as far as the prehistoric.68 By the early modern period, there was an aging but strong stone castle.

The burgesses of Edinburgh were often called on to re-strengthen the fortifications of the castle. In 1650, after eleven years of war, the English army was approaching Edinburgh, with hopes of taking the castle. Work had been done on Edinburgh defences since the Bishops’ Wars, but with news of the English attack on Scotland, efforts were increased. In June and July the burgesses in the northwest quarter of Edinburgh were obliged to bring spades, mattocks, shovels and other such implements to Castle Hill to demolish the spur of the castle, which was a sixteenth-century Italian feature of the castle’s fortifications (see Figure 4.1 in the appendix).

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65 Gibson, *Edinburgh in the '45*, p. 14
66 Ibid., p. 15 - 6
67 Mair, *Market Cross*, p. 10
Each day a different quarter was to come and work on demolishing the fortifications so that more modern defences could be erected.  

The burgesses were also responsible for repairing the town wall. The burgh had been given permission in 1450 to fortify the town. The well known ‘Flodden Wall’ was an upgrade of the previous walls and was built by burgesses after the defeat of Flodden in 1513. It was possibly started around 17 March 1514, and was still being ‘bigged’ in 1560. By the 1640s, the wall was in disrepair and with the English army in Scotland, the burgesses set about trying to strengthen it. On 22 July 1650, timber was brought up from the lumberyards of Leith and Fisherrow for making scaffolding to reach the tops of the walls. George Wauchope, the treasurer of Heriot’s Hospital was ordained to ‘big up the back yet,’ of the town’s wall in Heriot’s yard. Houses that were inconveniently placed by the wall were taken down and their stones brought into the burgh for use in other places. John Mylne, the master mason, was in charge of the town defences. His apprentice was Robert Mylne, who in 1690 built Mylne’s Court in the Lawnmarket.

Aside from having the burgesses repair the town wall, Mylne was also busy preparing the defences for Leith. In 1649 the work had been going so slowly that the council had Mr. Patrick Henderson tell the ministers of the burgh to deplore the ‘neglect of the servants’ at working at Leith and the necessity of the fortifications to the parishioners. Working on the town’s defences took valuable time out of the workday. Soldiers were paid to work on the defences along with the burgesses. This effort, started around the Bishops’ Wars, would culminate in an unfinished line of defences running

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69 Edin. Recs., p. 241, 248  
70 Harris, S., Place Names, 2002, p. 254  
71 Edin. Recs., p. 146  
72 Ibid., p. 67  
73 Ibid., p. 249  
74 Ibid., p. 250  
75 Ibid., p. 250  
76 Edinburgh Burgesses, p. 375  
77 Edin. Recs., p. 204  
78 Ibid., p. 203  
79 Ibid., p. 260
from Holyrood to Leith that were formidable enough to keep Cromwell at bay.\textsuperscript{80} On 2 September 1650, the day before the defeat at the battle of Dunbar, the council decided that the whole town should be completely surrounded with modern defensive fortifications, as were London and Oxford ‘finding it most necessary for the good and safety of this town and all the neighbours and their whole goods and estates’.\textsuperscript{81} Unfortunately, it was too late for such grand measures. With the defeat of the Scottish army at Dunbar and the retreat of the remnants to Stirling, Edinburgh had no choice but to surrender to Cromwell. Maybe with fortifications as grandiose as London’s ‘lines of communication’ the capital of Scotland might have been able to hold out against a renewed English siege. The improvised trenches between Leith and Edinburgh were dug in well enough that they kept the English at bay before Dunbar, but with the destruction of the army the town did not have the manpower or morale to face a continued siege. According to the etiquette of the day, if a town resisted a siege, the attackers did not need to give quarter.\textsuperscript{82} Trade would have been disrupted even further and valuables plundered. Even if the burgesses had erected the more modern defences, they still might not have been able to resist after Dunbar.

**Technology – the Locksmith Craft’s Unique Contribution to Security**

The locksmith craft not only filled the requisite burgess duties for town security, but also made their own unique contributions in the way of providing technology. Crime has always existed, but the lock has not. It was an invention – an innovation in response to a societal problem. Using mechanical skills that many other hammermen did not have, they provided mechanisms which kept the homes of burgesses, as well as many municipal buildings and structures, secured against illegal or unwanted entry. It is not known when mechanical locks – i.e. a security device with moveable parts requiring a form of lever to operate it – were first used to secure belongings against thieves in Scotland, let alone Edinburgh. Edinburgh had the skilled craftsmen to provide lock

\textsuperscript{80} Grainger, J. D., *Cromwell Against the Scots*, 1997, p. 24, 26
\textsuperscript{81} *Edin. Recs.*, p. 260
\textsuperscript{82} Friedrichs, C. R., *EM City*, 2003, p. 294
technology by the early modern period, the products of which provided security not just on a local level, but for the nation’s capital.

In early modern Scotland the physical act of assaulting someone in their home was known as ‘hamesucken’.\(^{83}\) Prevention being the best deterrent, locks were the front line against hamesucken, or any illegal entry. Probably the best known example of home invasion in Scotland would be the exploits of Deacon William Brodie. Brodie, the sometime deacon of the wrights and masons, or Incorporation of Mary’s Chapel, was a cabinet maker by trade. He had first-hand knowledge of how early modern locks worked, as he had to fit them as part of his work. He therefore knew how to bypass them. From 1786 – 8, Brodie and his accomplices – notably one George Smith - broke into five well-to-do businesses, taking various items. The sixth burglary was the most daring, being on the General Excise Office for Scotland, at Chessel’s Court off the Canongate.\(^{84}\) Brodie, after an impressive escape to the continent, was eventually captured and brought to trial in Edinburgh. Part of the evidence used against him was a group of false keys, or lock picks. These picks are now in the collection of the National Museums of Scotland (see Figures 4.2, 4.3, 4.4 in the appendix). Deacon Brodie and these picks are excellent illustrations of both the necessity of the locksmith craft to security in early modern Edinburgh and the shortcomings of early modern lock technology.

Early Modern Lock Technology

The lock technology available in early modern Europe was basic and unchanged since the middle ages. The majority of the locks were based on the pivot key type, which meant that the key moved in a pivotal motion inside the lock, with the key bit orbiting the centre of the keyhole, as opposed to the sliding key type favoured by the Romans and Greeks around the time of Christ. The basic components of an early modern lock can be seen in the table below.

\(^{83}\) CSD, 1992, p. 264
\(^{84}\) Gibson, J. S., Deacon Brodie, 1993, p. 31 – 40
<table>
<thead>
<tr>
<th>Part</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key</td>
<td>Implement to exert leverage on bolt of lock so as to either push bolt between door and door jamb, or to remove bolt from jamb to allow door to move freely. Consists of four main parts: bow, bit, shank and stem.</td>
</tr>
<tr>
<td>Bolt</td>
<td>Bar which extends out of lock into door jamb to impede door from opening.</td>
</tr>
<tr>
<td>Key Hole</td>
<td>Entryway on lock which defines fulcrum of key's pivotal motion and limits key's bit to a specific orbit inside lock.</td>
</tr>
<tr>
<td>Warding</td>
<td>Pieces of metal inside lock designed to impede key from pivoting, unless corresponding ward clefts are cut into key allowing the true key to pass over and engage the bolt.</td>
</tr>
<tr>
<td>Tumbler</td>
<td>Part of lock designed to restrain bolt in either open or closed position. If key is not of adequate height, the tumbler will not be raised high enough to release the bolt. See Figures 4.5 and 4.7</td>
</tr>
<tr>
<td>Bolt Hole</td>
<td>Hole in door jamb that accepts bolt when door is locked.</td>
</tr>
<tr>
<td>Sprent Band</td>
<td>Alternative type of bolt hole, on trunks, chests and boss locks. A metal loop that being attached to a hinge, swings down into a slot on lock plate. The bolt engages the sprent and the lid or bar remain in locked position</td>
</tr>
</tbody>
</table>

Basic Lock Parts

Not all locks would have utilized all of these parts, as each one was hand made and therefore any number of variations could have been employed. Most locks consisted of a group of parts mounted to either an iron plate, or inside a wooden block (stock lock). The central feature of the lock would have been the bolt, which moved in and out of the lock to engage the staple, keeper, or bolt hole in the door jamb. When the bolt was extended outside of the lock, it made a wedge which would not allow the door to open. This was designed in relation to the key hole, which limited the movement of the key to a specific orbit so as to engage the bolt at two exact spots on the top hemisphere of that
orbit to the left and right of the key hole - one when the bolt was extended to the locked position and the other when the bolt was drawn in. The bolt could only travel left to right; the key swung around underneath the bolt to compel the bolt's travel while locking or unlocking the door.

If a lock had just the basic parts, the bolt and key hole (see Figure 4.6), any object could have been inserted into the mechanism and used to manipulate the bolt and unlock the door, which is the basic principle of 'picking' the lock. In an attempt to ensure that only the true key would unlock a specific mechanism, several features were added to locks over the centuries. The first was known as warding, which 'wards' off false keys. As can be seen in Figure 4.8, warding was a series of obstacles, resembling fencing, put in the orbital path of the key. When looking at an old key, such as those in Figure 4.12, there are clefts visible on the bit, which is the rectangular piece extending non-symmetrically from the shank, which is the section of the key stem which enters the lock. These clefts are cut out of the key to allow it to glide around the warding. The more complex the warding, the harder it was to get picks through the key hole to the bolt. As can be seen in Figure 4.13, the more warding there was, the thinner and weaker the pick would be, making for a difficult picking job.

The second mechanism feature was known as the post, which was a cylindrical piece of metal set inside the key hole. When posts were used, the keys had to be hollow pipe keys to pass over the post into the mechanism. If the inner diameter of the pipe key was not the correct width, or if the pipe of the key were not deep enough, the post would stop the key from entering the lock. With the post in the centre of the key hole, there was less space for the person to insert picks and manipulate the bolt inside. The key hole was usually the only access to the bolt and a post offered one more obstacle for would be thieves.

The third feature and arguably one of the best inventions of the last two millennia, is the tumbler; its basic principle is still in use in levers for modern day mortice locks. As can be seen in Figures 4.5 and 4.7, the tumbler is a near triangular piece of metal that sits directly above the bolt. A spring presses down on the tumbler, forcing it to engage the top of the bolt, which restricts its movement. With the invention
of the tumbler, possibly in the early middle ages, the bolt could be fastened in either the locked or the unlocked position. If the bolt were to be caught in the middle, or half-locked, the key would get bound up and be unable to unlock the mechanism, resulting in a permanently locked door. The tumbler not only regulated the placement of the bolt, but it also provided extra security. On top of the bolt were at least two grooves (see Figure 4.7). A spring put pressure on the top of the tumbler, forcing it into one of the grooves. Once the key pushed the tumbler up and engaged the bolt, it could then move the bolt over, while at the same time lowering the tumbler into the second groove on top of the bolt. If the key’s bit did not raise the tumbler high enough off of the bolt, then the tumbler would remain engaged with one of the grooves and the key would not be able to push the bolt open or closed.

With a little knowledge of how an early modern lock worked, they were usually easy to pick through one of the two main methods. The first involved manipulation of the bolt. This could have been achieved with two instruments that were fashioned from any long, thin and strong material. The first step was to bend the instruments so that they circumvented the wards once inside. After inserting them through the key hole, the tumbler would have been lifted with one, while the bolt was simultaneously engaged and pushed to the open position with the other. All work had to be done through the key hole, as it was the only window to the bolt. If a post was in the key hole, this could complicate the process. With simpler locks, it was an easy operation. On 19 August 1699, an entry was put into the Aberdeen Incorporation of Hammermen’s minute books stating that:

taking into consideration the damage and prejudice that both the said trade, and also the inhabitants, sustain by opening of locks with crooked irons, and the mala famas and bad reports raised upon the blacksmiths thereanent, have unanimously strictly statute and ordained, that no person or persons presume, nor take upon hand, to directly or indirectly, of the said trade at any time hereafter to open any locks whatsomever with crooked irons or any of the like instruments (except with the keys of the said locks).85

85 Bain, E., Merchant and Craft Guilds A History of the Aberdeen Incorporated Trades, 1887, p. 205
Even the Aberdeen smiths that made the locks were forbidden from using the first type of lock pick, though there was a second type.

The other method of picking a lock involved making a key blank, or a key without any ward clefts cut out. Keys are three dimensional objects and each dimension is important. If it is too short or too long the key would either bind or not throw the bolt far enough over to allow the door to open. Once a key blank was filed down to the right dimensions to go inside the key hole, its bit was covered with wax or soot and inserted. With a turn of the bow, the bit was pressed up against the inner warding, leaving an imprint in the wax or soot of the obstacles inside the lock. The areas where the wards touched were then removed, leaving the key to swivel freely around the wards. The height of the bit was then adjusted until the new key opened the lock. This type of key is known as a ‘skeleton key’ in modern parlance. As can be seen by Brodie’s keys in Figure 4.2, 4.3 and 4.4, this was the method that Brodie and his accomplices used.

Deacon Brodie’s Lock Picks

The Brodie keys, which are now in the care of the National Museums of Scotland, consist of twenty-five keys in total, which were given in to the museum in 1841 by the Clerks of the Justiciary Court. Of these twenty-five keys, two are pipe keys for doors, cabinets, or padlocks, four are stock lock keys for doors, thirteen are rim-lock keys for doors and six are double bitted keys for doors or cabinets, providing thirty-one pick options for the Deacon’s misadventures.

In Figure 4.2, the first two keys from the left are the two pipe keys, which are of similar size to rim-lock keys, indicating they were intended to pick medium to large locks. Note the spindly, single-bit extensions, one ‘?’-shaped and the other straight. Padlocks of Brodie’s time period, 1741 – 88, were of heavy construction, so these picks are not too large to have been padlock picks. The second pipe key from the left, has its bit angled upward. This might have been intended to open a press lock, which

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86 NMS, MJ 98.1 - .18, MJ 99.1 - .6, K2002.328
87 NMAS, 1892 Catalogue, MJ 99 - 100
88 Gibson, Deacon Brodie, p. 21
was a common type of cabinet lock with a back-spring bolt similar to Figure 4.9. This type of bolt does not require a tumbler, as the spring is part of the bolt and therefore tension holds the bolt in either locked or unlocked position. On standard keys with the two symmetrical bit-halves (as in Figure 4.13), one side of the bit lifts the tumbler, while the other side of the bit engages the bolt. Brodie’s second pipe key, with its upward angled bit, would have been perfect for picking a simple press lock with a back-spring bolt. This did not require the second half of the bit, as there was no tumbler to lift.

In Figure 4.2, the last four keys from the left are the stock lock keys. These were intended to pick a type of door lock known as a ‘stock lock’. A stock lock was a cheap form of lock where the basic metal parts were mounted in a wooden case. I. N. Hume, in his description of stock locks in, *A Guide to Artifacts of Colonial America*, states that the ‘parts were individually mounted in a wooden block and sealed with two strips or plates of sheet iron, one covering the wards and the other the head of the bolt’. In Figure 4.11 shows the back of such a stock lock. In London in 1726, an Englishman named Richard Neve published a guide for building techniques and materials entitled, *The City and Country Purchaser and Builder’s Dictionary: or the Complete Builders Guide* (sic). In it Neve describes the chief varieties of London’s locks. The cheapest is the stock lock at ten pence, but the same type ranges up to seven shillings. Other types of locks range up to ten shillings. Stock locks used less metal and were therefore cheaper to produce. They were the common man’s lock.

Brodie was in possession of four picks for stock locks. These four picks are identified as stock lock keys due to the positioning of the shoulder, which is the enlarged section between the stem and shank of a key that acts as a stopper to keep the key from going to far into a lock. In Figure 4.12 there is a comparison of the positions of the shoulders, marked by the black arrows. Keys have to be perfectly positioned in order to operate a lock mechanism. On a regular rim-lock key, the shoulder was behind the bit, indicating that the key hole was just big enough to accept the diameter of the shank.

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89 Hume, I. N., *Artifacts*, 1969, p. 244
90 Neve, R., *Purchaser*, 1969, p. 194
While the shank entered the lock, the shoulder was stopped by the lock case and the key was in position to glide freely around the wards so that the bit could engage the bolt. Without a shoulder, the key could be inserted to far into the lock, which would cause the bit to catch on the warding and stop it from turning. For a stock lock key, the shoulder was in line with the main ward cleft, which allowed the key to pivot without being caught up on the main ward plate inside the lock. The lock case was wooden to reduce cost and therefore the keyhole was larger to allow the shoulder to pass through into the lock and instead make contact with an inner iron plate that made up the centre or main ward. This ward plate stopped the key's shoulder so that it lined up perfectly to pass over the warding when turned. In this manner, the lock did not need a metal case, which saved the locksmith iron and money. The stock lock would seem to have been frequently used in early modern Scotland, as 16 per cent of Brodie's keys were for stock locks.  

91 In Figure 4.3 are Brodie's thirteen rim-lock keys, of the standard rim-lock type for the late eighteenth century. Note how there is no shoulder on any of them. This way the keys could be inserted into a lock to any required depth, without being hindered by the lock case. The overly thin bits are due to extra stock being removed to ensure passage over and around the warding inside the locks. In Figure 4.13 there is a detail of two of Brodie's rim-lock keys that have thread wrapped around the top of the bits. This might have been a temporary solution to the bit being too short to throw a bolt all the way open. If the height of the bit, which is the distance from the stem to the edge of the key's orbit, is a fraction of a millimetre too short, then the key will not be able to push the bolt all of the way to the unlocked position. The string wound around the top of the bit might have given the key the needed reach. 

92 The last group of Brodie's picks is illustrated in Figure 4.4 - the six double bitted keys. Double bitted keys were able to open two different locks, while only having to carry one key. Brodie had three large, one medium and two small double bitted keys, one with shoulders and the others without. The two largest of these are interesting in

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91 NMS, MJ 98.1 - .18, MJ 99.1 - .6, K2002.328
92 Thanks to Mr. Douglas Macgregor of Edina Lock and Key in Edinburgh for this insight.
that they only have the basic main ward and collar ward clefts cut out from the bits. This might indicate that the Brodie gang encountered several large locks that were lacking their warding, a common but immoral practice of many smiths of the day. It might indicate that these keys had not yet been cut and were being held in reserve for future jobs, with only the basic pattern of ward clefts removed to save time. They might represent three houses or shops that were spared when Brodie fled to Holland and was captured.

Brodie's keys are all rough and unfinished. They were not meant to be decorative; they were simple tools meant to manipulate locks open. Most of the bits are thin and spindly, a defining feature of skeleton keys. Some of the bits have broken and one can imagine Brodie swearing under his breath as the false key broke off in the lock he was trying so hard to open with stealth. The fact that the picks were made by a wright, Brodie and a grocer, Smith,93 illustrates the fact that the locks provided by the Edinburgh locksmiths were better than nothing, but not completely secure.

**Improvements On Lock Technology**

The 'pernicious and wicked custom' of lock picking provided impetus for the locksmith craft to find new ways to increase the security of their products. While early modern locks may not have been as secure as modern mortice locks, is not to say that all of them could easily be picked. Some had more intricate warding than others. Some made use of tricks or traps. False key holes were common, as were hidden key holes. The National Museums of Scotland has a kist lock from c.1627 with two hidden levers on the face plate (see Figure 4.10). First one was thrown, exposing the key hole. If this could be found the thief would then pick the lock. To the thief's chagrin the sprent band, which is now missing, would not come away from the lock until the second hidden lever was found on the left hand side of the lock face.94 There was also the idea of safety in

93 Gibson, Deacon Brodie, p. 47
94 NMS, MJ 9
numbers – many locks to pick meant more time for someone to catch the thief in the act. Of course there was punishment too: Brodie and Smith were hung.

While the basic mechanical principles of the early modern lock were identical to the medieval lock, there is evidence that the craft realized the deficiencies in security of their products. One response to this was a pessimistic reduction in the warding inside the mechanism, as it was only a deterrent and not a fool-proof defence. If it could be defeated, why waste the valuable iron? The customer would not know. On 3 May 1740 this practice had become so blatant that a complaint was lodged with the Incorporation of Hammermen by a locksmith named Thomas Richard:

Anent the complaint made by Thomas Richard for ane of the masters of the locksmith’s art against some of his brethren for exposing to sales in the market, locks that were not sufficient and made in a proper way for security against picking and otherways and the same being considered by the house, they ordain the work seized upon that account to be returned to the proprietors and the subject matter complained upon to be remitted to the locksmith art to endeavour upon some rules for preventing the occasion of the faults complained upon in time coming.95

Richard, a locksmith with a conscience apparently, knew of the immoral practice of not including wards to fend off picks. He took pride in his work and tried to improve the standards of those of his colleagues that were not as conscientious.

On 14 May, after the locksmiths had had time to consider what rules they wanted in place to maintain the integrity of their brethren, they met with the blacksmiths at the Magdalene Chapel:

The which day at a meeting of the blacksmith and locksmith arts of the Incorporation of Hammermen of Edinburgh to make to take under consideration some more proper method of making locks than what hiterto is in practice to prevent the pernicious and wicked custom now in use of picking locks and in order to obviate some doubts that has lately arisen anent seizing some locks made in the ordinary way and sold in the market which had been remitted to the said arts by the said incorporation and they having maturely weighed and considered the foresaid affair, they do hereby agree among themselves that in time coming they shall make no door locks directly or indirectly, by themselves or [other], but such locks that are wholly filled in the work according as the key shall be cut and that under confiscation of these locks to the use of the poor of

95 EHMB, ED008/1/7, p. 34
the said incorporation and that for hereafter all such locks to be made by them shall have the initial letters of their names affixed upon them in some convenient place, under the like penalty and that this resolution be reported to the house by the masters of the arts.\footnote{IHMB, ED008/1/7, p. 37 - 8}

The problem had in the interim been addressed to the blacksmiths also, as they were at this stage allowed to do locksmith work. The problem of lock picking was set out as stemming from door locks not being 'wholly filled in the work according as the key shall be cut', meaning that the wards were missing, but the keys had been cut to look as if there was a complex defence inside the mechanism. From 1740 on, locks had to have complete warding inside, with the maker's mark stamped somewhere on the mechanism.

Upon hearing of which report of the blacksmith and locksmith arts, the house upon reasoning [thereon], approve and agree thereto on the whole heads [thereof] and have interposed and hereby interpose their concurrence and authority thereto and ordain the same to be kept in due observance under the penalties mentioned in the said resolution and that the same shall be recorded among the [other] acts and ordinances of the house.

Thomas Richard for moved that such locks belonged to his brethren that were upon hand should be altered and mended in the manner proposed by the above resolution before they should be exposed to sale, because it appeared to him that under colour of stock in hand locks at present still remaining unsold some persons would entirely evade the intention of this present act so much for the honour and interest of the country.\footnote{Ibid., ED008/1/7, p. 37 - 8}

Richard voiced his concern that the smiths at fault might try to sneak those locks already made without warding into the market despite the new rules. His concern was not only for the honour and interests his craft, but for the country. They had to provide security for home, burgh and nation.

Some of the locksmiths and blacksmiths did not like the idea of having the already 'completed' locks inspected before going to market:

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a debate ensuing [thereupon the said Thomas Richard...protested for a vote of the house whither the locks upon hand should be mended within a determined space in manner proposed before exposing to sale or not and a motion being accordingly made, the members of the house agreed that the locks in hand should not be altered. Whereupon and against which resolution, the said Thomas Richard for protested and took instruments and alleged that by being over ruled
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\end{quote}
by the above resolution, he well foresees that the said scheme will be entirely frustrated and never thoroughly put in execution and that it must undoubtedly be the views of many to disappoint the foresaid act and resolution.\footnote{EHMB, ED008/1/7, p. 37 – 8}

The future locks were to be improved, but the ones already made, which were not produced overnight, were allowed to go up for sale to the public. Politics required compromise.

On 9 August 1740, one of the ‘alleged’ offenders had the audacity to ask for his locks back:

The petition of Alexander Gray, locksmith in Caltoun, craving some work to be returned back again to him that had been seized upon alleged insufficiency was delayed till further consideration was taken of the reasons set forth in his petition.\footnote{Ibid., ED008/1/7, p. 42}

It is not mentioned whether he got them back or if they were sold to help the poor of the hammermen.

While Chubb’s 5 lever mechanism and other non-warded types of locks were far in the future, the incorporation’s decision to stop the practice of shortcuts and require the maker’s mark, were important improvements to security. Society was about to experience the Industrial Revolution and it was recognized that the standards of the day for security devices were inadequate. Shortly after 1750, there were innovations which brought lock technology out of the warded age.

**Municipal Security**

The locksmith craft helped provide security for municipal buildings as well as domestic ones. The *Accounts of the Lord High Treasurer of Scotland* give innumerable instances of locks being fitted, repaired and having extra keys cut. Edinburgh Castle, Stirling Castle, Arbroath Abbey, Holyrood Abbey and Palace, Linlithgow Palace and other places of such importance got new doors, which meant new locks, or new crooks and bands, or just new keys. There was a reference in 1488 to a smith picking a lock open.
This probably included a new key for it also. Other municipal buildings and structures would also have required locks. The tolbooth served as a jail and therefore required some form of lock mechanism. The ports were locked at night, so they too must have been tended to at some point by Edinburgh locksmiths, again illustrating their contribution to security. All municipal structures required security in order to provide security.

**Gunsmiths**

Another type of lock that provided security for the burgh was the gun lock. Guns were made in Edinburgh since the fifteenth century. As technology progressed in Europe, ignition mechanisms, or ‘locks’ were applied to firearms to make them easier to handle. Gun locks had to have moving, mechanical parts. Henceforth they needed steel for springs and batteries. The springs provided the tension and potential energy to move the flint across the hardened steel battery. This created sparks which ignited the powder. If the springs were not of correctly tempered steel, they would wear out and not function properly. If the battery were not of correctly tempered steel, the flint would not make sparks, due to the laws of physics. One of the skills of a locksmith was correctly tempering springs.

In 1570 David Cass was listed as a burgess locksmith. In 1579 he was listed as a dagmaker, in reference to one of his apprentices, Gilbert Cass. In 1594 another of David Cass’s apprentices, Gawine Furde, had to give as his essay ‘ane hagbut, ane dag and ane snap to be all perfectly outred’. A ‘snap’ is a snaphaunce lock for ignition of the powder in the firearm. It had moving parts of a mechanical nature, very similar to a locksmith’s type of lock. The greater locksmith craft produced another type of lock that aided in making Edinburgh theoretically more secure – gun locks.

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100 TA, 1877, p. 83
101 Edin. Recs., p. 131-2
103 Edinburgh Burgess, p. 100
104 Whitelaw, C. E., Scottish Arms, 1977, p. 142
Aside from their shared burgess responsibilities for burgh defence, the locksmith craft also used their unique skills and the technology available to provide better weapons for burgh defence and security for homes, booths, warehouses, municipal structures and government buildings in Scotland’s capital burgh.
Chapter 5

The Locksmiths' Workplace

The activities of a locksmith, as with any occupation, had specific types of space in which they were enacted. In an urban environment, space was limited. On top of this, certain occupations were not welcome in certain areas of towns. Factors such as smell and levels of fire hazard were taken into consideration. Unfortunately, there are no directories showing locations of occupations in early modern Edinburgh. It is a difficult and laborious task to isolate locations, involving blind searches through random sasines, minute books and burgess entries; a job far beyond the scope of this project. Could the locksmith art be practised anywhere in Edinburgh, or were there specific areas where their booths were clustered? Not all activity of the locksmith craft involved production, though. There was also the retail side of the trade. This happened in either the booth or the weekly market. These two main areas of economic activity, markets and booths, were not well documented in terms of location. The various acts of the parliament, privy council or town council rarely go into such detail for any occupation. By looking at the practical requirements for the locksmith trade, it might be possible to make an educated
guess at where the locksmith occupation could have been practised in the burgh. While this will be hypothetical until further research is done into the occupational structure of early modern Edinburgh, it will at least give a more detailed view of a particular craft from pre-industrial Scotland.

**Markets**

Markets, or mercats, as they were called in Scots, were the main retail outlet for craftsmen. On 3 October 1477, King James III (1460 – 1488) gave permission in a letter for Edinburgh to hold separate markets for animal feed, fish, salt, chapmen, along with hatmakers and skinners, wood and timber, shoes and leather, carcases and mutton, fowls, livestock, meal, cloth, dairy products and used goods. Most pertinent to this study, was the market for iron work ‘belonging [to] cutlers, smiths, lorimers, lockmakers and all such workmen, to be used beneath the Netherbow, before and about Saint Mary Wynd’. This is rather intriguing, as the physical market for Edinburgh metalwares was outside of the area that would be encased by the burgh walls a century later. The town wall, or Flodden Wall, was built on the east side of St. Mary’s Wynd, leaving the metalwares market outside. The wall did not delineate exactly the burgh boundaries, however. In 1813 a map of Canongate was made by William Bell. In Figure 5.1 can be seen a detail of this map, showing the area ‘beneath the Netherbow, before and about’ St. Mary’s Wynd, where the hammermen’s market had been in 1477. As can be seen, the market was outside of the line that would become the town wall, but inside of the south-east quarter of the burgh. The sixteenth-century town wall did not represent exactly the full extent of Edinburgh.

By 1742, the Canongate’s fleshmarket had moved from the head of the Canongate to an open square immediately to the north. Edinburgh’s markets were also moved occasionally. In 1477 the market for skins was on the south side of the High

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1 Edin. Recs., p. 34 - 5  
2 Lynch, M., Edin. & Ref, 1981, p. 27  
3 Bell, W., Plan of Regality of Canongate, 1813, www.nls.uk/maps  
Street, from the Bellhouse down to the Tron. On 11 February 1558 it was decided to shift the market to ‘beneath the Salt Tron, betwixt Walter Scott’s Close and Nidrie’s Wynd on both sides’. In 1559 there was further legislation by the bailies and council ‘for down taking of the skin market from the place where the same was used to be had to the Freir Wynd head and from their further to the Nether Bow...’ In 1477 the fish market was on the High Street, from Frere Wynd to the Netherbow, but in Rothemay’s 1647 map it was down Fish Market Wynd, between the High Street and the Cowgate. In 1477, there were at least seven markets in the Edinburgh High Street. In the 1647 and 1742 maps, it is evident that at least three of these markets had been cleared from the High Street: poultry, fish and mele markets. Metalwares were not as messy, nor as odorous, as chicken and herring, so perhaps the market that the locksmiths attended was left where it had been in 1477.

Markets were highly regulated. In the Hammermen’s 1483 seal of cause it was stated that,

there shall [be] no open market used of any of the said crafts, or work pertaining to them of their craft, upon the high street, nor in crames upon boards, nor bachlit nor shown in hands, for to sell in no part fore nor backside with in this burgh, but alanerly on the market day.

In the 1496 reaffirmation, it was again stated:

...no open market made nor used by whatsomever persons of any work pertaining to the said Hammermen of their craft in showing thereof in hands upon the High Street nor in crames nor on boards nor other ways within the said burgh nor in their booths except alanerly the market day.

It was a matter of privilege to be able to produce and sell a certain type of product and incorporation was meant to protect the Hammermen’s right to certain wares. By

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5 Edin. Recs., p. 35
6 Colston, J., Inc. Trades, 1891, p. 89
7 Edin. Recs., p. 34
8 Today, this is called Fish Market Close. Gordon of Rothemay, J., Edinodunensis Tabulam, Map of Edinburgh, c.1647, www.nls.uk/maps
9 There were fourteen markets in total in 1477; seven of them were located on the High Street. Edin. Recs., p. 34 – 5
10 ‘Resold’? CSD, 1992, p. 32
11 Smith, Hammermen, p. 182
12 Ibid., p. 182
limiting the selling of those wares to a specific market day, it was easier to ensure that unfreemen would pay stallenger’s fees for the right to sell Hammermen’s work. This levy made it more difficult to usurp their privilege.

On the market day applicable to a specific craft, the craftsmen would bring their wares from their booths to the designated market place. Goods were allowed to be sold only from the individual’s specific stand in the market, though it was a common complaint that hucksters walked up and down the town plying their wares. There were exceptions to this rule; stallengers who sold woven goods were allowed to sell from only their market stall, whereas the makers of the wool were allowed to walk up and down the market selling their goods. Freemen burgesses were allowed to buy whole webs of cloth on any day of the week and unfreemen were allowed to sell whole webs to free burgesses. These inconsistencies in the burgh’s market policies illustrate the importance of cloth to Edinburgh’s economy. The market would open at nine in the morning and go until one in the afternoon. In 1740, it appears that the market for metalwork lasted until two. The market time was an important part of burgh privilege and measures were taken to ensure that the selling of goods happened only in the market place at the market time. There were fines for leaving goods on display past the close of the market. In 1740 work was seized from a stallenger named Chalmers in Potterrow ‘for not razing his stall in the Market when two of the Clock in the afternoon struck.’ In order to prove that one was a freeman of the burgh, it was required in 1664 that burgesses brought along their burgess tickets to the market.

Another place where craftsmen could sell their wares was the burgh fairs. Fairs were like markets, only far less frequent. Whereas the markets were weekly, the fairs happened only once or twice a year. During fairs, freedom seems to have been open to all. Unless someone was an outlaw ‘beyond sanctuary,’ the burgh’s freedom was suspended and all had licence. These fairs would have been golden opportunities for

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13 Marwick, J. D., Guilds and Crafts, 1909, p. 194
14 Ibid., p. 190
15 Edin. Recs., p. 35, and Marwick, Guilds and Crafts, p. 189 and 193 – 4
16 EHMB, ED008/1/7, p. 43
17 Ibid., ED008/1/7, p. 43
18 Marwick, Guilds and Crafts, p. 182
unfreemen, as they would have been able to sell their wares in Edinburgh, though the freemen of the burgh had first pick of selling space.\textsuperscript{19} While limited in time, fairs were still usurpations of much guarded burgh freedoms.

The market was a very important institution in early modern Edinburgh. Markets required open space, such as the High Street, or the Fishmarket Close. Some would have needed a ready source of water. In a wet climate, the Hammermen probably would have needed covered stalls. While the burgh did relocate the less desirable markets which involved strong odours or mess away from the High Street, the un-offensive markets remained where they had been in 1477.\textsuperscript{20} Perhaps the Hammermen’s market for finished metalwares remained by St. Mary’s Wynd.

**Booth**

The markets and fairs were common areas, open to all freemen and those unfreemen who paid stallenger’s fees. The market areas were purely for retail. Booths were the other main economic areas in the early modern burghs and were owned by both merchants and craftsmen. They had several functions, but the main activity which happened in a craftsman’s booth was production. Craftsmen worked from five in the morning until eight o’clock at night on weekdays,\textsuperscript{21} and till four o’clock on Saturdays.\textsuperscript{22} All the raw materials and tools, or ‘worklumes’ as they were known,\textsuperscript{23} would have been kept in the booth. When locksmiths did outside jobs, such as picking open locks, the booth was a base of sorts from which the job could be solicited. At night, the booth could be locked up in an effort to prevent work or tools being stolen, though this undoubtedly did happen from time to time.

\textsuperscript{19} Marwick, *Guilds and Crafts*, p. 8
\textsuperscript{20} Such was the case with the lawmmarket, or land-market; land referring to ‘country’. *Edin. Recs.*, p. 35, and Marwick, *Guilds and Crafts*, p. 193. This particular continuity might also reflect the importance of cloth to Edinburgh’s economy.
\textsuperscript{21} This was in summer; it is not mentioned if the hours were the same in winter. EHMB, ED008/1/8, 1 August 1750
\textsuperscript{22} *APS, General Index*, 1875, p. 382
\textsuperscript{23} As in the 1645 testament of David Clark, dagmaker, reprinted in Whitelaw, C. E., *Scottish Arms*, 1977, p. 300
Another role of the craftsman’s booth was the education of apprentices. The anvil was commonly called the ‘study’. The anvil and the bench in their master’s booth were where apprentice locksmiths learned their trade. Booth space also might have doubled as sleeping space for apprentices, servants, or even the family members of masters, especially when the craftsman’s booth was close to his house. Beds and chambers were expensive.

Booths were also showrooms for the craftsman’s wares. While there is no direct evidence from Edinburgh stating that hammermen could sell directly from their booths, there is evidence from other towns in Europe. Nehemia Wallington, a London turner in the mid-seventeenth century, kept a journal in which he thanked God for customers coming to his shop and making forty shillings worth of purchases on a day when other shopkeepers had shut their doors and windows for fear of fighting in the streets.

In Glasgow the hammermen could sell from either their booths, the market or even vend their work on the High Street. Closer yet, in the Canongate in 1614, ‘Walter Smyth, servant to James Nasmyth, dagmaker, [was] charged with coming to Thomas Glen, dagmaker, his booth, with a pistole in his lap and took ane gentleman away which was standing therein, which was proven by the brother of the said Walter.’ Not only could customers buy directly from booths, but their custom was protected from rivals enticing them away. Smyth was fined twenty shillings. Customers were nearly sacrosanct.

In France, it was noted that merchants who worked from warehouses did not ‘have open shops or any display counter and sign at their doors and houses’. Warehouses could indicate an overseas trader, or a local ‘merchant’ who sold goods

24 Whitelaw, Scottish Arms, p. 300, and ‘Rates of Customs’, 1867, p. 329 and 359
25 There is a reference in the Incorporation of Goldsmith’s seal of cause stating that they could sell from either booth or market, and they were originally part of the hammermen. Colston, Inc. Trades, p. 30
27 Lumsden, H. and Aitken, Rev. P. H., History of the Hammermen of Glasgow, 1912, p. 74
28 From Canongate Hammermen Records, as transcribed in Whitelaw, Scottish Arms, p. 207, and accidentally described as coming from the Incorporation of Hammermen of Edinburgh in Kelvin, M., Scottish Pistol, 1996, p. 177
brought in from the surrounding countryside. Merchants with a shop would have relied on the counter and sign to advertise their wares, as would have craftsmen. The ultimate goal of producing wares was to sell them and the display aspect of booths, as opposed to the storage aspect of warehouses, was therefore very important. A craftsman who had his booth on the High Street had a definite advantage to one who had his booth tucked away down a side close.

Unfortunately, there are no surviving prints, engravings, or representations of an Edinburgh locksmith’s booth. There is one representation of an Edinburgh Goldsmith’s booth engraved in the stone above the North entrance to George Heriot’s School (see Figure 5.3). The c.1630 representation shows the goldsmith blowing the fire with a pair of hand-held bellows. Behind him is his anvil and to the right of the hearth is his bench. The bench is typical, with bags for catching the filings from the precious metal. Bench tools line the wall and cover the bench, while tools for working with heated metal lie beside the hearth. The anvil, hearth and bench are all in close proximity, to avoid losing heat while transporting work from one to the other.

A floor plan from Mossman’s Land (today known as the John Knox House) shows the booths of a small, uneven sample of Edinburgh burgesses (see Figure 5.2). Mossman’s land had workspaces for a merchant, a spurrier, a bonnetmaker and a tailor. Their shops make an interesting study of booths, as these four trades can be ranked according to theoretical wealth and standing of their respective occupations. James Maistertoun, the merchant, should have been the most wealthy of the four; followed by John Baxter, the tailor, Andrew Smyth, the spurrier and then Murdoch Brown, the bonnetmaker. The merchants were a very diverse group, though and the merchant’s ‘stone shop’ on the west side of Mossman’s Land is only a third of the size of the tailor’s shop. Baxter’s booth was listed as the ‘main shop or merchant’s booth’, yet it was occupied by a tailor. Tailors were usually part of the craft aristocracy and it is no fluke that a tailor would occupy the most spacious booth in the building. It also tells something of the prestige of Edinburgh merchants that the best booth in the building was

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30 Dr. Smith was kind enough to allow me to use his research from his book: Smith, D., John Knox House, 1996, p. 35 and 57
described as a ‘merchant’s booth’, regardless of the occupant. It was taken for granted that merchants commanded more prestige than the humbler crafts, but in this case, a member of the craft aristocracy was usurping their standing.31

Judging by the small size of Maistertoun’s booth, it is possible that he was a wholesaler, with his goods kept in a warehouse in Leith. Perhaps he was a more humble merchant, selling small wares. His stone shop was the only space in Mossman’s Land that he owned, which probably indicates that he resided elsewhere; his dealings with the building were purely business. Smyth, the spurrier, might have been the opposite. He owned three ‘laigh cellars’. His work space was underground, accessible from a stair leading into Murdoch Brown’s house. There was a domestic hearth in the southern most cellar, indicating a possible residence of the Smyth family. It would seem that work and home were in the same three cellars.32

Murdoch Brown and John Baxter were different, in that they had their booths on the ground floor and lived on the ground and first floors, respectively.33 It is interesting that a bonnetmaker would have owned such a house while a spurrier, which was one of the minor trades in the Incorporation of Hammermen, was living in the cellar. This might be because the spurrier needed the space for his trade, while the bonnetmaker needed only the two small booths on the southern face of Mossman’s Land. On the other hand, Brown might have been wealthier than Smyth. Perhaps even a humble incorporation like the bonnetmakers34 had its own aristocracy. The fact that the tailor, Baxter, lived above the others, yet not on the top floor, fits the usual pattern of wealth being concentrated in the middle floors of Edinburgh tenements.35 The general trends of booths and chambers fit into a wider pattern of wealth and standing in the urban environment. Where a locksmith’s booth would have fitted into Mossman’s Land, is more difficult to say.

31 Smith, John Knox House, p. 35 and 57
32 Ibid., p. 35–7, 57, and 60
33 Ibid., p. 57
35 Pinkerton, R. M., and Windram, W. J., Mylne’s Court Three Hundred Years of Lawnmarket Heritage, 1983, p. 29
It seems that booths in general were not large spaces. As it was, with the population increase of the sixteenth century, space within the city walls was precious. If the space was not needed, then it was not taken. To get a feel for the size of a booth from early modern Edinburgh, one needs only to enter one of the many shops on the High Street. They are often small; typically long and narrow, with a shop front consisting of one or two small windows and the door. This type of frontage can be seen in a c.1790 painting of the goldsmith’s and jeweller’s booths by St. Giles, in Parliament Square (see Figure 5.4).

Examples of surviving booths can also be seen underneath Mylne’s Court, in the Lawnmarket. When built in 1690, the ground floor section of the building was a line of shops.36 One shop, a jewellery store today, was in 1883 a Baker’s shop.37 The inner walls were not easily changed, as that would involve changing the entire building, so like water, businesses filled the existing container. Edinburgh’s booths can still be examined today.

Archaeological excavations in Exeter have shown the size of a brass foundry. Thomas Pennington started the foundry in Paul Street c.1625, with production happening until c.1720. The foundry produced domestic wares and bells. The space taken up by the foundry was about nine metres by twenty-three metres.38 While this is not a small area, a foundry was a larger-scale occupation than a locksmith’s shop. Still, one would expect a vast complex for as technical a process as happened in that nine by twenty-three metre space. It would make an interesting study to look at floor plans of surviving buildings and compare them with tax rolls to figure out what space was used for what occupation. Perhaps there is a correlation between booth size and trade. Perhaps space was parcelled out randomly, depending on the space available in the property up for sale. Most likely, there was a degree of both statements involved in the upset of a booth.

While there are no surviving engravings or prints of an Edinburgh locksmith’s booth and it is unknown which surviving shops were at one stage a locksmith’s booth, it

36 Pinkerton and Windram, Mylne’s Court Three Hundred Years of Lawnmarket Heritage, p. 26
37 Ibid., p. 36, ‘Fig. 3’
38 Crossley, D., Post-Medieval Archaeology in Britain, 1990, p. 20
is possible to look at the general structure of a locksmith’s booth by turning to Europe. As with Edinburgh, small booth size was not uncommon in Europe, though there was no standard space requirement for a shop in any early modern city. In Nürnberg, there are many shop frontages still visible with the single window and door façade which also survived in Edinburgh. It is thought that in Nürnberg, this was due to high ground taxes.\(^{39}\) Luckily, there are three surviving images of Nürnberg locksmith’s shops (see \textbf{Figure 5.5} from 1528, \textbf{Figure 5.6} from 1568 and \textbf{Figure 5.7} from 1698).\(^{40}\) All three were done as a part of a series of images of Nürnberg trades. There are certain key elements of a locksmith’s booth which are either figured or can be deciphered from the three shops. The main components of a booth are not present in all three shops; all picture a bench with at least one vice and sundry tools. The 1698 shop does not show a forge, though with the anvil and hammers, it is to be assumed as elsewhere in the shop, out of view. The 1528 and 1568 shops both show the forge area behind the locksmiths. In the 1528 shop, there in no anvil pictured, though with the forge present, it can again be assumed as there. Whether shown or not, the prints all show that the main components of a locksmith’s booth are the forge, an anvil and a bench.

The seven locksmiths illustrated in the three shops also show several concurrences, as well as some differences. Judging from them, the most common activity in a locksmith’s booth was filing at the vice. All three pictures show at least one locksmith at work at the bench, demonstrating the importance of bench-work to the trade. It is interesting that all show them as being seated while working at the vice; a practice which would be scorned by a modern-day Edinburgh locksmith. Did Edinburgh locksmiths in the early modern period sit while working at the vice? Considering the hours worked, maybe it should be expected that they sat when at the workbench. Of the seven locksmiths illustrated in the three pictures, five are shown filing at a vice.

All three of the pictures show similarities in the dress of the locksmiths. Of the seven, all are wearing aprons to protect their clothes. Clothing was expensive and it would be interesting to know whether a locksmith owned a set of clothing just for the

\(^{39}\) Strauss, G., \textit{Nuremberg in the 16\textsuperscript{th} Century}, 1966, p. 21
\(^{40}\) See figures for bibliographical notes.
workshop, or whether they had to wear the same outfit for work and for everyday life. Five of the seven wear hats while working. The outfits of all indicate that locksmiths wore normal clothes, as opposed to work attire.

The seven locksmiths also highlight some variations in the three shops. The 1528 shop shows only one locksmith working, while the 1568 shop has four smiths. The 1698 shop shows only two. Only the 1568 shop shows all three of the main components: forge, anvil and bench. Perhaps the other pictures, which only illustrate certain aspects of the locksmith’s shop, did not include all the workers in the shop. Perhaps they are mere generalizations of the locksmith’s environment. If they are taken on face-value, then perhaps the difference in numbers indicates a variation in wealth of different locksmith’s shops, with the 1528 shop showing a tradesman which did less business than the 1568 shop. Edinburgh locksmiths had a degree of variation. Eleven locksmiths purchased guildry, indicating their wealth (see Table 5 in the appendix). The shops of these eleven would have been more akin to the 1568 shop. Booths whose master did not attain guild brethrenship might have looked more like the 1528 or 1698 shops. Only eleven of the 150 locksmiths\(^{41}\) attained guildry, though, so would there have been much variation in the size of Edinburgh locksmith’s booths? Perhaps they all resembled the 1698 shop in terms of size.

The discrepancy in numbers of locksmiths in the three shops could also illustrate a growth in the Nürnberg locksmiths in response to the greater demand for locks brought about by the population expansion of the 1500s in Europe. This type of growth was certainly the case in Edinburgh, where the numbers of locksmith-entrants to burgess-ship more than doubled from 1550 to 1750 (see Table 1 and Chart 1.1 in the appendix). Perhaps the 1528 shop evolved into the larger 1568 shop as a response to market pressures. But did Edinburgh locksmith’s booths take on more craftsmen per booth?

All three pictures show tools, though they become better illustrated in the later shop. The 1528 picture shows only two files, a vice and what appears to be a square-drive wrench for tightening the vice. The 1568 shop has anvils, hammers and tongs, as

\(^{41}\) There were 150 different locksmiths listed between 1494 and 1750 in the hammermen minute books. EHMB
well as the omni-present files. The 1698 shop shows a plethora of the tools used. There are two anvils, two vices, a hand drill, lock picks, a saw, callipers, files and engraving tools. There are files stored up above so as to not allow them to touch each other, which causes them to go dull much faster. What appears to be another wrench for tightening the vice, is sitting behind the nearest one.

The work being produced in the three shops is fairly standard. All are producing door locks, keys and hinges. The 1568 booth also has several padlocks on display. Locks, keys and architectural hardware seems to have been the normal work of locksmith’s booths, though the 1568 booth has surplus stock on display to the public, above the bench. More craftsmen meant more production.

The physical buildings occupied by the three shops all share one feature: they all have at least one window. On a practical level, windows allowed in light, which maximised vision while minimizing the costs of artificial lighting by candles, rush lights and the fuel-consuming forge. Widows also allowed air circulation, which would have been necessary when working with any type of chemical in the forge. In winter the craftsmen probably stayed as close to the forge as possible. Equally practical, was the fact that a view outside did more to sustain mental-wellbeing than staring at a dark wall.

The 1528 shop shows a wooden floor, a stone wall with one window visible from the bench, a stone forge and a timber ceiling. The 1568 shop seems to have a dirt floor, a timber ceiling and one large window. The window sill doubles as the bench, while the window is used to display the shop’s wares. The 1698 picture gives no indication about the building materials of the booth, though two large windows are clearly present. One has a screen, possibly to prevent people entering through the window and removing valuable tools, materials, or work.

It is a shame that there are not more engravings of locksmith’s booths to compare. All three of the above mentioned (Figures 5.5, 5.6 and 5.7) are from Nürnberg and therefore not necessarily representative of Europe as a whole. Much of early modern locksmith’s work is very similar across Europe, though and the engravings of other trades from various cities and towns are similar. It is unfortunate that the
Edinburgh town council did not see it as a necessity to the town’s honour to have a series of pictures done of Edinburgh crafts.

Although it is not specifically of a locksmith’s shop, there is an English diagram of a ‘smith’s forge’ which confirms the basic setup described in the aforementioned shops (see Figure 5.8). Joseph Moxon’s book, Mechanic Exercises, was first published in 1678. In it, Moxon set out to explain how several trades worked. He stated in the preface,

I intend to begin with smithing, which comprehends not only the blacksmith’s trade, but takes in all trades which use either forge or file, from the anchor smith, to the watchmaker; they all working by the same rules, tho’ not with equal exactness and all using the same tools, tho’ of several sizes from the common blacksmith uses…

Though he often referred to areas being for the use of ‘blacksmiths’, the mainstay of the work is described as being for ‘smiths’. None of the work deals with horses, but nine of the thirty-eight pages and one of the two diagrams devoted to smithing (see Figures 5.8 and 6.1) deal specifically with the production of locks and keys. Moxon’s diagram of a smith’s forge should therefore be taken as representative of a typical locksmith’s forge.

As can be seen in Figure 5.8, Moxon’s diagram of a smith’s forge can be divided up into three main components; the forge, the anvil and the bench. The forge was ‘to be built up from your floor with brick about two foot and an half, or sometimes two foot nine inches high, according to the purpose’. If it was for making anchors, it would have been necessarily larger. Locksmith’s work was never so large that it could not be carried in hand, so his dimensions would have been suitable. Further describing his diagram, Moxon wrote:

The back of the forge is built upright to the top of the ceiling and enclosed over the fireplace with a hovel, which ends in a chimney to carry away the smoke, as ‘B’. In the back of the forge against the fireplace, is fixed a thick iron plate and a taper pipe in it about five inches long, called a tewel, or (as some call it) a tewel-iron, marked ‘*’, which pipe comes through the back of the forge, as at ‘C’. Into this taper pipe, or tewel, is placed the nose, or pipe of the bellows. The office of this tewel, is only to preserve the pipe of the bellows and the back of the forge

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42 Moxon, J., Mechanick, 1989, Preface
43 Ibid., p. 1 - 38
44 Ibid., p. 1
about the fireplace from burning. Right against the back is placed at about twenty inches, or two foot distance, the trough and reaches commonly through the wholes breadth of the forge and is broad and deep as you think good, as at ‘D’.

Forges could reach such a heat as to completely liquify iron. In this heat, it was possible that even brick could burn; henceforth the tewel iron was set to cover the main area where the heat would be most intense on the brick wall behind the forge. The trough was for keeping water to control the heat of the fire, cooling workpieces or hot tools and tempering steel. Moxon continued with his description of the forge setup:

The bellows is placed behind the back of the forge and hath as aforesaid, its pipe fitted into the pipe of the tewel and hath one of its boards fixed so that it move not upwards or downwards. At the ear of the upper bellows board is fastened a rope, or sometimes a thong of leather, or an iron chain or rod, as ‘E’; which reaches up to the rocker and is fastened a cross a rock-staff, which moves between two cheeks upon the centre pins, in two sockets, as at ‘G’. So that by drawing down this handle, the moving board of the bellows rises and by a considerable weight set on the top of its upper board sinks down again and by this agitation performs the office of a pair of bellows.

The bellows were a device for directing a high-speed stream of air directly into the centre of the fire. This increased the amount of oxygen, creating even more heat as it was burned. The increased heat brought the workpiece up to any temperature the smith desired and if not careful, melted it. Apparently, all early modern forges were side-blown, as opposed to the more modern method of having the air blown up from below the fire.

One of the other main components of a smith’s booth that Moxon illustrated was the anvil. The anvil’s purpose was to offer a solid surface on which the metal could be pounded into shape. A soft surface would have given way, leaving the work only mildly marked. The anvil was hardened, though and therefore did not move. The hot metal which was struck with the hammer was flattened between the two. With a bit of skill, the ‘squishing’ could be controlled. On the anvil Moxon commented:

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45 Quotation marks around symbols referring to Moxon’s diagrams were added by myself for the sake of clarity. Moxon, *Mechanick*, p. 2
46 Ibid., p. 2
It's face must be very flat and smooth, without flaws and so hard that a file will not touch it (as smiths say, when a file will not cut, or race it.) The upper plain...is called the face; it is commonly set upon a wooden block, that it may stand very steady and solid and about two foot high from the floor, or sometimes higher, according to the stature of the person that is to work at it.\footnote{Moxon, Mechanick, p. 3}

Moxon's diagram shows only one of the variety of anvils available in the early modern period (marked 'Fig.2., A' in Figure 5.8). While there were other varieties, such as those shown in Figures 5.6, 5.7, 5.10 and 5.12, the basic setup shown in 5.8 seems to have been universal; the anvil was always mounted on a wooden stump, with its face at a height so that the smith could work comfortably while standing.

Moxon did not go into much detail about the bench itself; only the tools on it. The bench was a very important part of the locksmith’s booth, though. It was a desk; a place where a great deal of the locksmith’s work was done. It is significant that almost all early modern prints of trades show a bench in the workshop. For a locksmith, the bench had to be absolutely stable. If it was not, then the vice would rock back and forth as the craftsman attempted to saw, or file the workpiece, resulting in wasted energy and time. Often, benches were secured to a wall of a shop. It is interesting that Figure 5.5, the 1528 locksmith’s shop from Nürnberg, shows a freestanding bench. Perhaps it was secured into the floor, or perhaps the picture is only representative.

Tools

The same sources which illuminate the physical space of a booth also give a clear picture of the tools and techniques employed by Edinburgh locksmiths. First, there are the tools associated with the forge. This group of tools were usually intended for working with hot metal. Locksmiths needed to be able to head the iron parts they worked with in order to shape them. Tongs allowed the locksmith to reach into the fire to place the part in the section of the fire which would give him the specific heat desired. Tongs then enabled the smith to retrieve the glowing workpiece and keep a constant
purchase while hitting it with a hammer at the anvil. Moxon stated that there were only two types of tongs:

There are two sorts of tongs used by smith; the one the straight-nosed tongs, used when the work is short and somewhat flat and generally for all plate iron. The other crooked-nosed tongs, to be used for the forging small bars, or such thicker work, as will be held within the returns of their chaps.\footnote{Moxon, Mechanick, p. 3}

Since every part had a different shape, some parts were easier to hold than others. If a locksmith needed to hold an odd-shaped piece and did not have tongs that would grasp it correctly, then he would simply make tongs with specialist jaws.\footnote{Streeter, D., Smithing, 1980, p. 17} Moxon probably did not mean that there were only two types; he probably was making a reference to the two most common. Diderot, in his mid-eighteenth-century encyclopedia of trades, shows four types (see Figure 5.11).\footnote{Diderot, D., 'Serrurier', c.1751 - 72, Plate LIII, Figures 39 - 41} All smiths had to be self-reliant and show ingenuity in the work place.

Locksmiths also needed hammers at the forge, for shaping metal on their anvil. There were many different shapes and sizes of hammers. Moxon described several different varieties:

as first the hand-hammer, which is sometimes bigger, or less, according to the strength of the workman; but it is a hammer of such weight, that it may be wielded, or governed, with one hand at the anvil. Secondly, the up-hand sledge, used by under-workmen, when the work is not of the largest, yet requires help to batter or draw it out; they use it with both their hands before them and seldom lift their hammer higher than their head. Thirdly, the about sledge is the biggest hammer of all and is also used by under-workmen, for the battering, or drawing out of the largest work; and then they hold the farther end of the handle in both their hands and swinging the sledge above their heads, they at arms end let fall as heavy a blow as they can upon the work. There is also another hammer used by them, which they call a riveting-hammer. This is the smallest hammer of all and very rarely used at the forge, unless your work prove very small; but upon cold iron it is used for riveting, or setting straight or crooking small work.\footnote{Moxon, Mechanick, p. 3 - 4}

If a locksmith tried using a heavy sledge hammer to straiten the delicate pin of a key hole, he might have crushed it completely. If he tried using a light riveting hammer to

\footnotesize
\begin{itemize}
  \item \footnote{Moxon, Mechanick, p. 3}
  \item \footnote{Streeter, D., Smithing, 1980, p. 17}
  \item \footnote{Diderot, D., 'Serrurier', c.1751 - 72, Plate LIII, Figures 39 - 41}
  \item \footnote{Moxon, Mechanick, p. 3 - 4}
\end{itemize}
shape steel, even when glowing red, just out of the forge, it would barely have dented the workpiece. Specific tools had specific jobs and therefore there were several hammers in a locksmith’s booth.

Various types of chisels would have been used for cutting hot metal. One type is known as a hardy and was set into a hole on the anvil (see Figure 5.12, ‘Fig. 4, D’ and ‘Fig. 10’). The heated workpiece was set on top of the wedge-shaped hardy (see Figure 5.12, ‘Fig. 10’) and struck by the hammer. This caused the hardy to be driven into the workpiece like a knife, cutting it in two. There were also handled chisels for cutting the top of the heated iron.

The second group of tools were usually meant to be used with cold metal at the bench. The main feature of a locksmith’s bench was the vice (see Figures 5.5, 5.6, 5.7, 5.8 and especially 5.9). While work was held steady in the vice, the locksmith changed its form. Hammers were used for light hammering. If the iron was thin enough, heat was not needed to shape the piece and the hammering could take place at the bench.

Files were some of the main tools used by locksmiths. Files came in all shapes, sizes and cuts. Moxon explained them as follows:

The several sorts of files that are in common use are the square, the flat, the three square, the half round, the round, the thin file, etc. All these shapes you must have of several sizes and of several cuts. You must have them of several sizes, as well because you may have several sizes of work, as for that it sometimes falls out that one piece of work may have many parts in it joined and fitted to one another, some of them great and others small; and you must have them of several cuts, because the rough-toothed file cuts faster than the bastard-toothed file, the fine-toothed file faster than the smooth-toothed file.

Different shapes (see Figure 5.14) were required for different shaped jobs; a square file did no good for making a rounded cut. Different sizes were needed for different sizes of work. A large file took off a lot more metal than a small file and would therefore have eaten small workpieces. With different cuts, the locksmith could guage how much metal would be taken off the workpiece, as well as bring the surface to a good finish:

52 Diderot, ‘Serrurier’, Plate LI, Figure 4, and Streeter, Smithing, p. 12
53 Ibid., Plate LII, Fig. 14
54 Moxon, Mechanick, p. 15
The rough or course-toothed file (which if it be large, is called a rubber) is to take off the unevenness of your work which the hammer made in the forging; the bastard-toothed file is to take out of your work the deep cuts, or file-strokes, the rough-file made; The fine-toothed file is to take out the cuts, or file-strokes, the bastard-file made; and the smooth-file is to take out those cuts, or file-strokes, that the fine file made. Thus you see how the files of several cuts succeed one another, till your work is so smooth as it can be filed. You may make it yet smoother with emerick, Tripoli, etc...

When used in succession from rough-cut down to fine-cut, the metal attained a polished finish which resisted rust better than a rough surface.

When a locksmith wanted to cut iron plates to shape, one method involved a large pair of shears, with one leg mounted in a large wooden block. Another method was to use cold chisels, which were wedges of steel that could be struck by a hammer to cut iron that had not been heated in the forge (see Figure 5.12, ‘Fig. 8’ and ‘Fig. 9’ and Figure 5.14, ‘Fig. 78’). The workpiece was set on a soft iron plate, the chisel set in the position desired and a heavy blow was struck down on the top of the chisel. The ward clefts on key bits were often cut out by chisels:

The...wards [are] made, or at least entered at the forge, when the iron had a blood, or almost a flame heat, yet sometimes smiths do it on cold iron, with a thin chisel...but you must take care that your chisel be neither too thick, or too broad, for this punching of wards is only to give the thin files entrance to the work; which entrance you then have, you may easily file your ...wards, wider or deeper, as your work may require.

Saws were also used, as can be seen by the picture of the 1698 locksmith's shop from Nürnberg (see Figure 5.7).

When a locksmith needed holes put in a workpiece, he had two main options. The first involved using a punch, which was a long, thin piece of steel, the end of which was round in section, but flat on the tip. The punch was set over the workpiece, which was in turn set over the open jaws of the vice and struck with a hammer. In much the same way that a paper punch puts holes in paper, the steel punch was driven through the iron plate, leaving a clean, round hole. Other shapes could also be punched in iron,

55 Moxon, Mechanick, p. 15
56 Ibid., p. 22
57 Ibid., p. 29
depending on the needs of the locksmith. Rectangular holes for mortice and tenon joints of lock-case walls required punching.\(^{58}\)

Another option for making holes was the hand drill. This item was a simple device, akin to the method of starting a fire with sticks. By making a steel bit spin on the softer iron workpiece, a hole was eventually bored through. There seem to have been several methods of powering the spinning motion. One involved a downward force on two handles, which caused the bit to unwind (see the triangular shaped drill hanging on the wall in Figure 5.7). The bit was first wound up and then placed in the spot where the hole was desired. When downward pressure on the handles caused the two cords to unwind, the bit spun. Another type was the bow powered drill (see Figure 5.8, ‘Fig. 8’ and Figure 5.15). As the bow was pushed forwards, the spool rotated, causing the bit to bore through the workpiece.

The bow powered mechanism was also used on small hand lathes, for accurately turning shapes in metal, or boring evenly spaced holes for pipe keys (see the vice mounted lathe in Figure 5.13, ‘Fig. 27’ and the bow in Figure 5.14, ‘Fig. 91’). These were common tools, used by many trades (see the gunsmith’s booth in Figure 3.13 – the apprentice is setting one up). As the part spun, metal was removed evenly, leaving a symmetric and smooth surface. This is how locksmiths made the turned decoration on key stems and pots.

There were various other tools for different purposes. There were hand-vice, of which Moxon commented:

Hand-vice are of two sorts, one is called the broad-chapped hand-vice, the other the square-nosed hand-vice. The office of the hand-vice, is to hold small work in, that may require often turning about; it is held in the left hand and each part of your work turned upward successively, that you have occasion to file with your right. The square-nosed hand-vice is seldom used, but for filing small globulous work, as the heads of pins that round off towards the edges, etc. And that because the chaps do not stand shoudering in the way, but that the flat of the file may the better come at the edges. Their chaps must be cut as the vice aforesaid and well tempered.\(^{59}\)

\(^{58}\) Streeter, *Smithing*, p. 15

\(^{59}\) Moxon, *Mechanick*, p. 5
Hand-vices had a wing-nut, which held tension on the jaws so that they held a constant grip. If the locksmith wanted to be able to change the position of the workpiece without constantly opening and tightening the wing-nut of the hand-vice, he would use pliers:

Pliers are of two sorts, flat nosed and round nosed. Their office is to hold and fasten upon all small work and to fit it in its placed. The round nosed pliers are used for turning, or bowing wire, or small plate, into a circular form. The chaps of the flat nosed pliers, must also be cut and tempered, as the chaps of the vice.\(^{60}\)

Hand-vices and pliers were simply hand-held vices (see Figure 5.8 and Figure 5.14, 'Fig. 83', which is a broad-chapped hand-vice). They used leverage to provide a grip which the human hand was not strong enough to give.

Another necessary tool in the locksmith's booth was used for cutting threads for screws and bolts (see Figure 5.8 and Figure 5.16). Moxon wrote the following of screw plates and taps:

The screw plate is as plate of steel well tempered, with several holes in it, each less than other and in those holes are threads grooved inwards; into which grooves, fit the respective taps that belong to them. The taps that belong to them, are commonly made tapering towards the point, as 'Fig. 7' shows...\(^{61}\)

When a locksmith made a bolt for attaching a lock to a door, he would run the end of the bolt into the screw plate. As the soft iron bolt turned in the hardened steel plate, it was force to form threads. The corresponding tap was then forced to turn inside the nut for the bolt, leaving it with the same thread pattern. The nut and bolt then fit together.

Techniques

Locksmiths employed several important techniques in their work. The first techniques dealt with cold work, such as hammering and filing. Other techniques dealt with joining metal parts. The rest of the major techniques dealt with the preparation of iron and steel for certain tasks.

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\(^{60}\) Moxon, Mechanick, p. 5 - 6

\(^{61}\) Quotation marks around 'Fig. 7' were added by me for the sake of clarity and refer to Figure 5.8. 

Ibid., p. 7
Hammering was one of the most basic of skills for any locksmith. In fact, it was important for the entire Incorporation of Hammermen. If hammer blows did not land squarely, then half of the hammer’s face would have been indented into the heated iron, while the other half of the hammer’s face was suspended in air above the work. This would have resulted in deep indentations and misshaped metal. If the hammer blow landed with the entire face equally touching the work, then the blow was evenly spread across the work and the surface was not left scarred with indentations. By learning to control the hammer blows, the smith saved much time and effort in filing the surface smooth later. All depended on the intended plane of the hammer’s face when it contacted the workpiece. Hammering was a skill that had to be learned.

The importance of filing to the locksmith craft is demonstrated by the amount of space – three pages – which Moxon spent discussing it. Apprentice locksmiths had to learn to take long, heavy, level strokes when filing. The importance of aesthetics in early modern metalwork demanded control in this element of the art.

One of the first lessons Moxon give is control over how much metal is removed, by learning not to file too much:

when you file upon the prominent, or rising parts of your work, with your course cut file, you must also take care that you file them not more away than you need, for you may easily be deceived; because your course file cuts deep and makes deep scratches in the work; and before you can take out those deep scratches with your finer files...  

It was important that the locksmiths paid attention to which tools they were using; the larger, rough-cut files removed metal much faster than the medium and fine-cut files.

Another lesson in filing was keeping the file level, so as not to curve what should be a flat surface:

If it be a square bar, (or such like) you are to file upon, all its angles, or edges, must be left very sharp and straight. Therefore...you must, in your filing, athwart over the chaps of the vice, be sure to carry both your hands you hold the file in, truly horizontal, or flat over the work; for should you let either of your hands mount, the other would dip and the edge of that square it dips upon would be taken off; and should you let your hand move never so little circularly, both

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62 Moxon, Mechanick, p. 16
the edges you file upon would be taken off and the middle of your intended flat would be left with a rising on it. But this Hand-craft, you must attain by practice; for it is the great curiosity in filing.63

Moxon went on to explain how one should not keep their file level when making a round surface, as that would create flat spots on it. Instead, the file should have followed the contour. All surfaces are in certain planes and the file needed to stay in that plane in order to attain the correct surface and finish. A well-known maxim in metal work states that one cannot put the metal back on once it is removed.

The locksmith apprentice was not to file gingerly, though: 'When you thrust your file forwards, lean heavily upon it, because the teeth of the file are made to cut forwards; but when you draw your file back, to recover another thrust, lift, or bear the file lightly just above the work; for it cuts not coming back.'64 If one kept pressure on the file on the backstroke, the files went dull sooner, resulting in increased expense. Heavy, level strokes, using the entire length of the file on the push and an ease of pressure when drawing it back, resulted in quick, controlled and effective filing. Bad filing was uneconomical in time expenditure, but also in the cost of buying a new set of sharp files to replace the ones that were dulled.

There were several options for joining metal parts; some were done cold, others involved heating the parts in the forge. Cold joining was a broad technique, that entailed forming a mortice tab of iron on one piece and putting it through a tenon, or slot, which had been punched into another piece. The protruding end was then smashed with a hammer, which riveted it into place. This was known as peening and was a very strong method of joining. Another variation involved making a rivet, which resembled a nail and putting it through the two work pieces. The protruding end was then peened over, making an ‘H’-shaped fastener.

The most common hot joins were welding and brazing. Welding entailed first cleaning the surfaces which were to be welded, coating them in a chemical flux, such as borax and then heating them until they reached a welding-heat. This type of heat could be seen, as the metal was glowing white and sparking profusely. The parts were then

63 Moxon, Mechanick, p. 16 - 7
64 Ibid., p. 17
removed to the anvil as quick as possible and smacked firmly with a hammer. The metal would then fuse together. This is known as either impact welding, or forge welding.

The other common hot joins was brazing and soldering. Moxon describes the way in which these processes took place:

You may have occasion sometimes to braze or solder a piece of work; but it is used by smiths only, when their work is so thin, or small, that it will not endure welding. To do this, take small pieces of brass and lay them on the place that must be brazed, ans strew a little glass beaten to powder on it to make it run the sooner and give it a heat in the forge, till (by sometimes drawing it a little way out of the fire) you see the brass run. But if your work be so small, or thin, that you may fear the iron will run as soon as the brass and so you lose your work in the fire, then you must make a loam of three parts clay and one part horse-dung and after they are wrought and mingled very well together in your hands, warp your work with the brass and a little beaten glass upon the place to be brazed closed in the loam and laying it a while upon the hearth of the forge to dry, put the lump into the fire and blow the bellows to it, till you perceive it have a full heat, that is, till the lump look like a well burnt coal of fire; then take it out of the fire and let it cool: afterwards break it up and take out your work.65

The glass acted as a flux, cleaning the edges and making the brass flow into the seam. Padlocks, keys and some lock parts from the early modern era often show remnants of this process. It is interesting that glass and manure were both involved in this process, showing both a reliance of the urban environment on animal products, as well as a lack of wastage in the early modern period.

There were other techniques that were equally important to hammering, filing and joining. Two of the most important were methods of iron preparation, known as hardening and tempering. The two usually happened in conjunction and usually in the order mentioned. Iron is a soft metal in its purest form. Items like springs cannot be soft; they need to return to their original position when moved in order to be effective. The way to achieve this was to shape the spring from a suitable steel, rather than iron and heat it in the fire. The locksmith could tell how long to heat the part by the colour of the metal. Once it was heated, it was removed from the forge and quickly quenched in the water trough. This sudden cooling caused the steel to become extremely hard, to the point that a file would not cut it. At this point, however, the steel was too hard; it was

65 Moxon, Mechanick, p. 12 - 3
brittle and would break under pressure. Tempering was the process of gently bringing the steel from too hard back to the point where it was springy. Moxon describes it thus:

If your steel be too hard, that is too brittle...[it] will be subject to break; or if it be a spring, it will not bow, but with the least bending it will snap asunder: Therefore you must let it down (as smiths say) that is, make it softer by tempering it. The manner is thus, take a piece of grin-stone or wet-stone and rub hard upon your work to take the black scurf off it and brighten it; then let it heat in the fire and as it grows hotter you will see the colour change by degrees, coming to a light goldish colour, then to a dark goldish colour and at last to a blue colour; choose which of these colours your work requires and then quench it suddenly in water...66

The blue colour was the correct one for springs.

If tempered steel was at the middle of a spectrum, with 'brittle' at the hardest end and 'malleable' at the softest end, then the next technique was the farthest end possible on the softening side of the spectrum. When steel was properly tempered, it was near untouchable with a file. This also meant that it was virtually unworkable at the bench. If a locksmith needed to alter the shape of a piece of steel, he first needed to make it soft enough to work with. This was achieved by a process called annealing. Moxon simplified the process in his book on smithing:

Having chose your steel and forged it to your intended shape, if you are either to file, engrave, or to punch upon it, you ought to anneal it first, because it will make it softer and consequently, work easier. The common way it to give it a blood-red-heat in the fire, then take it out and let it cool of itself.67

With the metal in a softer state, the locksmith could shape the workpiece to the required dimensions. He would then harden and temper it to a point where it would serve.

The amount of skill required to master these techniques is illustrated by the length of apprenticeship, which was supposed to be at least seven years.68 If the work week was more than eighty hours,69 and it took seven years to be ready to train others and open one's own booth, then it is apparent that these skills were not to be taken for granted. They took time to develop. There were no charts, or gauges to explain when

66 Moxon, Mechanick, p. 61
67 Ibid., p. 60
68 Marwick, Guilds and Crafts, p. 73
69 5:00 am to 8:00 pm on weekdays, EHMB, ED008/1/8, 1 August 1750, and till 4:00 pm on Saturdays. APS, General Index, p. 382
the metal was ready for a specific task; all was done by a careful combination of eye and experience.

Materials

Locksmiths used a range of raw materials in their trade. They needed iron stock for lock and key production, as well as for making or repairing tools. By the late seventeenth century, lock cases, as well as door knobs and other bits of architectural hardware, were increasingly made of brass. While wrought iron was more rust resistant than some higher carbon metals, tin was often used for coating work as a rust preventative. Fuel options included coal and charcoal and there were many other chemicals and items that added to the overhead expenditures of a locksmith’s booth. Some of these items were produced locally, but most had to be imported by merchants, illustrating both the dependency of the burgh on foreign trade and the dependency of craftsmen on merchants.70

The primary material needed in a locksmith’s booth was iron. Iron was obtained in various forms, including plates and bars. While there was iron production in Scotland prior to the Industrial Revolution, it was on a small scale. In 1610, there was a colony of English workmen under Sir George Hay, which made iron and cast canon in the woods of Letterewe in Gairloch parish, Wester Ross.71 There was also an iron mill set up in Dalkeith in 1648.72 The mill was set up on the River North Esk, so that its trip hammers could be water-powered. The Statistical Account of 1845 states that the corn mill, which was previously the iron mill, was formerly used for manufacturing iron bars, sheet iron and all sorts of heavy smith work.73 The heavy smith work that they produced

70 It would make an interesting study to compare craftsman / merchant relations in conjunction with import duties on raw goods. Perhaps there was some correlation between the growth of merchant power, and dependence on them for raw materials.
73 The Statistical Account of Edinburghshire by the ministers of the respective parishes, 1845, p. 503
included finished wares, such as cart and wheelbarrow wheels, ploughs, shovels, spades, picks, gates, railings, and other such items.\textsuperscript{74}

While Scotland’s main source of iron ore was the inferior bog ore, certain industrious Scots imported scrap iron and refined it using local fuel. In 1724, Alexander Graham of Duchray noted that in Aberfoyle parish,

are plenty of oak and birch woods and three miles north from the church on the confines of the parish of Callender is a new set up iron work, where is made very good iron partly of tar got in the country and partly of iron scraps got from Holland by managers of the work. The charcoal made use of for refining the iron is made of birch timber, cut out of large birch wood near the iron work.\textsuperscript{75}

While there were other areas in Scotland producing iron prior to 1750, iron production, as opposed to usage in making finished goods, was very limited in Scotland prior to the Industrial Revolution.

The bulk of iron used by Scottish smiths came from abroad. Joseph Moxon, commenting on English sources of foreign iron, had the following to say about the vast network of European suppliers:

English iron, is generally a course sort of iron, hard and brittle...unless it be about the Forest of Dean and some few places more, where the iron proves very good. Swedish iron is of all sorts, the best we use in England. It is a fine tough sort of iron, will best endure the hammer and is softest to file; and therefore most coveted by workmen, to work upon. Spanish iron, would be as good as Swedish iron, were it not subject to red-sear, (as workmen phrase it) that is to crack betwixt hot and cold. Therefore when it falls under your hands, you must tend it more earnestly at the forge. But though it be good, tough, soft iron, yet for many uses, workmen will refuse it, because it is so ill and unevenly wrought in the bars, that it costs them a great deal of labour to smooth it; but it is good for all great works that require welding, as the bodies of anvils, sleges, large bell-clappers, large pestles for mortars, & all thick strong bars, etc...\textsuperscript{76}

While Scotland would have had different trade networks than England, the sources of the iron would have been the same for all countries across Europe. From 1740 to 1749, Sweden exported 42,700 tons of iron, with 53.5 per cent going to British market, 10.5

\textsuperscript{75} Joynson, P., Local Past, 1996, p. 98
\textsuperscript{76} Moxon, Mechanick, p. 13 – 4
per cent going to Holland, 24 per cent going to the Baltic area and 12 per cent going to the Latin market. Sweden did not sell to England alone.

Moxon also discussed where the best sources for steel were:

The difficulty of getting good steel makes many workmen (when by good hap they light on it) commend that country-steel for best, from whence that steel came. Thus I have found some cry up Flemish-steel, others Swedish, English, Spanish, Venice, &c. But according to my observation and common consent of the most ingenious workmen, each country produces almost indifferently good and bad; yet each country doth not equally produce such steel, as is fit for every particular purpose...The Flemish-steel is made in Germany, in the country of Stiermark and in the Land of Luyck: From thence brought down to Cologne and is brought down the river Rhine to Dort and other parts of Holland and Flanders, some in bars and some in gads and is therefore by us called Flemish-steel and sometimes gad-steel. It is a tough sort of steel and the only steel used for watch-springs...I cannot learn that nay steel comes from Sweden, but from Danzig comes some which is called Swedish-steel: It is much the same quality and fineness with Flemish-steel. The Spanish-steel is made about Biscay. It is a fine sort of steel, but some of it is very difficult to work at the forge, because it will not take a good heat; and it sometimes proves very unsound, as not being well curried, that is well wrought. It is too quick (as workmen call it) that is brittle for springs or punches, but makes good fine edged tools. Venice-steel is much like Spanish-steel, but much finer and works somewhat better at the forge. It is used for razors, surgeon's instruments, gravers, etc.

Steel was a different thing altogether from iron and also had to be imported.

There are a few known sources of iron which fed the Scottish burghs. Records from Edinburgh mention Swedish, Danish and Spanish iron. In Edinburgh, Swedish iron cost 24 s. a stone in 1600 and 30 s. a stone in 1607. Danish iron was also 30 s. a stone in 1607. In the 1612 rates of valuation and customs for imported goods, 'Spanish spruce and Swedens iron' cost 13 s. 4 d. the stone weight. Iron and steel were important commodities, both to locksmiths and all other metalworkers and illustrate the dependence of Scotland on foreign trade. The Baltic trade was especially important.

77 Hildebrand, K-G., Swedish Iron in the Seventeenth and Eighteenth Centuries, 1992, p. 26
78 Moxon, Mechanick, p. 57 - 8
80 'Rates of Customs', p. 316
Other metals were also needed by Edinburgh locksmiths. Tin was a common coating for rust-proofing iron. The 1612 rates of valuation and customs state that unwrought tin by the hundred weight cost thirty pounds. It would seem that only the more expensive locks and keys would have been coated in tin. Brass was also used by locksmiths, increasingly after the last quarter of the seventeenth century. In 1612, the rate for imported brass, by the hundred weight, was forty pounds.

Metals were not the only raw materials needed by locksmiths. Fuel was another large overhead cost for a locksmith’s booth. In order to shape the metal into usable parts, heat had to be applied. Coal was a fuel which was found readily in Scotland. Production was increased ten fold from 40,000 tons during the 1551 – 1560 period, to 475,000 tons during the 1681 – 1690 period. In Bo’ness, in the late seventeenth century, coal mining employed 2.9 per cent of the male pollable population. One of the more productive early coal mines was Sir George Bruce’s mine at Culross, Fife. Bruce was granted the lease of Culross Abbey’s mine in 1575. After gaining technical expertise in Europe, he introduced several innovations to the mine, including his ‘Egyptian Wheel’ mechanism for draining the water out of the lower levels. The monks before him had managed to work the coal at thirty feet in depth. Bruce’s miners got down to 240 feet, with drifts that reached a mile under the Firth of Forth.

It is interesting, that in the 1612 book of customs and valuations, the import list does not mention coal, though the export list does. The rate for exported ‘smiddy coals the chalder’ was four pounds. In the early eighteenth century, coal cost six pence for eighteen stones. Charcoal, which was wood, burned to the point where all moisture

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81 ‘Rates of Customs’, p. 331
83 ‘Rates of Customs’, p. 292
86 Sked, P., *Culross*, 1999, p. 3
87 ‘Rates of Customs’, p. 295
88 Ibid., p. 336
89 Kelvin, *Scottish Pistol*, p. 57
was gone, was also a possible fuel for running a forge. It is doubtless, that there were other raw materials needed by locksmiths, which the records do not directly name.

Many of the details of a locksmith’s booth are similar to those of other European cities. Many of the details are similar to those booths of other trades. Many of the tools and techniques were similar to those of closely related trades, such as blacksmiths. It is unfortunate that no one recorded the locksmith craft better but, with the sources available, it is still possible to piece together the workplace of the Edinburgh locksmiths. Their tools and techniques can be studied in a roundabout way, all the time pointing to the required knowledge of basic metallurgy and the patiently learned skills that produced security for the early modern burgh.
Chapter 6

Locksmiths' Work

What did the locksmiths do and what did they make? While the very term 'locksmith' would seem to be sufficient to answer this – smith meaning worker and in this case a worker of locks, it is still no depth to this answer. Modern-day locksmiths retain the term, but do not build locks. In fact, they only repair locks and cut keys which were made in other countries such as Italy. Unfortunately, the sources for the locksmiths in Edinburgh rarely went into any great detail as to what they were producing. When they did, the jargon used in the records is still rather opaque to twenty-first century minds. While some of the words can be found in Scots dictionaries, many are too technical; no doubt the average person on a seventeenth-century street would not have fully understood the technological labels of all lock parts. With the records using forgotten terminology, when used at all, it is hard to get a precise understanding of what the locksmiths did. Luckily, there is another type of source available to historians –
artefacts. By using the material culture which survives, in conjunction with contemporary paintings and the written documents, it is possible to piece together a picture of what products and services the locksmiths provided for early modern Edinburgh. Was the work of Scottish locksmiths the same as that of European locksmiths? This chapter will first look at the written records of locksmiths’ work and then the material records, in order to get a better understanding of the work done by both Edinburgh locksmiths and European locksmiths in general.

There were two main categories of work done by locksmiths in the early modern period: production and services. Production activities in a locksmith’s booth could cover a range of different items. It is known that, in some European towns, there were craftsmen who specialized in a certain area of a particular trade. For example, in Nördlingen, in 1615, there were seven locksmiths and one padlocksmith.¹ The market for padlocks in that area of Germany was strong enough that the one smith could specialize in making only padlocks. By contrast there is nothing in Edinburgh’s records to indicate that any locksmith ever specialized in the production of just one item. Production in Edinburgh encompassed all facets of locksmiths’ work.

Production

The main written source for locksmiths’ work was the Incorporation of Hammermen’s minutes. The incorporated trades all made use of the office of boxmaster. The boxes in their care held the important papers and money of the incorporations. The first volume of the Incorporation of Hammermen’s minute books lists an entry in 1500 ‘for the lock making and the key of the little box to John Anderson, xvij d.’² If the boxes were to be secure, they needed to be locked. Usually, there were three different keys given out to different officials in the incorporation, so that the boxmaster alone did not have complete access to the money and deeds. The very institution of incorporation gave work to the locksmith craft.

² Smith, J., *Hammermen*, 1906, p. 19
The Incorporation of Hammermen also owned various tenements and properties. These often needed repairs for locks and architectural hardware. One of the earlier locksmiths, a man named John Loksmyt, was given six pence for two lock and bands by the incorporation. Bands were large iron hinges that stretched across the door and rested on crooks, which were 'L'-shaped spikes of iron mounted in the wall (see Figure 6.2, upper right-hand corner). Throughout the early modern period, the Hammermen’s minutes are peppered with listings of payments to locksmiths for architectural hardware, along with wrights’ and masons’ bills for installation.

The minute books laid out the work for locksmiths after a dispute with the blacksmith craft over the rights of production. In 1649 the blacksmiths complained to the Incorporation that a locksmith was encroaching on blacksmith work by making chimney irons, which presumably were the cranes mounted on the sides of hearths. In 1654 the dispute involved all of the locksmiths. It was stated that locksmiths were selling ‘all sort of chimneys only proper to the blacksmiths’ in the quays. The Incorporation at first stated that no locksmith within the Edinburgh Incorporation was to:

big any chimneys to the prejudice of the said blacksmiths to vent and sell again the same except so much as shall be for their ane proper use or what they shall work themselves of locksmith work...or else they shall sell to the said blacksmith what chimneys they shall big that they work not themselves...

The issue came up several times and eventually the two arts came to an agreement. The blacksmiths’ work was set out as ‘the making of horse shoes, nails thereto and shoeing of horse, together with the making of chimneys and braces with racks thereto and [paterniks for the fire with couter sork and plough shoes]’, and locksmiths’ work was defined as ‘the making and mending of locks and bands with all white work and filed work pertaining to the Locksmith craft, with all sort of jointed bands.’ It then went on to state that the door crooks, door bands and mending chimneys were common work for

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3 Smith, Hammermen, p. 46
4 EHMB, ED008/1
5 Ibid., ED008/1/3, 6 June 1649
6 Ibid., ED008/1/3, 29 July 1654
both blacksmiths and locksmiths. Locksmiths not only made lock and keys; they also made other types of architectural hardware.

Some of the most detailed accounts of the locks being produced in early modern Edinburgh were the essays set for apprentice locksmiths to become masters and freemen of the Incorporation of Hammermen. The minute books start listing essays in the late sixteenth century. A sample of essays for the locksmiths is shown in Table 14 in the appendix. There were two main components of the essays: kist locks and pass locks. There were occasionally different essays set; in 1609 one essay included a kist lock, a boss lock and a double plate lock and from 1684 to 1698 there were several double iron locks. Besides these few exceptions, the essays from 1586 to 1683 were variations of a kist lock and from 1684 to 1749 were variations on a pass lock.

For a century, the essay remained a lock for one of the various types of boxes. It is interesting that the term ‘chest’ replaced the Scots term ‘kist’ before the Cromwellian occupation. The sprent bands were a form of shackle mounted on a hinge (see Figure 6.3 and 6.4). It is an integral part of most kist locks, so the 1646 essay of a ‘lock’ probably referred to a kist or chest lock also. Why it was that kist locks were seen as being important enough to be the test for mastership is unknown. The 1612 list of rates and customs for imports and exports shows that imported kists ranged in price from twenty shillings up to thirty pounds. Perhaps kists were seen as luxury items?

Door locks, of which pass locks are a complex variety, were not luxury items. There is a Hogarth engraving from 1747 entitled ‘The Idle Prentice Returned from Sea, & In a Garrett with a Common Prostitute’. The door clearly shows a lock, though the rest of the interior shows extreme poverty. Pass locks are locks that are made to pass, which means that one key will open all of the locks; it will pass them all. By keying alike three different locks, one key could open them all; a person needed only one key to have access to all the rooms. Alternatively, one of the locks might have been made on a master system. In a master system, a master key will open all of the locks, while other

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7 EHMB, ED008/1/4, p. 340 – 3
8 The following discussion of essays comes from the minute books. Ibid., ED008/1/1 – 8
9 ‘Kist’ is Scots for chest.
10 ‘Rates of Customs’, 1867, p. 297
11 Hallett, M., Hogarth, 2000, p. 206
servant keys will open only a certain number of the locks. This was achieved by altering the warding inside the locks; the mastered lock had the most warding and the master key was the only one cut broad enough to pass all of them. The servant keys were cut to pass only some of the warding.

The earlier essays of pass locks often stated that they were to have 'brass drawers' and be polished. Drawers probably refer to the knobs for drawing in the bolt and latch. Brass was becoming more common on Edinburgh locks. Around the late seventeenth century it became the fashion in England and America to make lock cases out of brass.\textsuperscript{12} Brass knobs started to replace the loop handles. Brass was more resistant to the elements than iron. The polished cases and brass fittings on Edinburgh locks might indicate that fashion in Scotland paralleled that in England. The brief change from brass knobs to brass handles from 1743 – 45 again reflects trends in fashion.

It is interesting that the 1609 essay involved making three different locks. One wonders if the Incorporation was angry at the poor apprentice. The boss lock part of the essay was either for a door, a chest, or a padlock. Examples of boss locks for doors can be seen in Figures 6.1 and 6.2. Boss padlocks can be seen in Figure 7.55. This type of lock was also used on kists, chests and other such boxes. They were of simple construction, as the body is simply a piece of iron plate shaped into a concave dish, with the mechanism mounted inside. The main, or draw bolt then had a spreng band attached that was captured by the internal bolt of the lock mechanism, keeping the main bolt and the door in the closed position.

The 1609 double plate lock is a bit more mysterious. A plate lock usually indicates a simple mechanism mounted on an iron plate for internal doors. The adjective 'double' might indicate that it was large, as in the contemporary term 'double musket'. It might also have been a technical term for a type of iron plate. In the 1612 list of rates and customs, doubles are stated as 'harness plates or iron doubles.'\textsuperscript{13} Armour, or 'harness', was made of iron plates. Perhaps a double plate lock refers to a thick type of plate used for a specific type of lock? Whatever the term means, the setting of double

\textsuperscript{12} Hume, I. N., \textit{Artifacts}, 1969, p. 246
\textsuperscript{13} 'Rates of Customs', p. 297
plate or iron locks seem to have occurred only in the seventeenth century and they often included door furniture.

The problem with essays is their lack of explanation. Were they setting essays of difficult items to make? Were they setting items that were in high demand? It is doubtful that essays were market driven, as door locks would have been in huge demand during the population boom of the 'long' sixteenth century. More houses meant more doors. Perhaps it is also meant more chests for keeping the goods of all the people. A further study on chest and door lock ownership would shed light on the relationship between essays and markets. The essays do indicate that Edinburgh locksmiths had the skills for producing kist locks and door locks.

Another interesting source for what kinds of locks were being produced in Scotland comes from the *Accounts of the Lord High Treasurer of Scotland*. The majority of the accounts are a running list of expenses incurred for various building projects in Scotland and give a good amount of detail as to what was used in terms of architectural hardware. In 1491 a new 'inlock' was added to the castle door where charters were kept. It cost three shillings. In 1517 two small stock locks were purchased for use at Craigmillar. The pair cost five shillings and two pence. A slightly more detailed entry for 1541 lists three stock locks for the dungeon of Blackness Castle. A 1548 entry lists payments for 'three great through locks to the palace of Holyroodhouse, price of the piece xxij s., summa iiij li. vj s.' A 'great through lock' is most likely the sixteenth century term for a large pass lock to be mounted on a door. It is unfortunately more common for locks to be given more ambiguous names in the records, such as the 1518 reference to 'great locks'. The adjective refers to size.

There is evidence given in the accounts of a range in quality of door locks. In 1507, a lock was put on the turngree door of an unspecified abbey, which cost fourteen pence, but a lock put on the queen's chamber door at Linlithgow in 1506 cost fourteen

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14 *TA*, 1877 – 1916, p. 184
15 Ibid., p. 130
16 Ibid., p. 474
17 22s. and £3. 6s. Ibid., p. 167
18 Ibid., p. 148
19 Ibid., p. 366
shillings. There was a spectrum of cost for Scottish locks, ranging from simple stock locks up to more grandiose works of art.

Another job which one would think would be at the high-end of the cost spectrum was the production of yett locks. While the average burgess would have owned at least one door, not everyone would have owned a large iron ‘yett’, or gate. Governmental buildings and the houses of the nobility would have required yett locks. Yet surprisingly, a 1505 entry suggests that yett locks were not as expensive as one would think. Two shillings and six pence was paid for ‘the mending of the east and west park yetts and a lock to one of them’. The two and a half shillings not only bought a new yett lock, but got two yetts repaired also.

The accounts make many references to padlocks, which came in multiple types and sizes. Again, the records do not give a great amount of detail. A 1497 entry lists a payment of four shillings and two pence for ‘two hanging locks to the treasure kist’. Larger hanging locks seem to have been considered higher security. In 1541 there was a payment ‘for three great hanging locks to the prison house door in the castle and ane to the head of the tower upon the iron yett, price the piece xx s.’

Size was not the only differential in padlocks. There were various forms of padlocks available at any given time. This might be represented by terminology. As shown above, some padlocks were called hanging locks. Others were known as paddock locks, as a 1568 payment for ‘paddock locks to the castle of Dunbar,’ shows. A paddock was a frog. This is probably where ‘padlock’ comes from. In Germany, the word for padlock is ‘vorhängeschloß’. Whether or not hanging and paddock locks were different is not disclosed by the records.

The accounts also mention chest locks. In 1503, there was an entry for locks and keys to two pairs of coffers, which cost ten shillings. In 1504, seven locks and seven

20 TA, p. 348
21 Ibid., p. 164
22 Ibid., p. 365
23 Ibid., p. 487
24 Ibid., p. 120
25 Ibid., p. 362
keys for ‘the kists in the wardrobe’ cost fourteen shillings. In 1503 a kist lock was about two shillings.

Press locks, which were locks for cabinets, are also listed. In 1512 there was a payment of twenty-eight shillings for six bands and three locks for the queen’s presses. Each cabinet door needed two bands, or hinges and one lock. The furniture for a single cabinet door cost nine shillings and four pence.

There were various entries for new keys being made. Keys were not mounted to buildings and therefore easily lost or damaged. One example of many is the 1491 payment of twelve pence for ‘ane new key and the mending of ane other lock.’ It is unfortunate the clerk did not give separate prices for the entries of new keys. Perhaps new keys were only ordered when other work had to be done?

Aside from locks, the accounts make References to architectural hardware which might have been made by locksmiths. Locks needed fixtures in order to work. One 1495 entry illustrates this by mentioning a payment of two shillings for a lock, staple and nails. The nails were fastening the lock to the door. Once through, the ends of the nails would have been peened over to prevent their removal. The staple was an iron bar with each end set into the door jamb to give the lock’s bolt purchase on the jamb (see Figures 6.5 and 6.6). A 1503 entry refers to Edinburgh locksmiths making locks and bands for ‘the Friars of Stirling’. In 1504, twelve pair of bands and twelve pair of crooks were purchased for Lochmaben, along with six locks. This would have kitted out six doors for the price of eight shillings.

A later entry from 1513, gives some insight into how crooks and bands were mounted. A payment was made for ‘lead to the crooks’. After the hole was bored in the stone, lead would have been inserted. The spike of the ‘L’-shaped crook would then have been driven in, forcing the lead into the crevices and creating a tension hold on the

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26 TA, p. 423
27 Ibid., p. 378
28 Ibid., p. 184
29 Ibid., p. 228
30 Ibid., p. 250
31 Ibid., p. 280
32 Ibid., p. 523
iron crook. The door, which would have had the bands attached by nails, would then have been set on the crooks.

The *Accounts of the Masters of Works* is a similar source to the Lord High Treasurer’s accounts, dealing only with the building and repairs done on royal palaces and castles. It lists many similar references to locksmiths’ products, though often with more detail and better descriptions. The door locks included pass locks, through locks, great through locks, chamber door locks, privy locks, stable door locks, plate locks, double plate locks, boss plate locks, stock locks, pipe stock locks and great stock locks. Padlocks included hanging locks, hanging boss locks, great hanging boss locks, paddock locks, great padlocks, lesser padlocks, little padlocks and padlocks for yetts. Cabinet locks included press locks, button locks, single button locks, bordered button locks and almirie locks. There were kist and chest locks. There were pipe keys, great keys, stock-lock keys, triple, double and single keys. Shields were often included.33 Crooks, bands, snecks, sneckheads, staples and jamb bands are all mentioned.34

**Table 15** in the appendix shows a partial sample of prices for a few varieties of locksmiths’ products listed in the *Accounts of the Masters of Works*. The evidence is too sporadic and varied to be positive, but the data does seem to indicate a pronounced increase in the cost of locksmiths’ work from the 1530s to the 1630s, which was, for the most part, significantly greater than the rise in price over the same period of basic foodstuffs. In 1540, a basic stock lock cost only five shillings. By 1612, the price was sixteen to twenty shillings. In 1640, a stock lock cost eighteen to thirty shillings. Chamber door locks also increased. In 1532, they were one to five shillings a piece, but by 1629, they were twenty-four shillings. Larger house door locks went from four to five shillings up to three pounds, six shillings and eight pence. Keys are the most striking, as they went from sixteen to eighteen pence all the way up to between six shillings and thirty shillings. Within any of these categories there would have been variation of quality. Locksmiths’ products were becoming more expensive.

33 A shield was an escutcheon, or a small metal plate which reinforced the key hole. Pride, G. L., *Scottish Building*, 1996, p. 69
34 *MWA*, 1957 and 1982
Table 16 in the appendix is a sample of daily wages taken from Gibson and Smout's *Scottish Economic History Database, 1550 – 1780*. The daily wages for all four categories — smiths, wrights, masons and workmen — significantly increased between 1559 and the early decades of the seventeenth century. The rise in wages for skilled craftsmen such as smiths, however, was significantly greater than that for ordinary labourers and the gap between these two groups in the workforce continued to widen in the 1620s and 1630s. As can be seen in Table 17, the increase in the price of bread was broadly in line with the rise in wages of ordinary workmen over the same period, part of a deliberate policy on the part of the council to keep the price of wheat bread stable in real terms. If the prices of locks, as shown in Table 15, were increasing, while the income of smiths was also increasing, and the price of a staple such as bread was stable, then it would appear that locksmiths in the later early modern period would have had more disposable income than their sixteenth century counterparts. This is corroborated by the increase in locksmiths attaining guild brethrenship (see Chapter 2).

**European Locksmiths' Products**

There are many foreign sources for looking at the metalwares produced by locksmiths. While not Scottish, these are still important, as a comparison of surviving locks and keys with provenance shows that Scottish locks were not that dissimilar from other European types of locks and keys. An interesting English account, written by Richard Neve in 1726, lists the following types of locks:

- Stock locks plain from 10 d. to 14 d. per piece or more
- S-bitted stock locks with a long pipe, 1 s. 6 d.
- S-bitted and warded stock locks very strong, 7 s.
- Brass locks from 5 s. 6 d. to 9 s.
- Brass-knobbed locks in iron cases, 3 s.
- Double-springed locks, 1 s.
- Closet-door locks, 1 s. 4 d.
- Pad, (or secret) locks with slits instead of pipes, 1 s.

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35 *SEHD, 1550 – 1780*
Plate stock locks 3 s. 8 p. some ditto for half that price
Plate stock locks in shute, 4 s. 6 d.
Brass-knobbed locks in shute, 6 s. 6 d.
Iron rimmed locks very large, 10 s. 6 d.
Some locks, made of iron and brass of 50, nay £100 per lock.36

Neve states that it ‘were endless to mention them all,’ so his list is not comprehensive. It does give an interesting sample of what was commonly available in eighteenth century England. Stock locks seem to have been the most common, as Neve listed six varieties of them. Rim locks, such as the brass and iron locks accounted for four types. Smaller locks, such as spring locks and closet door locks only gave two entries and the padlock only one. Neve was writing a builder’s dictionary, so the fact that the ten of the thirteen locks discussed were substantial door locks might represent Neve’s bias; the sample might not represent the English lock market, so much as the builder’s section of that market. Chest locks and the many varieties of padlocks are not represented.

The prices given by Neve show that plain stock locks were the most economical. Spring locks, which were usually for chamber doors,37 and padlocks, were the next cheapest at a shilling each. Above these came closet-door locks, s-bitted stock locks and brass-knobbed locks in iron cases. An ‘s-bitted stock lock’ refers to the shape of the key hole. The profile of the key’s bit was ‘S’-shaped. The key hole was therefore an ‘S’ under a round hole. The long pipe refers to the length of the key. Brass-knobbed locks in iron cases were more expensive due to the amount of metal used, compared to a wooden stock lock.

Plate stock locks were basic plate locks which were set inside a wooden case, or ‘shute’.38 Like plain stock locks, they were not encased completely in metal; unlike stock locks, the metal parts were mounted on a single iron plate. Plate stock locks, such as ‘MJ 234’, in Figures 7.36, 7.37 and ‘MJ 292’ in Figure 7.38, clearly used more metal that plain stock locks, such as the one in Figure 7.41. Reduction of iron lowered the cost, but even plate stock locks got slightly more expensive with the addition of the protective wooden shute.

36 Neve, R., Purchaser, 1969, p. 194
37 Moxon, J., Mechanick, 1989, p. 22
38 The best discussion of stock locks, both plain and plate, can be found in Hume, Artifacts, p. 245
The brass-knobbed locks in shute are more curious. This might indicate that they were a form of plate stock lock with brass knobs and a latch bolt. Perhaps the term shute had another meaning.

Brass-cased locks were in use from the late seventeenth century,\textsuperscript{39} and were expensive due to their solid, cast brass case. Brass and wood were more resistant to the elements, as were stock locks.

While plain stock locks were the cheapest lock listed by Neve, their fancier s-bitted and warded counterparts were among the more expensive locks. Stock locks were also resistant to the elements, due to their wooden case. Particularly strong ones with good warding were ideal for municipal buildings.

The most expensive locks were the large, iron-rimmed locks and the fifty to one hundred pound iron and brass locks. These had more metal and probably better construction. The latter group probably cost so much due to fancier workmanship.

The pattern of cost shown by Neve’s account of English locks closely resembles some of the price differentials shown in Scotland’s, \textit{Accounts of the Masters of Works} (see Table 15). English stock locks in 1726 varied from ten pence to seven shillings.\textsuperscript{40} Scottish stock locks in 1629 varied from ten shillings to thirty shillings.\textsuperscript{41} There was a spectrum of quality available.

Diderot’s encyclopaedia of trades is another source of locksmiths’ work. The section entitled ‘Serrurier’, includes fifty-seven plates and twelve pages of notes on mid-eighteenth century locksmiths’ work in France. The plates include pictures of locks, keys, architectural hardware and tools. One interesting item shown in three figures from plate IV, is the wall anchor.\textsuperscript{42} Wall anchors were an architectural feature used for holding walls together. Due to the weight of roofs, walls often get pushed outward. Wall anchors were iron anchors attached to inner beams (see \textbf{Figure 6.11}). They kept the walls from spreading. \textbf{Figure 6.9} shows Diderot’s wall anchors. The fact that these are included under ‘Serrurier’ is significant, as this might indicate that locksmiths in

\textsuperscript{39} Hume, \textit{Artifacts}, p. 246
\textsuperscript{40} Neve, \textit{Purchaser}, p. 194
\textsuperscript{41} MWA
\textsuperscript{42} Diderot, D., ‘Serrurier’, c.1751 – 72, Plate IV
other countries also made wall anchors. In James Court, in the Lawnmarket of Edinburgh, there are three wall anchors visible (see Figure 6.12). A Swedish wall anchor of a similar design can be seen in Figure 6.10. If French locksmiths made wall anchors, it is possible that the ones in James Court were made by Edinburgh locksmiths.

Services

The second category of locksmiths’ work was services. The Incorporation of Hammermen’s minute books not only talk of the products of the locksmiths, but also the services they provided. One early entry from the first volume talks of a payment for ‘mending of the weekly box, the lock and the key...vijd.’\(^{43}\) As it was only a repair, there was little overhead cost from iron expenses and the cost of the job was less than half the cost of a new lock and key. Iron was precious and needed to be recycled when possible.

The *Accounts of the Lord High Treasurer of Scotland* also give details of the service side of locksmiths’ work. In this source, many of the entries were for repairs of locks. In 1488 there was a payment for the mending of the locks and keys to the boxes ‘that the Abbot of Arbroath had, iii s.’\(^{44}\) In 1501 there was a payment ‘to auld Alexander Tulloch for mending of two locks in the king’s place in the abbey...ij s.’\(^{45}\) The frequency of lock repairs in the Lord High Treasurer’s accounts might be indicative of how valuable iron was at this time. Wealthier countries, such as England, also repaired of locks occasionally.\(^{46}\)

Another service shown in the Lord High Treasurer’s accounts is lock picking. Keys were easily lost and locksmiths had the technical knowledge to open the locks. In 1488, there was a payment to a smith who opened several locks. The entry states that the smith was paid ‘in gold forty demyis.’\(^{47}\) One demy was equal to nine shillings,\(^{48}\) so

\(^{43}\) Smith, *Hammermen*, p. 5
\(^{44}\) *TA*, p. 88
\(^{45}\) Ibid., p. 112
\(^{46}\) This is indicated by an English locksmith’s bill from 1709, shown in whole in Eras, V. J. M. *Locks and Keys*, 1957, p. 60
\(^{47}\) *TA*, p. 83
the smith received 360 shillings for picking an unspecified number of locks. Just as is the case today, there was a high fee for a locksmith travelling to open locks. This is due to the time consumed by a smith leaving his work to go to the site where the locks to be opened are and then making the lock pick to open the mechanism.

Locksmiths also travelled to deliver work that was contracted from outside the burgh. In 1501 there was a payment ‘to the locksmith of Edinburgh, for carrying of part of locks to Stirling to the Gray Friars,…viij d.’

Considering that the smith was paid only eight pence, it is hopeful that he was going that way anyway.

One service that the locksmiths did not provide was installation of locks. In 1491, the Accounts of the Lord High Treasurer of Scotland list the following: ‘Item, for a bolt of iron and lead and to a mason to make a hole and put the bolt in…viij d.’

The iron bolt would have been made by a smith, but the installation required a mason. Such a bolt hole can be seen in a door jamb at Mylne’s Court, which was apparently built in 1690 (see Figure 6.7). Bolt holes, slots and staples (see Figure 6.5 and 6.6) were used to hold the locked bolt when it extended from the door’s lock or draw bolt. The nature of bolt holes required masonry skills and therefore the locks were probably installed by craftsmen in the building trades rather than locksmiths. In 1507, a wright was paid for a key, which he probably had paid a smith to make for him.

Other entries in the Lord High Treasurer’s accounts show wrights being paid for locks. In much the same way that lorimers made parts for saddlers, locksmiths made parts for builders; they did not install the locks themselves.

The Accounts of the Masters of Works also gives references to locksmiths’ services. The main service was repairs. Locks were mended and new keys made. Sometimes the warding was changed and the key redone to suit. Table 15.1 in the appendix shows a partial sample of prices listed in the Accounts for having a locksmith

48 Bateson, D., Scottish Coins, 1987, p. 8
49 TA, p. 112
50 Ibid., p. 184
51 This is from the third floor, north side, west flat off the common stair. The north side of the Mylne’s building might be earlier than 1690. Pinkerton, R. M., and Windram, W. J., Mylne’s Court Three Hundred Years of Lawnmarket Heritage, 1983, p. 22
52 TA, p. 382
repair a lock and make a new key. As with the prices of locksmiths' products shown in Table 15, the data for Table 15.1 also seems to indicate an increase in the cost of locksmiths' work from the 1530s to the 1630s. In 1540, the price for mending the lock and making a new key was only one shilling and four pence. By 1612, the price was ten to sixteen shillings. In the 1630s, the service cost between four and eighteen shillings. The prices would have varied, depending on the extent of the lock's damage and the complexity and size of the key. Locksmiths' services were becoming more expensive in real terms.53

Locksmithing: A Look at the Processes

To be able fully to understand the work of a locksmith would require doing an apprenticeship and working in the trade day by day. While this study may never fully appreciate the experience of early modern locksmiths, it can attempt to look at some of the more intricate concepts involved in making locks and keys. Due to the nature of their work, these might never have been labelled; they may have taken these fundamental concepts for granted.

The first concept is security. When making the locks and keys, the smith was trying to outsmart criminals. A locksmith could have looked at a lock and known right away how high of security the mechanism was. Unfortunately, a thief who knew how to pick locks also understood this concept. Much of early modern security was therefore based on deception. Hiding the key holes, or putting false key holes, were common examples.

Another important concept was that of ‘mechanical motion’, or ‘travel’. Locks were complex mechanisms. If one part was slightly misplaced, then there would be friction on the parts and the mechanism would bind up, in either the locked or unlocked position; travel was impeded. Locksmiths therefore had to ensure that all parts moved exactly the way they were supposed to move, to exactly the correct distance. This

53 MWA. This is again shown by Gibson and Smout's database as presented in Table 16 in the appendix. SEHD, 1550–1780
concept could also work in favour of a locksmith. If a lock was not working, the smith could simply use reason to discover the problem. There was guaranteed to be a logical explanation somewhere in the workings of the lock.

Sometimes, it was more economical to sell a new one. The old, malfunctioning lock could be recycled, as iron was valuable. If a locksmith spent all day fixing a lock which would bring him only seven pence, when he could have been producing a new lock that would bring in fourteen pence, then it is obvious which job should be given precedence. Locksmiths were businessmen and the shrewder the smith, the more wealthy and affluent he would have been. Along with the skills taught in the master’s shop, the apprentice would have had to learn these concepts to make his trade viable.

Joseph Moxon, in his 1678 book Mechanic Exercises, gave a detailed account of how a type of chamber-door lock, known as a ‘spring lock’, was made in England. Chamber-door locks were intended for use inside houses, on doors for chambers. They are often differentiated from house-door locks, which were used on the main door to the close, turnpike or street. Moxon’s text was accompanied by a detailed picture, reproduced in Figure 6.13 in the appendix. The explanation of Moxon’s illustration is key to understanding the process and is therefore given in whole:

In Fig 2. ‘AAAA’ the main plate, ‘BC’ the key hole. ‘EDE’ the top hook, ‘EE’ cross wards, ‘F’ the bolt, ‘G’ the bolt toe, or bolt nab. ‘H’ the draw-back spring, ‘I’ the tumbler, ‘K’ the pin of the tumbler, ‘LL’ the staples.
In Fig 3. ‘AAAA’ the cover plate, ‘B’ the pin, ‘BCD’ the main ward, ‘DD’ cross wards, ‘E’ the step ward or dap ward.
In Fig 4. ‘A’ the pin hole, ‘B’ the step, or dap ward, ‘C’ the hook ward, ‘D’ the middle, or main cross ward, ‘EE’ the cross ward, ‘F’ the main ward, ‘GG’ cross ward, ‘H’ the shank, ‘I’ the pot, or bread, ‘K’ the bow ward, ‘L’ the bow, ‘BCDEEEFGG’ the bit.\(^\text{54}\)

The first step, according to Moxon, was to cut out a section of iron plate for the main plate (Fig. 2. ‘AAAA’). This was done using a cold chisel (see Figure 5.14, ‘Fig. 73’) and a cutting plate set on the anvil. The plate chisel was struck with a hammer, cutting out the shape of the main plate.

\(^\text{54}\) Parentheses added, punctuation and spelling modified for the sake of clarity. Moxon, Mechanick, p. 23
The locksmith then decided what ‘depth’, or length, he wanted the key’s bit (Fig. 2. ‘BCDEEFGG’) to be. This refers to the distance from the centre of the key to the edge of the bit. This decided how big of a radius the key’s orbit would have and therefore determined where the bolt would have to be put. It also decided the size of the key hole. The depth was marked out on the main plate with a compass. The centre was where the key would rest in the lock and the other arm was where the bit would travel around to engage the bolt. Moxon told his readers to leave ‘about half an inch of plate between the bottom of the key hole and the lower edge of the main plate’.\footnote{Moxon, Mechanick, p. 23}

With the main plate set aside, the locksmith next cut out another section of iron plate for the cover plate (Fig.3. ‘AAAA’). The cover plate formed a backing for the lock. The pipe key would pass through the key hole in the main plate, make contact with the cover plate and stop in the correct position to turn around inside the lock. The cover plate was to be cut out with two wing-like pieces which were bent at right angles (Fig. 3. ‘FF’ and ‘GG’) in the vice. These formed legs so that the cover plate could stand off of the main plate. The distance between the two plates was to correspond with the size of the key’s bit, which travelled around between the two plates. On the foot of each leg of the cover plate (Fig. 3. ‘GG’) a hole was punched for later riveting to the main plate.

In the middle of the cover plate, the centre was found. A compass was used to find the positions of the warding. The first arc (Fig. 3. ‘DCD’ in \textbf{Figure 6.13}) marked out the position of the main ward in the lock. The compass was then set to a little more than half the diameter of the key’s shank and another arc was scribed onto the cover plate. This arc (Fig. 3. ‘E’) marked out the position of the step ward, or dap ward.

With the positions laid out on the cover plate, the smith next had to make the actual wards. Moxon described this section of the process as follows:

\begin{quote}
you must take thin plate and with hammering and filing make them both... hammer-hard and of equal thickness all the way. Then file one edge very straight, by laying a straight ruler just within the edge of it and drawing, or racing with a point of hardened steel, a bright line by the side of the ruler. File away the edge of the plate to that line, then draw...another straight line parallel to the first
\end{quote}
straight line, or which is all one, parallel to the filed edge, just of the breadth you intend the wards shall be and file as before, only, you must leave two, or sometimes three studs upon this plate, one near each end and the other in the middle, to rivet into the main plate, to keep the ward fixed in its place.\textsuperscript{56}

The wards started out as rectangular strips of thin iron plate, with two or three studs projecting uniformly from one side. Moxon stated that the wards were to go on the main plate, though he had originally started off talking about the cover plate. His illustration (Figure 6.13) shows the warding on both plates.

The smith next had to shape the strips into a partial circle, or ‘C’ shape. This happened at a small type of anvil, known as a ‘bickern’. Moxon carried on describing this process:

Then laying the plate a-thwart the pike of the bickern, hold your hand even with the face of the bickern and hammer this plate down somewhat by the side of the pike and by degrees you may (with care taken) bring it unto a circular form, just the size of that circle you described on the main plate; which when done, you must apply this ward to the circle you described on the main plate; setting it in the position you intend it shall be fixed and marking with a steel point where the studs stand upon that circle, in those marks punch holes to rivet the studs to.\textsuperscript{57}

This process was repeated as many times as there were wards in the lock. Once in place and the holes punched, the work would have been turned over, set on an anvil and tapped with a hammer until the studs collapsed around the outside of the hole; in this manner the wards were riveted onto the plate.

The next stage of the spring lock, was the pin, or post, in the centre of the key hole (see the post in the centre of the key hole of the boss lock in Figure 6.1). First a hole had to be punched through the centre of the cover plate, somewhat smaller than the wire you are to make your pin of, because you may then file one end of the pin away to a shank, which must fit the smaller hole on the plate and the whole thickness of the pin will be a shoulder, which will keep the pin steady in the centre hole of the plate, when the pin is riveted to the plate.\textsuperscript{58}

\textsuperscript{56} Moxon, Mechanick, p. 24 - 5
\textsuperscript{57} Ibid., p. 25
\textsuperscript{58} Ibid., p. 25
With a small section of the end of the pin filed down to a smaller diameter, the end was then put through the hole until it could not go any further. The cover plate was then turned over and the pin set on the anvil or in the vice. A hammer was used to crush the protruding, filed-down end of the pin around the hole of the plate. This process was known as peening, or riveting. As the metal was hammered, it expanded, making it impossible to be withdrawn through the hole again. In this manner, the pin was fastened upright onto the cover plate.

The cover plate section was then set to the side, while the key hole was either punched or drilled. This depended on how delicate the warding around the key hole was. If drilled, then two small holes were drilled close to one another and a series of files used to expand the hole until it was the correct diameter for the key.

At this point, Moxon mentioned the making of the key, which he did not go into much detail on. Sometimes the key was already made before the lock; sometimes the key was made to an existing lock. Moxon describes the key-making process in several broad steps: forge the key, drill the end of the shank to form the pipe (see Figure 5.13) and cut the wards, which were the clefts for passing over the warding. Moxon states that the wards were made by heating the key and punching out the clefts. Files were then used to bring them to the required width and depth. The key would then be cleaned and polished.59

The bolt (Fig. 2. ‘F’) was the next step in making a spring lock. Moxon wrote ‘you must forge the bolt of a considerable substance, thick and square at the end that shoots into the staple in the frame of the door, that it may be strong enough to guard the whole door...’60 The rest of the bolt was a complex shape, which is not easily deciphered from Moxon’s illustration (Figure 6.13). His description is slightly clearer:

the rest of the bolt that lies between the two staples on the main plate, may be made very thin inwards, that is, the side that lies towards the main plate, which because it cannot be seen when the bolt is fixed upon the plate, I have made a figure of it and turned the inside to view, as in ‘Fig. 4.’ where you may see, that the end ‘A’, hath a considerable substance of iron to guard the whole door, as aforesaid and ‘B’ is a square stud, which doth as well keep the outside flat of the

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59 Moxon, Mechanick, p. 28 - 9
60 Ibid., p. 29
bolt on the range, as serve for a stud foe the spring ‘H’ in ‘Fig. 2.’ To press hard against and shoot the bolt forwards: This bolt must be wrought straight on all its sides, except the topside, which must be wrought straight only as far as the shoulder ‘G’, called the toe, or nab of the bolt, which rises, as you see in the figure, considerably high, above the straight on the top of the bolt... 61

The purpose of the toe, or nab, was to catch on the end of the key’s bit when it was turned around in the lock. The key pushed on the toe, which made the bolt slide over to the open position.

Once the bolt was forged and cleaned with files, the hollow side was placed against the main plate for fitting. The placement of the bolt required precision ‘that when the key is put into the key hole and turned towards the bolt, the bottom of the bit may fall almost to the bottom of the nab and shoot the bolt back so much, as it needs to enter the staple in the door frame.’ 62 The bolt was attached by staples, which had to be perfectly placed so that the key met the bolt at the exact distance of the key’s bit from the key’s stem. When the key was vertical, it should have been about a half of a millimetre away from the bottom of the bolt. When the bolt’s ‘true place’ was found, the holes for the staples which held the bolt were punched and the staples riveted over the bolt to the main plate. The bolt was then attached, but able to move back and forth easily; this was the concept of ‘travel’.

Next, a hole was punched in the main plate for the tumbler pin (Fig. 2. ‘K’). This pin was to hold the tumbler (Fig. 2. ‘I’) in place on the main plate. The tumbler was a long piece of iron which had a round hole at one end for pinning to the lock. The tumbler acted as a lever and transferred the energy from the spring (Fig. 2. ‘H’) to the bolt; it kept the bolt in the closed position until moved by the key.

The spring was made of steel. It was held in place by two small tabs which fit into punched holes in the main plate. The tabs were riveted in place at ‘O’ and ‘O’ at Fig. 2. in Figure 6.13. Four holes were then punched in the four corners of the main

61 Moxon, Mechanick, p. 29
62 Ibid., p. 30
plate for screws or nails. Last of all, the cover plate was riveted in place over the key hole and finishing work done for aesthetics.63

Similar types of locks and keys are found in collections across Europe, indicating that the English methods were employed elsewhere. Figure 6.14 shows a double-bolted version from Johannes Keppler Haus in Regensburg, Germany. Spring locks were basic mechanisms for internal doors, but they still illustrate the methods used to produce all locks.

Surviving Material Culture

In early 2002 I was given the opportunity to do some volunteer work for the National Museums of Scotland, cataloguing its collection of locks and keys. This task took about two and a half years and yielded the 282 pages of data in the appendix. The majority of the NMS collection is used here as a rough sample of lock and key material culture. For the work of Edinburgh’s locksmiths, it is not an entirely representative sample, but it is the best sample available. It does represent the material culture used in Scotland and in many cases Edinburgh. Material culture is an often neglected historical record. Alone, it falls short of accuracy, but used in conjunction with the previously discussed records, the NMS sample can give a new perspective to understanding what the locksmiths did in the early modern period. The sample can also give a clearer view as to how close Scottish lock and key material culture matches its European counterparts.

NMS Sample

The NMS sample consists of 276 objects.64 These ‘objects’ are sometimes single pieces and sometimes groups of up to twenty-five connected pieces. An object might be a fragment of a lock, a lock with a key, or a key chain with eleven keys on it. The term ‘object’ is meant to represent an isolated unit. In actual numbers, there are more than

63 Moxon, Mechanick, p. 31
64 This is only a sample of the locks and keys in the NMS; objects on display or grossly outside the time period of this thesis were avoided.
302 keys, eighty-two locks and three key-related items, but for statistical purposes the sample was grouped into 276 objects. Of these 276 objects, 245 are thought to be Scottish in origin and thirty-one are thought to be foreign. The 245 were used in Scotland, but with a thriving merchant community throughout the early modern period, it is difficult to be sure that they were in fact produced here. Several objects are very similar in style and form, possibly indicating that they were made in the same booth.

Table 13.1 in the appendix shows the breakdown of the NMS sample. It consists of 163 Scottish keys, twenty-eight foreign keys, seventeen Scottish door locks, no foreign door locks, fifty-four Scottish padlocks, three foreign padlocks, seven Scottish chest locks, no foreign chest locks, one Scottish cabinet lock, no foreign cabinet locks and three 'other' lock and key related items from Scotland.

One problem with using objects as historical documents is the question of survival and representation. Scotland's climate is not conducive to the survival of iron objects, especially ones mounted on external doors. Keyholes, windows, cracks in walls and anything that allowed a draught, brought moisture to un-tinned metal surfaces, encouraging corrosive rust. Another factor in survivability was the comparable poverty of Scotland. Metal was expensive and therefore recycled whenever possible. If locks were fancy, then they were saved and no doubt there are many beautiful locks held in private collections across Scotland; the NMS hold a fraction of the surviving material culture. Whether destroyed by the elements, recycled, or kept as heirlooms, the majority of Scotland's locks and keys did not make it into the NMS collection, which makes the sample even more unrepresentative. It has already been discussed that kist and chest locks were the primary essay for apprentice locksmiths seeking freedom of the Incorporation from at least 1586 to 1684, but only seven chest locks are included in the NMS sample. Pass locks were the essay from the late seventeenth century to well beyond 1750, though only seventeen door locks are shown by the NMS sample.

Another factor in survival and representation is that people often save the aesthetically pleasing items and therefore collections are missing the everyday, plain objects. Museum space and funding is limited. Objects have to be significant enough to be worth spending this space and funding on them. While museums today are better at
realizing that it is not always the ‘pretty’ objects that tell the best story, many of the objects probably belonged to the early collections of the Society of Antiquaries of Scotland, which were founded in 1780, and are therefore already biased.65

These problems do not make the NMS sample irrelevant though; written documents often do not survive either. There are no specifically urban records for Scotland predating 1398,66 though burghs had been in Scotland since at least the time of David I (1124 – 1153). Many burgh records do not predate the sixteenth century.67 While the historical documents, both written and material, do not always give a complete picture, the patterns of survival in themselves can be interesting.

**Keys**

As can be seen in Table 13.6, keys make up 67 per cent of the NMS sample of Scottish objects. Keys are by far the most numerous objects in the NMS sample. Their survivability is probably so high due to their size. They were easily lost and therefore, highly replaceable, leading to more keys. They were also easily found with metal detectors and archaeology.68 Their size made for non-obtrusive antiques. While a lock might have been recycled, keys were easier to keep, as they did not get in the way, were aesthetically pleasing and made ‘pretty’ collections. There are more keys than locks in the NMS sample, because more keys were made, at least one per lock and more were kept.

Keys are a difficult object to classify, as there are dozens of variations. They could have been shank keys, pipe keys, or latch keys. Each of these types also could have been either, a cabinet key, a rim key, a padlock key, or even a stock-lock key. The combinations of just these few examples are bewildering. For the purposes of this study,

68 Metal detectors have been responsible for the destruction of many archaeological sites and are a shameful waste of our archaeological heritage. By digging for metal artefacts, all provenance is destroyed for future digs.
the keys will be divided into the following broad categories: shank keys, pipe keys, stock-lock keys, key groups, ceremonial keys, latch keys, watch keys, safe keys and 'other'.

Shank Keys

Shank keys is a broad reference to the basic type of pivot key used since Roman times. Figure 4.12 in the appendix shows two varieties of shank keys. The grey key on the left is the type of shank key often referred to as a rim-lock key. This is the basic idea of a shank key. The darker key on the right is a specific type of shank key called a stock-lock key, which will be discussed further on. Shank keys are usually noted by having a solid, cylindrical section which is thrust inside the lock. Extending from this section, known as the 'shank', is the bit. Shank keys fall under the even broader category of pivot keys, as they are meant to be turned on a central axis to operate the lock. Shank keys are still used today, though greatly modified. Of the 163 keys in the Scottish objects of the NMS sample, thirty-seven were grouped into shank keys, or 23 per cent.

Pipe Keys

Pipe keys are keys with hollow stems (see Figure 6.19). The locks they operated had pins or posts in the key holes (see Figure 6.1). Pipe keys offered greater security due to the pins blocking the key hole. While a pipe key could enter the lock by sliding over the pin, lock picks had to find a way to circumvent it. The only other alternative was to make a key with the exact same outer and inner diameters as the true key; a task not easily done without arousing suspicion while going back and forth to check the progress of the pick. Pipe keys, such as the example shown in Figure 7.7, were also pivot keys. It is interesting how many pipe keys are in the NMS sample. They account for 51 per cent of the Scottish key-objects (see Table 13.8 in the appendix). While more complicated to make than shank keys, the security was better.
Stock-lock Keys

Stock-lock keys are a specific type of shank key. It should be noted that not all stock locks used stock-lock keys; some used pipe keys or plain shank keys (see Figures 7.41 and 7.49, 'MJ 298'). The distinctive characteristic of a stock-lock key was the positioning of the shoulder.69 Figure 4.12 in the appendix shows a plain shank key on the left and a stock-lock key on the right. The arrows indicate the positioning of the shoulders, which were the sections which stopped the key from going too far into the lock. The shoulders lined up the key to pivot towards the bolt. On shank keys, the shoulder was behind the bit. The shoulder stopped against the outer metal plate of the lock, with the bit completely inside. Stock-lock keys had the shoulder half or a quarter of the way across the bit. The entire shank, shoulder and part of the stem entered the lock and came to rest on the main ward. While a shank key needed at least three plates of iron, two outer plates to stop the shoulder from either side, and an inner main-ward plate to ward off false keys, stock-lock keys only needed one iron plate. The main ward stopped the key and warded off false keys at the same time.70

Stock-lock keys made up 18 per cent of the Scottish key-objects in the NMS sample. This is a remarkable survival rate considering the inexpensive nature of stock-locks. In 1640, a key for an iron lock was twelve shillings, but a key for a stock lock was only eight shillings. A pipe key for a piped stock lock was six shillings.71 Stock lock keys are shown in Figures 7.36 to 7.50 in the appendix.

Key Groups

Groups of keys offer an interesting challenge to classification in material culture studies. One such group, 'K 2002.348', shown in Figure 7.28, consists of four types of keys:

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69 Hume, Artifacts, p. 245, 248
70 The best study of stock locks was done by Ivor Noël Hume, in his book A Guide to Artifacts of Colonial America. Ibid., p. 243 – 52
71 MWA, 1982, p. 396
shank (2, .3), stock-lock (.1), pipe, (.4, .5, .6, .7, .8) and a possible safe key (.4). Two of the keys are for lever locks (2, .4), while the others are all of the warded type common in the early modern period. This group, however, probably dates to the nineteenth century. Should this group be broken up and added to the data of each individual item? Instead, this study will view the group as a whole; a single object of great importance. Not only does this group show us the physical signs of manufacturing processes, but they also show us what locks the consumer used. The owner probably did not know the difference between a stock-lock key and a pipe key, but they did know what their doors kept safe. The owner of this group, if in fact the group was not altered before entering the National Museums' care, might have had a safe, two modern lever locks and several large door locks. They had eight doors with large, modern locks. The information sheet in the appendix for 'K 2002.348' shows that the group was found unregistered in the museum, illuminating one of the problems of using objects as documents. One of the keys was stamped by Bryden, though, so this tells us that they probably have an Edinburgh origin. Bryden was a bell hanger in Rose Street in the early 1800s.72 (See conclusion for more information, NMS) The fact that a group of such expensive, large locks was used in Edinburgh in the nineteenth century offers a stark contrast to the large quantity of cheaper stock-lock related keys. Perhaps at this time period, Edinburgh was more affluent? Edinburgh definitely was keeping up with the latest technology, as one of the lever locks came from a Rose Street shop in the New Town.73

Another, equally interesting group is ‘L.1927.14’. This group of six keys belonged to the Edinburgh Incorporation of Candlemakers. It is dated 1812 and consists of one shank key for a door and five pipe keys for either doors, cabinets, trunks, or padlocks. The Candlemakers were one of the humblest incorporated trades, yet by 1812 they owned or rented at least one property. They also had possessions valuable enough to be locked up with a state-of-the-art lever lock. They were organized enough to have keys belonging to the whole incorporation, not individuals. Keys are often shown in paintings as status symbols. Town magistrates often posed for portraits holding them.

72 See conclusion for more information. NMS
73 NMS, K 2002.348.4
The keys to Edinburgh were conventionally presented to the monarch at the Overbow or West Port at royal entries. Pictures of towns surrendering after a siege often show the town’s mayor or provost handing over the keys of the city. Incorporation officials received keys upon taking office. This group of keys (see Figure 7.25) had a great deal of significance to a group of craftsmen.

Ceremonial Keys

Two of the Scottish key-objects were purely ceremonial. While town magistrates or conquering generals were often given keys as a symbol, they usually were functional also. Ceremonial keys are different in that they are not intended to open any lock; they are simply for show. One of these, ‘MJ 265’, is shown in Figure 7.27. Note the flat section of stem where a nameplate once was. These two keys make up about 1 per cent of the Scottish key-objects in the NMS sample.

Latch Keys

There are two Scottish keys which can be classified as latch keys, ‘MJ 202’ and ‘MJ 297’ in Figure 7.27. The latter is for a type of lock commonly called either a ‘French latch’ or an ‘Edinburgh latch’. The Edinburgh name is due to the extensive use of this type of lock on Edinburgh’s Georgian New Town. Many escutcheon plates of this type of lock are still visible on doors leading onto the streets there. ‘MJ 297’ was found in East Lothian. The other latch key, ‘MJ 202’, is of another type. This one has an ‘S’-shaped section which pivots to slightly beyond a right angle to the stem. Eric Monk, in his book, Keys Their History and Collection, states that ‘The plain but strange key had a simple solid shank loosely pivoted at the last 20 mm and turning back at right angles to the main stem. The key entered a round hole of some 9 mm diameter, the end was

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74 EHMB, ED008/1/1-8
75 Monk, E., Keys, 1994, p. 41 – 3
76 NMS
pushed back by a spring and the key was turned to raise the latch. This latch key came from a house in Edinburgh. Latch keys account for only 1 per cent of the Scottish key-objects in the NMS sample, despite their common use in Georgian times. There are, however, probably a great many in private collections.

Watch Keys

One of the Scottish key-objects is a key for a watch. ‘MJ 182’ can be seen in Figure 7.23. It is only 0.006 per cent of the Scottish key-objects in the limited NMS sample.

Safe Keys

While there are several keys in the NMS sample which might have been for safe locks, many are either part of another object, such as a safe lock, or impossible definitely to call a safe key. Perhaps they only resemble safe keys. One Scottish key is known to have been a safe-lock key, but is unattached to one of the two safe locks in the NMS sample. It is ‘T’-shaped, as if it were a removable turn-crank (see ‘MJ 70’ in Figure 7.22). This means that the 0.006 per cent represented by the safe key is artificially low. There are three other safe keys, at least, included as part of the two safe lock objects.

Scottish Keys in the NMS Sample

The key-objects in the NMS sample represent a long time period. They include Roman keys and modern keys. There is a great variation in the quality represented; there are cheaper stock-lock keys, expensive watch keys and fancy shank-type keys with names of various members of the royal family engraved on them. The majority of them are of the higher security pipe form, demonstrating an attempt to maximise the rather weak security of early modern lock technology.

77 Monk, Keys, p. 42
78 NMS
Door Locks

As can be seen in Table 13.6, door locks make up 7 per cent of the NMS sample of Scottish objects. By the 1680s, pass locks were the main essay piece for Edinburgh locksmith apprentices who wished to become masters, so 7 per cent is lower than expected. As shown in Table 13.3 in the appendix, the seventeen door locks in the NMS sample can be divided into four main categories: rim locks, stock locks, plate stock locks and safe locks.

Rim Locks

Rim lock is a term for any door lock which sits on the face of a door. They were usually placed inside the door, with a hole bored through for the key to reach the lock. These four locks range in date from possibly the early sixteenth century ('MJ 6' in Figure 7.36 and 7.37) to the early nineteenth century ('K 2002.333' which is not pictured in the appendix). Three of the four appear to have been high quality locks, while 'MJ 291', as seen in Figures 7.32 to 7.35, was less substantial and possibly a cheaper lock. The sizes and weights of the other three rim locks, not to mention the decorative work, indicate that this section of the door-lock objects was dominated by the 'survival-of-the-prettiest' mentality that often plagued the antiquarian world.

'MJ 6' is of very heavy construction. It resembles a plate stock lock, but a similar lock found at Lacock Abbey, in England, suggests that it was not used like a plate stock lock. Figure 6.29 and 6.30 are similar mechanisms and were installed directly to the door. Wood was removed from the door, creating a crater which the mechanism sat in. Plate stock locks often had a separate block of wood, resembling a plain stock lock, into which they were mounted. The entire unit was then fastened to the door, making a sandwich around the plate stock lock. 'MJ 6' seems to have been mounted directly to the door, like the Lacock Abbey locks.

79 Hume, Artifacts, p. 245
'MJ 8' is probably the finest lock in the NMS sample (see Figures 6.20, 6.21, 6.22, 6.23 and 7.31). With its all metal construction and intricate decoration, this would have been a very expensive lock. The mechanism had a snib, which could be set to keep the spring bolts inside the lock so that the door could be opened with only the lever handle (see Figure 6.22). It is interesting that there is only one set of warding, though there are two separate ward boxes. The key was a pipe key and could only operate the mechanism from one side. There was a ward box for each side of the door, though both were mounted next to each other (see Figure 6.23). It was doubtful that anyone would ever think about picking the lock from inside of the house, so warding was not included in that ward box. Metal was expensive, so even the finest of locks demonstrates economy in production.

Underneath the lever handle of 'MJ 8' is a circular stamp with the letters 'AM'. It is possible that this might stand for Alexander Mossman, an Edinburgh locksmith, but this is making some broad assumptions. It is not known if this was, in fact, made in Edinburgh and it is not known if it dates to the early seventeenth century, as Mossman did. There are somewhat similar locks in the Old Ashmolean building, in Oxford. They are shown in Figures 6.27 and 6.28 and date to 1683. It is possible that the decorative floral border on 'MJ 8' might pre-date the non-bordered Oxford locks, but it should be noted that border work was still being used in Ulm in 1732 (see Figure 6.31). Unfortunately, the finest lock in the NMS sample has no provenance. It still reflects the preciousness of iron in early modern society through its lack of unnecessary warding.

Stock Locks

Of the seventeen door locks in the sample, stock locks are the most numerous, with nine objects. The inexpensive nature of stock locks and minimalist usage of iron parts in a wooden frame has already been discussed, so why do these cheap, wooden locks survive so well? It might be because the environment was kinder to the wooden case than the metal rim locks. Moxon stated in 1678 that stock locks were used on outer 'street
doors but this might have been a generalization. In 1623, stock locks were listed in the *Accounts of the Masters of Works* as being put on inner chamber doors. Stock locks were already less affected by the environment than iron cased locks, so indoor stock locks had a better chance of survival.

Stock locks were certainly recycled. In 1633 there were several references to mending stock locks in the *Accounts of the Masters of Works*. Sixteen shillings was paid for 'ane key for ane stock lock and for translating of the lock', meaning that they changed keys and made the inside of the lock match the new key. The same year, Robert Grenock was paid twenty-four shillings 'for mending of five locks two of them new stocked and keys the rest mended in the work'. If stock locks were so cheap, why did they get mended? Even more interesting is the fact that a stock lock was put on the Prince’s chamber door in 1633. Would the king’s son be given a cheap lock for his door? It seems more likely that there was a range of quality even for cheaper stock locks. Richard Neve, in 1726, did list a type of stock lock that cost seven shillings, compared to the plain variety at ten pence. The *Accounts of the Masters of Works* listed many as selling for over three pounds Scots. Ivor Noël Hume noted that most of the surviving stock locks he had encountered had a type of warding inside known as a collar ward. This added metal, which meant increased expense and time. Hume noted that few of the cheaper collarless main wards showed up in the surviving stock locks. Perhaps so many stock locks survive, because these are not the cheaper variety? Maybe the nine stock locks, or at least part of them, represent the high end of the cost spectrum?

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80 Moxon, *Mechanick*, p. 22
81 *MWA*, p. 144
82 Ibid., p. 333
83 Ibid., p. 366
84 Ibid., p. 357
85 Neve, *Purchaser*, p. 194
86 *MWA*
87 Hume, *Artifacts*, p. 245
Plate Stock Locks

Plate stock locks do not survive as well as their fully wooden counterparts. There are two plate stock locks in the NMS sample. One, ‘MJ 234’, is a pipe-key lock, as seen in Figures 7.36 and 7.37. It was only operated from one side of the door. The other, ‘MJ 292’, is a through lock, meaning that it is able to be opened from either side and is shown in Figure 7.38. It has been noted by Donald Streeter, that plate stock locks did not use the forward shoulder feature found on stock-lock keys. With two plates already present in the lock, it was not necessary to save metal by making the key act off of one plate.

‘MJ 234’ indicates that plate stock locks were also recycled, as there is a solder visible on the back of the cover plate (see Figure 7.37). It is doubtful that a locksmith would have tried to sell a lock with such a visible defect, so this would seem to be evidence of a repair and continued life.

Safe Locks

This category is represented by two locks, which are both thought to date from the early nineteenth century, as they were made by Bryden in Rose Street, Edinburgh. ‘K 2002.341’ has a double bolt mechanism with a wheel which transfers the power of the first bolt to the second bolt. ‘MJ 296’ is an even more complex mechanism, combining levers and warding. These locks represent the transition of Edinburgh out of the warded age of lock technology. Neither are included in the figures in the appendix.

Scottish Door Locks

It is interesting that of the seventeen door locks in the NMS sample, the majority of them are stock locks. While not as numerous, there are several medium to high quality locks in the sample. It is also possible that the stock locks are high-quality in their cost.

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88 Hume, Artifacts, p. 245
spectrum. The door-lock objects in the Scottish sample seem to represent a collection of the nicer artefacts, with only one or two lower quality locks. The time periods covered by them are equally interesting, as they might span from the early sixteenth century to the nineteenth century.

**Padlocks**

As can be seen in Table 13.6, padlocks make up 22 per cent of the NMS sample of Scottish objects. Padlocks survive very well, as they are small enough to keep, but are more substantial than just a key. These items were more readily kept. The fifty-four padlock objects are the most diverse group of Scottish objects. Using a broad typology, there are ten categories of padlocks, as shown in Table 13.4. Some of these types of padlocks were specific to certain time periods. Often, these periods overlapped and at least one type, the barrel padlock, was used across the world from the ninth century until the twentieth.89

**Barrel Padlocks**

As can be seen in Table 13.7, barrel padlocks account for about 22 per cent of the Scottish padlocks in the NMS sample. Barrel padlocks were a very simple type of lock. The entire mechanism is encased in an iron tube, or pipe, with a shackle going from side to side (see Figure 7.52). The actual mechanism was simple; a plate with two to three arms with springs mounted on them passed through corresponding holes in the shackle. Once through, the springs expanded, trapping the plate and arms inside the lock and barring the shackle from moving. A key had to be inserted into the opposite end to depress the springs so they could be withdrawn to release the shackle. This type of mechanism is illustrated in a 1767 plate from a French book on locksmithing (see the various components marked ‘Fig. 6’ at the top of Figure 6.43 in the appendix). Bolt-type padlocks, similar in mechanism to door locks, are thought to have come into

89 Hume, *Artifacts*, p. 250
Europe in the fifteenth and sixteenth centuries, though spring-type padlocks such as the barrel and half-heart types, remained common.  

There is a sixteenth century engraving from Nürnberg, Germany, of torture implements. Among them, is a picture of a barrel padlock (see Figure 6.32). Another German example is found in one of Albrecht Dürer’s prints, Der Engel mit dem Schlüssel zum Abgrund. This is reproduced in Figure 6.34. Sweden also used barrel padlocks, such as the 1644 example shown in Figure 6.33.

Barrel padlocks are found with a variety of mechanisms, so it is expedient to make a new barrel padlock typology. The items in the NMS sample are of four main types, as can be seen in Table 13.5 in the appendix. These types are, slide-key, screw-key, ‘T’-turn-key and side-entry. One of the twelve cannot be identified, as it is heavily corroded.

**Slide-key Type**

Slide-key mechanisms account for five of the twelve barrel padlocks in the NMS sample. This is probably the oldest version of barrel padlock, as it was the type used by the Vikings. As stated above, the mechanism’s internal workings can be seen in ‘Fig. 6’ at the top of Figure 6.43 in the appendix. This is the type of mechanism used on the Swedish padlock from 1644 shown in Figure 6.33. Hume has shown that slide-key type mechanisms have been excavated in America from mid-eighteenth-century contexts. This type of barrel padlock was long-lived. Figure 7.52 shows only one slide-key and the barrel padlock that went with it is now missing (‘MJ 28’). The thin construction of the keys did not give them high survival rates.

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90 Hume, *Artifacts*, p. 250
91 Kerrigan, M., *The Instruments of Torture*, 2001, p. 6
93 Hume, *Artifacts*, p. 249
Screw-key Type

Screw-key mechanisms make up three of the twelve barrel padlocks in the NMS sample. These padlocks had coil springs inside. When the key, which consisted of a pipe with an internal screw thread, was inserted into the padlock and repeatedly turned, the threaded internal pin was drawn up into the key like a cork-screw. This depressed the coil spring and eventually released the shackle. A diagram of this mechanism from 1767 can be seen in ‘Fig. 7’, in the bottom right-hand corner of Figure 6.43. See also, ‘MJ 214’ and ‘K 2002.347’ in Figure 7.62, which are screw-key type barrel padlocks.

‘T’-turn-key Type

There are two, ‘T’-turn-key mechanisms in the twelve barrel padlocks in the NMS sample. This type of key combined the principle of the slide-key type, with a double-bitted pivot key (see ‘MJ 26’, in Figure 6.43). The key was inserted to the back of the lock, in between two springs and then turned ninety degrees, forcing the springs above and below to compress. The arms could then be removed, freeing the shackle.

Side-entry Type

There is only one side-entry type barrel padlock in the NMS sample. This type is a combination of the screw-key type and a pivot key. ‘MJ 209’ can be seen in Figure 6.43. Note the placement of the key hole. The National Museums of Scotland were kind enough to have some X-rays done of several padlocks (see Figure 6.44 to 6.49). As can be seen, ‘MJ 209’ has an internal coil spring, but instead of a threaded rod being turned, a hooked rod is ‘caught’ by the key and pulled out of the shackle. The end of the key was drilled, as can be seen by how off-centre it is and the top of the bow is pointed.
Bag-shaped Padlocks

After barrel padlocks, the second largest category of Scottish padlocks was bag-shaped padlocks, which accounted for 15 per cent of the padlock sample. The eight objects of this type in the NMS sample can be seen in Figures 7.59 to 7.61. According to Hume, this type of padlock developed in the late seventeenth century and was characterized by escutcheons that swung forward and up, instead of swivelling to one side of the key hole.94 One such early bag padlock can be seen in Figure 6.59, ‘MJ 22’. The NMS sample would indicate that these became the dominant padlock type in the later eighteenth and nineteenth centuries. They are of heavy construction, with finely-made keys. A Glasgow example, ‘MJ 194’, even has a counting mechanism to show the owner how many times the lock had been opened. Interestingly, the case has been pried open at some point. This might have been to reset the counter with innocent intentions. ‘MJ 171’ and ‘183’ also have complex mechanisms, with secret levers to expose the key holes (see their information sheets in the appendix and Figure 7.61). Hume reckons that brass escutcheons on iron padlocks were a nineteenth-century innovation, ‘most of them dating no earlier than 1840.’95 He does not state if this is based on excavations or surviving pieces.

Half-heart Padlocks

Half-heart padlocks had spring-type mechanisms, like slide-key barrel padlocks. Figure 7.43, ‘Fig. 5’, shows four views of how half-heart padlocks worked. On either side of the upside-down ‘U’-shaped shackle, were two to four arrow-head like springs. When pushed through the top openings of the padlock body, they expanded, trapping the shackle. A key was then inserted from the side and turned ninety degrees towards the shackle, which depressed the springs so that the shackle could be removed.

94 Hume, Artifacts, p. 250
95 Ibid., p. 251
There are six half-heart padlocks in the Scottish sample, accounting for 11 per cent of the padlocks. **Figure 7.51** shows that these padlocks came in different sizes. Hume’s study of early modern locks and keys showed a time frame of 1730 – 1820 for half-heart padlocks. There is a c.1726 painting of two half-heart padlocks in the Magdalene Chapel in the Cowgate of Edinburgh.

**Ball Padlocks**

There are nine ball padlocks in the NMS sample, which are shown in **Figure 7.54**. These account for 9 per cent of the padlocks. Ball padlocks, or ‘globular’, as they are sometimes called, might have been in Europe as early as the late medieval period. The Ashmolean Museum, in Oxford, states in a display of ball padlocks, that they are thought to range in date from the 1400s to the 1600s.

There are several paintings and drawings that show ball padlocks. **Figure 6.41** shows Lorrain’s drawing, *The Liberation of St. Peter*, which dates from 1640 – 1, is in the British Museum, London. There is a ball padlock by St. Peter’s feet. A 1658 painting, *The siege of Spanish-occupied Dunkirk*, as shown in **Figure 6.42**, shows a ball padlock on a chest.

Archaeology has shown ball padlocks excavated in various mid-seventeenth century contexts. They have even shown up as late as 1730. Diderot decided to illustrate them in the mid-eighteenth century, as can be seen in **Figure 6.50**. They were very common in Europe and America.

Another French source, Monceau’s, *Art Du Serrurier*, from 1767, is shown in **Figure 6.43** and shows how ball padlocks were constructed. X-rays taken in the National Museums of Scotland in 2004 also show construction details. **Figures 6.44 to**

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97 Ashmolean Museum
100 Hume, *Artifacts*, p. 250
101 Diderot, ‘Serrurier’, Plate XXIX
102 Reproduced in Mandel, G., *Clefs*, 2001, p. 188
6.46 show several angles of a series of padlocks. The side view of the ball padlocks in Figure 6.46 shows that there are two parallel seams running longitudinally around the padlock in line with the shackle. The padlocks' bodies were made by forming two dish-shapes, or half-spheres and brazing them onto a 'C'-shaped strip of metal (see Figure 6.43, ‘Fig. 3e’). These would have been simple to make and therefore possibly inexpensive. They would have been rust-proofed, by browning, as was done to the NMS examples, or tinning, as was done to a German example in the Germanisches Nationalmuseum, Nürnberg (see Figure 6.40).\(^\text{103}\)

‘Medieval’ Forms

These four padlocks appear to have been spring mechanisms, similar to barrel padlocks in principal and half-heart padlocks in structure. ‘MJ 25’ is too badly corroded to get an impression of its inner workings, but ‘MJ 20’, ‘187’ and ‘302’ all seem to have been operated by slide-keys. As Hume pointed out, bolt-type padlocks in which a key turned to push a bolt out of a shackle, did not enter Europe until the fifteenth century.\(^\text{104}\) Until proof is found otherwise, it would appear that these four locks, shown in Figure 7.51, were the height of padlock technology before the early modern period. It should be noted that turn-key, bolt-type locks were used on doors, so it would not have been a far jump to transfer that technology into a padlock.

Triangular Padlocks

The two triangular padlocks in the NMS sample, which are shown in Figure 7.54, account for 4 per cent of the padlocks. Triangular padlocks were in use from at least the sixteenth to the eighteenth centuries, across Europe. Figures 6.37 and 6.38, show two views of one from Johann Keppler’s house in Regensburg, Germany. These padlocks were depicted in several mediums from c.1530 to 1607, as can be seen in Figures 6.35,

\(^{103}\) Germanisches Nationalmuseum

\(^{104}\) Hume, Artifacts, p. 250
6.36 and 6.39. In America, they have been found by archaeologists in seventeenth-century contexts. In France, they were depicted in eighteenth-century locksmithing books. Diderot decided to illustrate them in the mid-eighteenth century, as can be seen in Figure 6.50. Another French book which shows them, was Monceau’s, Art Du Serrurier, from 1767. It is reproduced in Figure 6.43.

X-rays taken in the National Museums of Scotland in 2004, show a few construction details for triangular padlocks. Figures 6.44 to 6.46 show several angles of a series of padlocks. The straight-on view of the smallest triangular padlock in Figure 6.44 shows the simple v-spring mechanism inside, reinforcing Diderot’s eighteenth-century plate. The padlocks’ bodies were made by brazing together thin iron plates into the triangular form. It appears, from the largest triangular padlock in Figure 6.44, that the upper section (which resembles ‘Fig. 3 EGE’ in the centre of Figure 6.43) was recessed into the top plate of the triangular body. These would not have been difficult to make for a locksmith in the early modern period.

**Boss Padlocks**

In the early records, these were referred to as ‘hanging boss locks’, but for clarity’s sake they shall be referred to as boss padlocks. Boss padlocks are quite simply as boss lock with a plain square of iron riveted to the back to make an enclosed mechanism. Where the sprent band would have gone, a shackle was put instead, with the other end looping through the far side of the padlock body (see Figure 7.55). There are only two boss padlocks in the NMS sample, but this should not reflect the importance of boss padlocks. One of these two padlocks, ‘MJ 13’, was used on the ‘cage’ of the Edinburgh Tolbooth. This was the type of lock used in 1707 to secure the Scottish crown jewels.

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105 Hume, *Artifacts*, p. 250
106 Diderot, 'Serrurier', Plate XXIX
107 Reproduced in Mandel, *Clefs*, p. 188
108 Diderot, 'Serrurier', Plate XXIX
110 NMS, MJ13
They were later cut off the chest by Sir Walter Scott.\footnote{Now displayed at Edinburgh Castle.} The government certainly had some faith in the security of these locks.

**Combination Padlocks**

There are two brass combination padlocks in the NMS sample. These both have letter combinations, as opposed to the more modern numbered wheels. One opens to 'Farm' and the other to 'Lever'.\footnote{NMS} See Figure 7.62. Beaumont and Fletcher's play, *The Noble Gentleman*, from 1615, includes the line 'with a strange lock that opens on A.M.E.N.'\footnote{Eras, *Locks and Keys*, p. 51} It is doubtful that the two combination padlocks in the NMS sample are as old as 1615, but they do represent a subsection of lock technology that came into Scotland.

**'Modern' Padlocks**

There is one padlock in the NMS sample which can be considered modern. It is flat and circular and made of cast iron. It probably dates to the nineteenth or twentieth century. While out of the time period of this study, it is still an interesting look at one of the directions locks went after the warded age. It is simpler and far less aesthetically pleasing than early modern locks. See Figure 7.62.

**Other Padlock Objects**

This category lumps together twelve padlocks that are harder to classify. Some are spring locks, like 'MJ 31' in Figure 7.62, though this particular lock does not appear to be European in origin. Others, such as 'MJ 108' in Figure 7.58, are of the sliding-bolt type. There is a late eighteenth century engraving of such a padlock in Diderot (see Figure 6.50).\footnote{Diderot, 'Serrurier', Plate XXIX} A few are of smaller size, while two in particular, 'MJ 18' and '19' in
Figure 7.53, are massive. These types of locks were found across Europe. 'MJ 19' in particular, is very similar to a Spanish example which was used to lock the town gates at night. These were high security locks in their day.

The mechanism of 'MJ 19' is extremely complex. X-rays done in 2004 by the National Museums of Scotland are reproduced in Figure 6.47 to 6.39. There are at least two different coil springs, one main spring for pushing out the bolt when released, several bolts and various levers. An interesting item, pointed out by the Museum's clock expert, is that there is space for three rungs of warding and the key is cut with three ward clefts, but Figure 6.47 shows what might be a lack of the middle and back set of wards. The front cleft seems to be filled, but the middle and back clefts appears to be empty. Economy of metal and selling only partially filled locks was a problem in 1740s Edinburgh; apparently it was also a problem at the time and place where this padlock was made.

Scottish Padlocks

Padlocks range from the medieval period up until modern times in the fifty-four Scottish objects in this category. Though there are diverse types, mechanically, there are only two types; spring and bolt. The former was activated by a key which depressed a spring. There were many variations on this. The latter, which is thought to be a later development in Europe, was operated by a turning key which pushed a bolt out of the shackle, so that it could be withdrawn. The NMS sample shows that both types carried on throughout the early modern period.

Chest Locks

Table 13.6 shows that chest locks make up 3 per cent of the NMS sample of Scottish objects. This is intriguing, as this type of lock was one of the main essay pieces for becoming a master locksmith in Edinburgh. The records in Edinburgh often mention

\[115\] Hume, Artifacts, p. 250
kist locks, chest locks and locks for coffers, but how to tell these locks apart is apparently lost in history. The seven locks in this category (see Figures 7.64 to 7.68) range in date from the medieval period (‘MJ 132’ in Figures 7.67 and 7.68) to the seventeenth century (‘MJ 9’ in Figure 7.65 and 7.66 and ‘MJ 11’ in Figures 7.67 and 7.68). Several might be later (‘MJ 149’ and ‘MJ 150’ in Figures 7.67 and 7.68). This early grouping is unusual in the NMS sample, which has a high concentration of eighteenth and nineteenth century objects.

The size and quality also varies. ‘MJ 132’ was intended for a small casket, whereas ‘MJ 12’ and ‘MJ 138’, in Figure 7.64, were part of large trunks. ‘MJ 9’ is incredibly elaborate and ornate, whereas ‘MJ 149’ is quite plain. ‘MJ 9’, with its hidden lever releases worked into the mechanism, might have been an essay, as much time and effort went into it. It is thought to date to c.1627, based on a comparison with a similar key, ‘MJ 66’ (see Figure 7.13 and 7.4).

Another possible essay is ‘MJ 11’, which is shown in greater detail in Figures 6.25 to 6.26. The construction is rather simple, but decoration was added to the cover plate on the back. The key is what makes this a possible essay. It is very ornate compared to other pipe keys in the sample. The bow of the keys is attached to the stem of the key by ‘rabbit ear’-shaped bow supports, which seem to have been common in the seventeenth century. Whether or not ‘MJ 11’ is a seventeenth century locksmith’s essay is now impossible to say with certainty, but it might have been.

Another chest-lock object from the National Museums of Scotland, which is not included in the NMS sample, is shown in Figure 7.63. This is a small chest thought to have belonged to the Pewterers of the Edinburgh Incorporation of Hammermen. (NMS) Note the two identical locks with the sprent bands still intact.

Cabinet Locks

As can be seen in Table 13.1, there is only one cabinet lock in the NMS sample. Table 13.6, shows that this equals only 0.004 per cent of the Scottish objects. Cabinets were quite common in Edinburgh in Deacon Brodie’s time. Brodie himself was a cabinet
maker. This type of lock was part of the essay for clockmakers in the Edinburgh Incorporation of Hammermen.\textsuperscript{116} The one example of a cabinet lock, ‘K 2002.432’, might not even be Scottish. The key greatly resembles a type often referred to as English and according to D’Allemagne ‘English export keys’.\textsuperscript{117} They are found in collections across Europe. This example might have come from a piece of furniture where the door folded down to become a writing surface. The back of the lock is extremely ornate, with floral engraving and a dragon head terminal (see Figures 7.69 and 7.70). It is difficult to say why so few cabinet locks are present in the NMS sample. No doubt, there are many of these locks in situ on furniture in the NMS collections, but only this one is in their collection of locks and keys. For comparison purposes only, Figure 7.71 shows an Italian cabinet lock. It is not part of the NMS sample. ‘K 2002.432’ is a high-end specimen in terms of quality. Perhaps the small nature of these locks made for a low survivability of the lesser quality ones.

Other Lock and Key Related Items

As can be seen in Table 13.6, the ‘other’ section makes up 1 per cent of the NMS sample of Scottish objects. The three objects included are a sliding bolt latch (not pictured in the appendix), a belt hook with eleven keys and a solitary belt hook. The latter two objects are shown in Figures 7.14 and 7.15. Suspension from belts was the common way to carry keys in the early modern period, as can be seen in many contemporary paintings and engravings. It is surprising that more key-suspension devices are not present in the sample. The sliding bolt latch is somewhat more modern, but illustrates a common door fastening that is also under-represented in the NMS sample.

\textsuperscript{116} EHMB, ED008/1/4 – 8
\textsuperscript{117} D’Allemagne, H. R., Decorative Antique Ironwork, 1968, p. 85
Objects In Situ

There are only a few original locks left in situ in Edinburgh. One notable example is a chamber door lock in John Knox House. It is thought to be from the seventeenth century. Countless Georgian and later examples can be found in the Edinburgh tenements. There is a large rim lock from c.1810 at the Customs House down in Leith (see Figure 6.18). Many of these types of locks are brought in for repair at locksmith shops which specialize in making new keys for them, such as Edina Lock and Key in Canonmills. This illustrates that many warded-type locks are still in use. Outside Edinburgh, one of the finer examples is a brass rim lock thought to date from 1740–50. It is in situ at the Old Rectory, Dunkeld (see Figures 6.15 and 6.16). At Hopetoun House in West Lothian, there are several locks, fire places and railings made by William Aitken in 1708. Aitken was not a freeman of the Incorporation of Hammermen, but he was a locksmith living in Edinburgh.

Edinburgh also has in situ architectural hardware which might have been made by locksmiths. Wooden doors and their locks were often removed and replaced, but their keepers, staples, sneckheads, etc., sometimes remain in the stone door jambs. Sneckheads were keepers for door latches. Door latches often involved simple handles with a sneck going through the door to lift a fall bar out of the sneckhead. This system kept the door closed, but the locks were separate components on the door. A sneckhead which probably dates to 1690 can be seen in Mylne’s Court in the Lawnmarket (see Figure 6.8). Mylne’s Court also has several staples which survive in the door jambs (see Figure 6.6). These would have kept the lock’s bolt. Stirling Castle also has in situ architectural hardware from the early modern period. An example from Stirling of a sneckhead and staple is shown in Figure 6.5. The positionings in this

118 In particular, there are two safe locks and on an iron door in the ‘charter room’ of Hopetoun House.
119 EHMB. Nor was he a burgess. Edinburgh Burgesses, 1929.
120 Edin. Marriage Reg., 1905, p. 13
121 Pride, G. L., Scottish Building, 1996, p. 72
122 This is on the eighth floor, north side, east flat off the common stair. The north side of the Mylne’s building might be earlier than 1690. Pinkerton and Windram, Mylne’s Court Three Hundred Years of Lawnmarket Heritage, p. 22
figure, of the sneckhead and staple are common. The door latch was usually around chest height, with the lock mechanism about waist height. Keys were often carried on belts, so this might have been the practical layout for a door.

NMS Sample: What’s Missing?

The NMS sample, while it does include a great deal, is not comprehensive. So what locksmiths’ work did not survive? What objects are not in the sample? Keys, the most heavily represented of the artefacts, show a lack of certain types of specialist keys. There is only one watch key and two latch keys. These deficiencies can be seen by the number of watchmakers in early modern Edinburgh, or the number of ‘Edinburgh latches’ on New Town doors.

Door locks are one area in particular that are severely under-represented. Only four rim locks are in the sample, though this was an essay piece. There are no brass-cased rim locks or mortice locks. In Figure 6.17, a c.1731, brass, rim lock can be seen in a painting by Gawen Hamilton (c.1697 – 1737) entitled, *Nicol Graham of Gartmore and Two Friends Seated in a Library.* By this time period, Britain favoured rectangular rim locks for doors. These would eventually be superseded by the mortice lock, which fit inside the door, instead of resting on it. Mortice locks were in use by the mid-eighteenth century. G. Bernard Hughes states that,

> Thick, solid mahogany doors of the period prompted the introduction of the mortice lock, concealed from view by inserting it into the edge of the door. In most early mortice locks only the brass knob was visible against the polished mahogany and the keyhole masked by a swinging escutcheon.124

For some reason, both brass rim locks, such as the one shown in Figures 6.15 and 6.16 and mortice locks are not present in the National Museum’s collection and therefore absent from the sample. No doubt, many are still in use on doors in private houses.

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123 National Galleries of Scotland, NG2464
Padlocks are heavily represented, as a whole, but taken as individual types, there are deficiencies. It has been mentioned that there are only two Scottish boss padlocks. Padlocks were not always as well-constructed as other locks, but this has lead to many being discarded and later found in excavations.

Chest locks and cabinet locks are both under-represented. They were an essay piece and there are references in governmental records to new chest locks being purchased.\(^{125}\) It is possible that the portable nature of furniture lead to them being taken away from Scotland, or kept in situ and away from the collection of locks and keys.

The NMS sample shows that several time periods are under-represented; the objects become more prolific towards the later Georgian period. The sample might reflect survivability increasing as the time period approaches today, or it might reflect changes in wealth as Scotland entered the 1707 Union of Parliaments and increased trade overseas.

**Foreign Objects**

Were Edinburgh and European locksmiths doing the same work? The NMS sample also includes thirty-one objects given an accession number beginning with, ‘MK’. This designation denotes that the object is not Scottish, but foreign. While many of the ‘Scottish’ objects appear to actually have come from other lands, the ‘MK’ group is known to have come from abroad. The foreign objects fall into only two categories; keys and padlocks.

Twenty-eight of the thirty-one foreign objects were keys. These were of similar varieties to the Scottish keys: shank, pipe, stock-lock, etc. Their places of origin range from England to Italy. Many of them are high-quality (see Figure 7.2 for example). Sometimes, foreign keys were reworked in Scotland; the *Accounts of the Masters of*

\(^{125}\) MWA & TA
Works, show a payment of twenty shillings Scots, for the dichting and tinning of seven English keys on 11 May 1629.\textsuperscript{126}

Three of the foreign objects are padlocks. ‘MK 7’, a boss padlock is from Norway (see Figure 7.55). ‘MK 45’ is a barrel padlock, also from Norway (see Figure 7.52). ‘MK 6’, shown in Figure 7.54, is from Sebastopol, Crimea. When they came to Scotland is hard to say, but the foreign objects do show that lock technology across Europe varied only a little.

Locksmiths’ Work

Lorna Weatherill, in her book \textit{Consumer Behaviour & Material Culture in Britain 1660 – 1760}, stated that ‘Material goods such as furnishings, made physical and visible statements about accepted values and expected behaviour. They were used to draw lines in social relationships, at the same time as providing shelter and subsistence.’\textsuperscript{127} This statement describes perfectly the work of the locksmith craft. Locks made a very visible statement; to the point that intricate decoration adorned much of their work and at least some simple file work graced the more humble pieces. Locks were a statement of security. They were meant to exclude the majority while giving access to a privileged few. They were a physical statement that unlawful entry was not socially acceptable. Keys were a symbol of trust and status. They were given to family members in homes and officials in organizations. Keys meant that a person had access. The problem with artefacts being used as documents is making the bridge from an abstract concept such as the above, to a tangible view of the time period in question.

There is a distinct lack of chest locks in the NMS sample, but chests were portable items. It was therefore easier for them to be taken away. Chest locks were also simpler in construction than heavy door locks. Perhaps the less substantial metal was more at risk for corrosion? Keys and padlocks survived best. There are a couple possible reasons for this. First, they were often made. If a new servant was hired, a new

\textsuperscript{126} MWA, p. 290
\textsuperscript{127} Weatherill, L., \textit{Consumer Behaviour & Material Culture in Britain 1660 – 1760}, 1996, p. 9
key had to be made for them. Many locks had more than one key. Keys were also easily lost, requiring a new key to be cut. Keys far outnumbered locks. Padlocks were not expensive and therefore could have been replaced more readily than door locks. Both keys and padlocks are extremely portable. They could be kept without cluttering a house. They were small and interesting. Of all lock and key material culture, keys and padlocks survive the best because they were the most prolific and easiest to care for. This may represent a skewed sample, but it also reflects a consumer market with a high demand for replacement components of previously bought goods.

Most importantly, the sample can tell us a great deal about how the locksmiths made the items; braze seams and welding seams are visible. Evidence of wrought iron can be seen on certain keys. Spreading of metal can indicate when holes were punched instead of drilled. While not completely representative, the NMS sample can still give a large quantity of information about early modern locksmiths and their work.

The End of the Warded Age

While there were isolated incidents of locks being made with slightly more security than others, they still all relied on warded type keys. The era of warded lock technology did not start to wane until 1778, when a locksmith named Robert Barron patented a new form of lock.\textsuperscript{128} While the tumbler mechanism had been an integral part of the warded lock for centuries before Barron, he took the concept and modified it. By making the tumbler act inside the bolt, the tumbler had to be raised to a specific height; if pushed too high, it would bind inside the bolt. This added another critical dimension to the key and made the locks harder to pick.

Barron took this idea farther by adding two tumblers which had to be lifted to different levels before the bolt could be thrown.\textsuperscript{129} This invention marked a revolution for lock technology. Barron’s idea caused warding to fall into disuse, though this

\textsuperscript{128} Monk, Keys, p. 27
\textsuperscript{129} Ibid., p. 28 and Eras, Locks and Keys, p. 105
process took a long time. New technology is always expensive, so alongside a period of remarkable invention, older, cheaper warded technology held on.

The Great Inventors

Aside from Barron, there was a series of other great inventors who helped bring lock technology out of the warded age.\textsuperscript{130} Joseph Bramah’s famous ‘Bramah Lock’ is still made today, and still highly respected. His system was patented in 1784, and involved a pipe key with notches all around its mouth of varying depths. Each notch corresponded with a different sliding lever inside the lock. When the key was pressed down, the inner levers all fell to their required depth, which lined up a series of cuts. The bolt was then free to be moved by turning the key. Versions of this lock, known today as tubular locks, can be found on almost any payphone, vending or washing machine.

In 1790, a Mr. Rowtree took out a patent for a lever lock, which is the basic idea behind Barron’s invention. Rowantree’s tumbler lock used wheels inside the mechanism. A Mr. Bird, in the same year, introduced a four-lever lock, which was the predecessor of today’s lever locks.\textsuperscript{131} Cotterill’s 1846 patent for the ‘Patent Climax-Detector Lock’ involved the principles of Bramah’s lock, only with the inner sliders being positioned at right angles to the key.\textsuperscript{132} The century between 1750 and 1850 saw some of the most ingenious lock modifications since medieval times, if not Roman. Many were chain reactions, based on variations of their competitors’ products. Eventually, an American named Yale came up with a cylinder lock, based in part on Bramah’s lock and in part on ancient Egyptian locks.\textsuperscript{133} This lock is widely used around

\textsuperscript{130} Eras, Locks and Keys, p. 104
\textsuperscript{131} Monk, Keys, p. 30
\textsuperscript{132} Eras, Locks and Keys, p. 107
\textsuperscript{133} Monk, Keys, p. 36
the world today. In Britain, these locks are usually used in conjunction with a modern form of the lever lock.

**Changes in Edinburgh**

Edinburgh was not isolated from the renaissance of lock technology. Innovation happened here also. One particular example was the Bryden family, who were not locksmiths but bell-hangers. With the Reform Bill of 1832, the road was paved for a later act on 14 May 1846, which abolished exclusive privilege of trading in Scottish Burghs. The once powerful incorporations became friendly societies, concerned only with insurance for their elderly members, widows, and orphans. No one could tell a bell hanger not to make locks; all occupations were open to anyone who could practise them.

The Bryden family business, in 1806, consisted of only John, who was a bell-hanger in Cowan’s Close, Crosscauseway in Edinburgh. In 1811, one of John’s sons was working with him at their new shop at 53 Rose Street in the New Town. The shop expanded with other sons, and moved to 82 Rose Street by 1827. By 1832, the business not only specialized in bell-hanging, but also Venetian-blind manufacturing. In 1834, the business moved to 80 Rose Street, with one of the sons, William Bryden, continuing at the shop at number 82. John Bryden and Sons opened a shop in Glasgow by 1852. Their trade there included bell-hanging as well as Venetian and spring-roller blind making. They kept the 80 Rose Street shop, in conjunction with their shop at 112 Buchanan Street in Glasgow, a practice which would never have been allowed by incorporations.

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134 Colston, J., *Inc. Trades*, 1891, p. 25 The Reform Bill of 1832 is stated by Colston as being in 1833.
135 Several still survive today. The Incorporation of Hammermen has many lawyers, but most of the Skinners are actual practising, or retired skinners.
136 *Post-Office Annual Directory*, 1806, p. 29
137 Ibid., 1811, p. 37
138 Ibid., 1827, p. 25
139 Ibid., 1832, p. 26
140 Ibid., 1834, p. 13
141 Ibid., 1852, p. 58
There are several locks and keys in the NMS sample that came from Bryden and Sons, 80 Rose Street. The locks were predominantly safe locks, which combined warding and levers in complex mechanisms. The keys which Bryden and Sons produced had a particular type of bit, with an extending arm which would lift a series of levers as the key turned through the warding (see Figure 7.27 in the appendix, 'MJ 213' and 'MJ 215'). These were made before warding had disappeared, but after new technologies were being introduced to locks. They were made not by locksmiths of the Incorporation of Hammermen, but by bell-hangers in the New Town. Edinburgh was exiting the warded age, and the incorporations were losing power.
Conclusion

In the fifteenth century Edinburgh’s craftsmen shifted from the older guild structure to a new system which modern historians have labelled ‘corporatism’ through the institution of incorporation. The Incorporation of Hammermen was one of the larger and wealthier of Edinburgh’s fourteen incorporated trades.\(^1\) From 1578 – 1730 nineteen deacon conveners of trades were hammermen, making it the fifth largest contributor to that office,\(^2\) which met in the hammermen’s own meeting hall.\(^3\) From 1406 – 1750, 134 hammermen became guild brethren, meaning that 16 per cent of the incorporation had the wealth required to join the guild.\(^4\) The Incorporation of Hammermen, as shown in Chapter 1’s commentary on growth and influence, was part of a craft aristocracy in early modern Edinburgh.

The hammermen, as shown in Chapter 2, had an internal hierarchy of the various metalwork-crafts which were incorporated. The locksmiths were one of the largest\(^5\) and

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\(^2\) *Municipal Constitution*, 1826, p. 75


\(^4\) See *Tables 5 and 5.1. Edinburgh Burgesses*

\(^5\) See *Tables 1 and 3 in the appendix.*
most influential of these crafts by the mid-eighteenth century. They were a part of the hammermen’s contribution to the craft aristocracy. Many of the deacons and boxmasters of the hammermen were locksmiths. They were the fourth largest contributor of guild brethren in the incorporation, indicating that they were not a poor craft in terms of wealth and that their products were in considerable demand in Edinburgh’s metalwares market. The locksmiths were, by any measure, an important craft.

They were also a highly skilled craft. The unofficial association of the gunsmiths, clockmakers and framesmiths with the locksmiths was due to the fact that they all shared skills which would eventually be utilized by mechanical engineers. Chapter 3 describes the relationship of these trades and points out that similar groupings were found in other European towns.

Chapter 4 describes the locksmiths’ contributions to security. On top of the normal militia and guard duties of all Edinburgh burgesses, the locksmiths provided the technology to protect homes and belongings. The security technology available at the time was easily circumvented but European society as a whole kept using warded technology up until the Industrial Revolution - a warded lock was better than no lock. The technology available was often supplemented by clever tricks of the smiths’ own design. Hidden levers and buttons concealed parts to the locks. Ingenuity made up for some of the deficiencies in medieval technology.

While early modern locks could easily be picked, that is not to say that they were poorly made. Chapter 5 describes the workplace, tools and techniques utilized by locksmiths across Europe. A locksmith did not need a lot of space to ply his trade, provided he had a bench, forge and the appropriate tools.

Chapter 6 discusses the surviving samples of locksmiths’ work and relies heavily on the collection of locks and keys in the National Museums of Scotland. This sample shows that several time periods are under-represented by the surviving material culture. There are many objects from the Georgian period, but the early modern period is not represented as well. This might indicate that survivability increased as the time period

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6 See Tables 4.6, 4.7 and 5.2.
approached today, or it might reflect changes in wealth as Scotland entered the 1707 Union of Parliaments and increased trade overseas. The heavy representation of low cost stock-lock related items might also be indicative of the Scottish economy. It is most likely that the large number of keys and padlocks is due to their size; these objects took up little space and were easy to store.

The data from Edinburgh sources has ramifications for the metal workers as a whole. By the eighteenth century, certain products were fading in importance in Edinburgh’s economy. Armour and weapons, which were decreasingly in private hands, were becoming less important compared to domestic items such as pewterware, horse tack, locks or clocks. The tradesmen who made these products therefore had different degrees of wealth. While saddlers were always in the aristocracy of the metalworkers, pewterers were not. This changed over the course of the early modern period, as the pewterers came to dominate the Incorporation of Hammermen. The locksmiths, who were not mentioned in the 1483 seal of cause, were by 1750 one of the more important crafts.

There are also ramifications for the Edinburgh incorporations as a whole. After the 1583 decree arbitral more craftsmen had the option to join the guild. While never as influential as the merchants, the crafts were far more important in the seventeenth century than they had been in the fifteenth century. As Edinburgh’s economy grew and diversified, the production sector followed suite.

Moreover, this thesis has ramifications for several aspects of European urban history. Edinburgh was of a comparable size to many cities on the continent, and this thesis provides data on the growth and decline patterns of the metalworking trades in the early modern period. While growth was the dominant trend for the metalworkers’ guild, certain times and certain trades experienced decline. Some trades faded away as consumer demands shifted towards other products. Some trades experienced astounding growth, while others were remarkably constant across the time period covered. In a European context, this information could shed a great deal of light as to how close to European trends Edinburgh was. It was shown in Chapter 3 that unofficial patterns of

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7 See appendix.
association between craftsmen who used similar techniques and materials were happening not only in Edinburgh, but also in Ulm, Germany. Edinburgh was unique in terms of Scottish burghs, but was it also unique in terms of European towns?

The research leading up to this thesis has highlighted several other areas which offer possibilities for future research. First are the minute books of the other fourteen crafts, many of which survive, though not as completely as those of the hammermen. This thesis represents an underdeveloped aspect of urban history: the in-depth study of specific trades. While there were many studies of craft guilds made in the later nineteenth century, there has been precious little new material on them since then. Colston’s *The Incorporated Trades of Edinburgh* was published in 1891. Marwick’s *Edinburgh Guilds and Crafts*, was published in 1909. While these are still very good source for the fourteen crafts, they are dated, and in some instances inaccurate. A new book on the fourteen trades needs to be done, incorporating the recently done tax and demographic analysis for Edinburgh. The collections of the National Museums of Scotland should also be utilized for the new research. There are many objects of relevance in the Trades Maiden Hospital, where many of the remaining volumes of incorporation minute books reside. A history of the baxters along with charts of bread prices, or the masons and wrights with a survey of their surviving structures would be only a sample of the possibilities of combining sources to revamp Colston’s and Marwick’s books. Little work has been done recently on their meeting houses and the activities which took place in them. There were also the occupations which were not organized into craft guilds, such as the brewers, stablers and carters. Excavations have been done on property pertaining to the brewers, which would yield much useful information. Occupational structure of Scotland’s urban areas could be looked at in far greater detail.

One aspect highlighted by the material in Chapter 5 on locksmiths’ booths is that we do not have a very good understanding of the workplace in the urban environment. While looking at the practical requirements for the locksmith trade might make it possible to make an educated guess at where the locksmith occupation could have been practised, it still does not tell us where it was practised. Edinburgh’s idiosyncratic
geology forced trades which needed a plentiful supply of water, such as the dyers or skinners, toward the north-east quarter, or forced migration to the Water of Leith. Other trades, such as the candlemakers, were forced to have their booths in one area. One project that could give greater detail to our understanding of how occupations fit into the urban environment would be to combine locational data from tax records with a contemporary town plan of Edinburgh, in order to study occupational distribution. Much work has recently been done on the social and economic structure of burghs, but very little has been done on the distribution of occupations. It would be very interesting to know where the locksmiths had their booths. Perhaps there would be some clues as to why they were where they were.

Distributional analysis through occupational mapping would greatly enhance our understanding of burgh occupations. It would give insight into the role that geography, geology and morphology played in everyday life. Which occupations could be practised anywhere? Which ones depended on certain natural resources? Were certain work-types clustered together, or did they tend to be evenly dispersed? Which work-types were marginalized from the main centres of activity?

There are many tax records throughout the early modern period. One example is the 1635 annuity tax, the records of which list householders and landlords. There are 903 businesses in the four quarters of Edinburgh. By plotting the locations of the various work-types listed over the 1647 Gordon of Rothemay map, a new tool could be formed for visualizing the distribution of occupations. The poll tax of the 1690s is divided into Edinburgh’s eight parishes, and could also be used for such analysis.8

Several German towns have had occupational mapping done for the early modern period, resulting in interactive display boards in their local city museums. In Scotland, several historians have touched on distribution while discussing occupational structure, but their comments have not been comprehensive, and they did not make use of a visual aid showing the locations.

The multi-disciplinary approach of combining historical records and geographical analysis could also be applied to other burghs so that a comparison of the

8 Dingwall, *Edinburgh*
occupational distributions could be made across Scotland. It has been suggested that there was an overall pattern of occupational distribution in English towns. Did Scottish towns match this? What about European towns? With a series of such studies, it would be possible to hypothesize as to whether the patterns of work-type distribution were uniform across differing geographical and cultural settings. Mapping could also be used to study distribution of wealth and gender. It could also be used to explore any correlation between location and marital status. Occupational mapping of Edinburgh could establish a model for future comparisons on a Europe-wide scale, and help us to better understand the urban environment in which the locksmiths, and all others, lived and worked.

Other work which could be done includes a survey of relations between merchants and craftsmen. While the stereotype is that the two groups were polar opposites, always at odds with each other, more recent work has challenged this view.9 The 1483 seal of cause for the Incorporation of Hammermen,10 as well as various comments in their minute books,11 show that there was a degree of tension between the craftsmen and the merchants. With so many sources available for the Edinburgh crafts, this topic merits further attention. How deeply engrained was the merchant / craftsman rivalry in early modern Edinburgh? How did their relationship change with the 1583 decreet arbitral?

One last suggestion for future research would make use of material culture. A recent study of clocks done by the British Museum looked at the metallurgical aspects of their construction.12 Metallurgists analysed the microstructures of clock springs and wheels from early modern clocks. It would be fascinating if a metallurgist were to look at locks using the same techniques. How fine was the steel used in Scottish lock springs? Was there variation in the quality? Was there any variation between Scottish microstructures and European? Many keys retain traces of finishes which prevented

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10 See appendix.
11 EHMB, ED008/1/7, p. 76
rust. Apparently, the common finish was tin. Several objects in the National Museums of Scotland have copper alloy finishes, while others have a silver coloured finish. What was the make up of the coatings on Scottish examples?

From 1450 to 1750 there were many changes in the religious, political and socio-economic structure of Edinburgh. The Reformation brought many changes, such as improvements to education and reform of religious practices. The minute books of the Incorporation of Hammermen show that while religion was still an integral part of everyday life, as can be seen by the many prayers and oaths given by craftsmen, the overall tone of the post-Reformation meetings was increasingly centred on business.

The reform of religion in all its aspects was a slow process and was not completed until the seventeenth century. In the interim, the internal politics of the craft incorporations went through difficult changes reflecting how fundamental religion was to society.

Throughout the early modern period Scotland's government went through a series of events which consolidated and centralized political control. By the sixteenth century, government was physically located in Edinburgh, and with the advent of central law courts and a standing army, violence was less often in the hands of individuals. With the introduction of corporatism in the fifteenth century through the institution of incorporation, crafts were legalized and increasingly politicized.

The socio-economic changes after 1450 did not affect the methods of craft production; as Farr states, 'decentralized small commodity production was the norm from the Black Death to industrialization.' The attitudes towards who could produce and how production was funded, however, were starting to change by the seventeenth century. As described in Chapter 2, guild brethren could employ other craftsmen to produce products in their booths. While this is not quite the industrial factory of the nineteenth century, or a merchant-funded manufactory, it was more capitalistic than the single-craftsman booth which was still the norm throughout the early modern period.

13 MWA, 1982, p. 290
14 EHMB
15 Lynch, M., Scotland New, 2000, p. 281
16 For example, there was an increase in craft councillors from two to six in 1583. Lynch, Edin. & Ref., 1981, p. 16-7
17 Farr, J. R., Artisans in Europe, 1300 – 1914, 2000, p. 55
True to the concept of ‘constant returns to scale’, an idea whereby growing output has to be matched by growing input of labour and raw materials,\textsuperscript{18} craft production was taking advantage of the labour surplus and growing wealth of the craft aristocracy. As can be seen in Table 5 in the appendix, the number of hammermen becoming guild brethren increased dramatically after the 1583 decreet arbitral. The craftsmen could have continued small scale, private production, but many opted for larger-scale subcontracting. This indicates increasing decentralization before the Industrial Revolution.

Across Europe, the ‘putting out system’, whereby merchant capital funded larger-scale production, was becoming increasingly evident. Edinburgh had several examples of this type of production in its manufactories. It has been stated that the utilization of manufactories, such as ropeworks, glassworks, soapworks, iron forges, salt pans and coal-mining operations, confirm the presence of the spirit of modern capitalism, which took off as an ideology amongst businessmen in Scotland in the seventeenth century.\textsuperscript{19} At the end of the sixteenth century, trade in Scotland was still based on the import of manufactured products and the export of raw materials.\textsuperscript{20} Measures were taken to change this, especially in the reigns of James VI and Charles I. One of their more important economic policies was to encourage the establishment of manufactories.\textsuperscript{21} Many of these were set up by peers and gentlemen. Lord Erskine had leather tanning, Sir George Bruce had coal mining and Sir George Hay had glassworks.\textsuperscript{22} Whether merchant- or gentleman-funded, the new manufactories were a diverse and prolific sector of the early modern economy.\textsuperscript{23}

In 1641 a more systematic industrial policy was introduced, oriented towards solving the lack of capital, high-quality domestic raw materials and skilled labour, as

\textsuperscript{18} Farr, Artisans in Europe, 1300 – 1914, p. 50
\textsuperscript{20} Ibid., p. 130
\textsuperscript{21} Turnbull, J., The Scottish glass industry 1610-1750: "To Serve the Whole Nation With Glass", 2001, p. 25
\textsuperscript{22} Donaldson, G., Scotland: James V – James VII, 1998, p. 258
\textsuperscript{23} Marshall, Presbyteries and Profits: Calvinism and the Development of Capitalism in Scotland, 1560 – 1707, p. 130
well as the competition of superior foreign goods.\textsuperscript{24} The various acts about manufactories were designed not only to increase the wealth of Scotland, but also, like incorporations, to provide a measure of social control in that they were designed to employ the poor. One example of this is the cloth manufactory at St. Paul’s Work, in Canongate.\textsuperscript{25} With the growing number of poor across Europe\textsuperscript{26} these workhouses became more common.

By the eighteenth century, there was significant expansion of industry backed by merchant capital and based on changing business practices of the seventeenth century.\textsuperscript{27} The merchant community itself was changing. Growth of numbers became stagnant in the later seventeenth century and the actual body of merchants became more institutionalized by the 1681 formation of the Merchant Company.\textsuperscript{28} As Helen Dingwall says, "It attempted to centralize and incorporate trading activity as well as protect privileges of individual merchants."\textsuperscript{29}

The bonds of the older merchant guild were loosened by the growth of larger-scale corporate trading and previously held monopolies on craft-manufacture started to slacken, though corporate control of craftsmen remained intact.\textsuperscript{30} Certain occupations, such as medicine and law, became professionalized,\textsuperscript{31} markets were expanded, consumer demand increased and manufactured products became more diverse.\textsuperscript{32} Luxury items were increasingly produced for the growing presence of wealthy gentlemen and nobility in towns\textsuperscript{33} and cheaper versions of luxury products were consumed by the growing

\textsuperscript{24} Marshall, Presbyteries and Profits: Calvinism and the Development of Capitalism in Scotland, 1560 – 1707, p. 131
\textsuperscript{25} Harris, S., Place Names, 2002, p. 100, 508
\textsuperscript{26} Farr, Artisans in Europe, 1300 – 1914, p. 15
\textsuperscript{27} Turnbull, The Scottish glass industry 1610-1750: "To Serve the Whole Nation With Glass", p. 38
\textsuperscript{28} Dingwall, Edinburgh, p. 274, 196, and 174, and Houston, R., Social Change, 1994, p. 358
\textsuperscript{29} Dingwall, Edinburgh, p. 274
\textsuperscript{30} Ibid., p. 174, 180 – 1, 274, and EHMB
\textsuperscript{32} Farr, Artisans in Europe, 1300 – 1914, p. 49
‘middling sort’. The economy of the eighteenth century was more, ‘diverse, extensive, and segmented than ever before, but the outlines of, and the trajectory toward, such an economy are clearly discernable in preceding centuries.\textsuperscript{35}

By the nineteenth century, Edinburgh, Scottish, and even European society were starting to think of the economy in new, more liberal ways,\textsuperscript{36} which would culminate in the abolition of guild privilege. In some areas this happened sooner than others. London’s companies started to lose power after the great fire of 1666, though their committees were often important lobbies for economic regulation.\textsuperscript{37} By 1846 Edinburgh’s incorporations were no longer allowed exclusive rights to manufacturing.\textsuperscript{38} Dublin’s guild system broke up in 1840.\textsuperscript{39} This happened in Spain in 1812, in Sweden in 1847 and in Austria in 1859.\textsuperscript{40} Europe’s corporate regime, which was so fundamental to the religious, political and socio-economic status of early modern craftsmen, gave way to more modern and liberal ideas of business.\textsuperscript{41}

The findings of this thesis, when applied to a wider history of Edinburgh in the early modern period, show an occupational group which was steadily growing, a consumer society whose tastes were becoming more refined, and a stunted growth of lock technology which was a feature of much of urban Europe. It is important to note that Edinburgh was not alone in the experience of the above-mentioned changes; most of these were characteristic of a broader, European context, illustrating that Edinburgh was a thoroughly European town. ‘Europeaness’, however, is not easy to define. While similarities can be found in all urban centres, differences can too. Many of the overall trends affecting Europe also touched Edinburgh. Corporatism is one of the most important to this thesis. While it is true that not all of Europe’s cities were affected by


\textsuperscript{35} Farr,\textit{ Artisans in Europe, 1300 - 1914}, p. 53

\textsuperscript{36} Ibid., p. 276. This idea is today called ‘liberalism’.


\textsuperscript{38} Colston,\textit{ Inc. Trades}, p. 25

\textsuperscript{39} Webb, J. J.,\textit{ The Guilds of Dublin}, 1929, p. 241

\textsuperscript{40} Farr,\textit{ Artisans in Europe, 1300 - 1914}, p. 282

\textsuperscript{41} This was not, of course, an overnight process – much of it started in the eighteenth century. Ibid., p. 278
corporatism at the same time, most of them accepted the corporate regime at some point between 1450 and 1750. Edinburgh's incorporations did have a lot in common with corporations in other towns. The groupings of certain occupations were similar to those of other comparable towns, as was shown in Chapter 3. The tools, techniques and workplaces were similar to those in other towns, as shown in Chapter 5. The types of products which were produced were again similar to those of other towns, as was shown in Chapter 6. The approaches to exclusion, training and governing were similar to those of other towns. While there were subtle differences, the overall experiences of craftsmen in early modern European towns were strikingly similar. The 'European town' may not be an absolute, but Edinburgh had more in common with it than not. Edinburgh was a European capital, and much of the security-related material culture used in Scotland was also used on the Continent. The locksmith craft emphasizes the fact that Edinburgh was a distinctively European town.

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## Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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</thead>
<tbody>
<tr>
<td>Backsprent</td>
<td>Possibly the seventeenth century term for the tumbler, which hold the bolt in either the locked or unlocked position. It could also be an internal part for setting the latch bolt continuously open; a snib?</td>
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<tr>
<td>Baxter</td>
<td>Baker</td>
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<tr>
<td>Bow</td>
<td>Part of a key that is left outside of a lock for applying pressure from the human hand to work the mechanism. There were many shapes and sizes throughout the centuries. Somewhat resembles a bow (as in bow and arrow), which probably gave rise to the name.</td>
</tr>
<tr>
<td>Bolt</td>
<td>Part of lock that is thrown from lock into door frame (jamband) to prevent the door, etc., being opened. It is used as a bar to secure the lock and door to the keeper (jamband) and door frame.</td>
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<tr>
<td>Bridge</td>
<td>Possibly the term for warding inside the lock.</td>
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<tr>
<td>Cordwainer</td>
<td>Shoemaker. Also called ‘cordiner’.</td>
</tr>
<tr>
<td>Kist</td>
<td>Scots word for chest, also called a ‘chist’.</td>
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<tr>
<td>Kist Lock</td>
<td>Lock used on a kist. Several different forms occurred throughout the centuries. Many involved some kind of bolt and sprent band mechanism.</td>
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<tr>
<td>Pass Key</td>
<td>Key that opens more than one lock.</td>
</tr>
<tr>
<td>Pass Lock</td>
<td>Any type of lock that is worked by the key of another lock. If a key for an outside door also opens the lock for a chamber door, then the two locks are pass locks.</td>
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<tr>
<td>Pipe Lock</td>
<td>A lock which has a pipe key instead of a through key. The opposite of a through lock.</td>
</tr>
<tr>
<td>Shank</td>
<td>Part of a key that goes inside the lock. Connected to the bit and part of the stem.</td>
</tr>
</tbody>
</table>
Shield - Escutcheon, or key-hole cover.

Sprent Band - Part of a lock – usually on a kist lock – that swings on a hinge or hinges into a position that would allow a shackle, attached to the back of said sprent band, to be engaged and held by the bolt of the lock. In this way, the sprent band, and whatever it is attached to, are held to the lock. For kists, the sprent band is usually fastened to the lid, while the lock is attached to the box front. When the bolt is thrown backward, it releases the sprent band, which swings up on its hinge and frees the lid.

Standing Vise - Large vise attached to a bench with a long leg attached to the floor directly below. Also known as a post vise, or a leg vise.

Stem - Part of a key. Long and usually cylindrical; the main body of a key which connects the bow to the shank and bit.

Study - An anvil for working metal.

Warding - A series of obstacles inside the lock which ‘ward’ off false keys. They usually resemble ‘C’-shaped fences, and come in a variety of shapes in cross section.
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