

A Study of the English Parchment Industry between 1650 and 1850

Stuart Henderson
MA by Research
University of York
Archaeology
October 2018

Abstract

This project will examine, in detail, the English parchment industry between 1650 and 1850, locating the main centres of production, reconstructing the process of parchment manufacturing both locally and nationally, as well as assessing whether it is possible to conclude the origins of the materials used in its manufacture. The results of this project should prove vital in providing context to the results of a number of post-medieval hDNA studies on parchment as well as providing historical data on a previously unstudied industry in history.

Contents:

| | |
|---|-----------|
| Abstract | 2 |
| Contents: | 3 |
| List of Tables: | 6 |
| List of Figures: | 7 |
| Acknowledgements | 8 |
| Declaration | 9 |
| Chapter 1: Introduction | 10 |
| 1.1 Aims | 10 |
| 1.2 The Research Question | 12 |
| 1.3 Objectives | 12 |
| 1.4 Chaîne Opératoire | 15 |
| Chapter 2: Literature Review | 16 |
| 2.1 Primary Sources on the Parchment Industry between 1650 and 1850 | 16 |
| 2.2 Modern Literature on the Parchment Industry | 18 |
| 2.3 New Areas of Research | 22 |
| Chapter 3: Overview of the Industry | 24 |
| 3.1 Uses for Parchment | 24 |
| 3.2 Who was Selling the Skins? | 24 |
| 3.3 How was Parchment Manufactured? | 28 |
| 3.4 The Socio-Economic Position of the Parchment-Maker | 31 |
| 3.5 Effects of the Growing Paper Industry | 33 |
| 3.6 The Price of Parchment | 35 |
| 3.6.1 J.E.T. Rogers Parchment Prices | 35 |
| 3.6.2 Gregory Clark Prices | 37 |
| 3.6.3 Witherby Publishing Group Data | 41 |
| 3.6.4 Conclusions | 42 |
| 3.7 Salt Prices | 43 |
| Chapter 4: Data on the Location of Parchment-Makers | 45 |
| 4.1 Review of Sources | 45 |
| 4.2 The Scale of the Industry | 47 |
| 4.3 Map of Parchment-Makers | 50 |
| 4.3.1 Review of the Data | 53 |
| 4.4 Sun and Royal Exchange Insurance Policies | 56 |

| | |
|--|------------|
| 4.5 Parliamentary Papers 1844 | 58 |
| Chapter 5: Parchment Laws | 59 |
| 5.1 Parchment Taxation | 59 |
| 5.2 Laws Surrounding the Manufacture of Parchment | 63 |
| 5.3 Who is enforcing these laws? | 65 |
| 5.4 Effects on Parchment Quality | 68 |
| 5.5 Conclusions | 70 |
| Chapter 6: The Location of Sheep Breeds | 72 |
| 6.1 Sourcing Sheepskins | 72 |
| 6.1.1. Fat Content | 72 |
| 6.1.2. The Age of Sheep | 74 |
| 6.1.3. Diet and Environment | 75 |
| 6.1.4. Wool Sheep | 77 |
| 6.1.4.1 Historical Survey of Sheep Used | 78 |
| 6.1.5. Conclusion | 79 |
| 6.2 The Location of Sheep Breeds | 81 |
| 6.2.1. The Downlands/South | 82 |
| 6.2.2 The Wolds | 87 |
| 6.2.3 Lowland Vales | 88 |
| 6.2.4 Woodlands and Wood Pasture | 90 |
| 6.2.5 Fenlands | 93 |
| 6.2.6 Moorlands | 95 |
| 6.2.7 London's Hinterland | 96 |
| 6.2.8 Conclusion | 97 |
| Chapter 7: Conclusions | 100 |
| 7.1 Conclusion | 100 |
| 7.2 Discussion | 101 |
| Appendices | 104 |
| Appendix 1: Witherby Publishing Group Data | 105 |
| Appendix 2: Parchment Quality | 107 |
| Appendix 3: List of Roger's Parchment Transactions | 108 |
| Appendix 4: Cumulative Percentage Increase of Products and Wages | 109 |
| Appendix 5: Types of Records Collected | 110 |
| Appendix 6: National Directories | 111 |
| Appendix 7: Local Directories | 112 |
| Appendix 8: Overview of Parchment-Maker Data | 113 |
| Appendix 9: Parchment-Maker Records by Location | 114 |

| | |
|--|------------|
| Appendix 10: Parchment Taxation Laws | 116 |
| Appendix 11: List of Parchment Taxation Laws | 119 |
| Appendix 12: Flaying Laws | 123 |
| Appendix 13: List of Flaying Laws | 128 |
| Appendix 14: List of Stationers Offices 1694 | 129 |
| Bibliography | 131 |

List of Tables:

| | |
|---|----|
| Table 1: Campbell's London Tradesmen | 31 |
| Table 2: Parchment-Maker Insurance Policies 1770-1779 | 57 |
| Table 3: Sheep Breeds Overview | 85 |

List of Figures:

| | |
|---|----|
| Figure 1: Depiction of the Research Process | 14 |
| Figure 2: Thorold Rogers Parchment Prices 1858-1683 | 36 |
| Figure 3: Gregory Clark Parchment Prices 1274-1706 | 38 |
| Figure 4: Salt Prices 1500-1850 | 43 |
| Figure 5: Map of Parchment-Makers 1601-1900 | 50 |
| Figure 6: Map of Parchment-Makers 1601-1650 | 51 |
| Figure 7: Map of Parchment-Makers 1651-1700 | 51 |
| Figure 8: Map of Parchment-Makers 1701-1750 | 52 |
| Figure 9: Map of Parchment-Makers 1751-1800 | 52 |
| Figure 10: Map of Parchment-Makers 1801-1850 | 52 |
| Figure 11: Map of Parchment-Makers 1851-1900 | 52 |
| Figure 12: Parliamentary Papers 1844 | 58 |
| Figure 13: Net Produce of Stamp Duties 1807 | 61 |
| Figure 14: Fibre Groupings - Dead Sea Scrolls | 77 |

Acknowledgements

I would like to thank my thesis advisor Dr Jonathan Finch of the Archaeology Department at the University of York for all his help and support throughout this project. I would also like to thank Matthew Collins, Sean Doherty, Sarah Fiddymont and Matthew Teasdale for including me in their conversations on their research surrounding the 'hidden history of parchment'.

I would also like to express my gratitude to my family for proof-reading my project, and apologise for the many hours they will never get back, and for the wealth of sheep and parchment knowledge they will carry around with them for years to come.

Declaration

I declare that this thesis is a presentation of original work and I am the sole author. This work has not previously been presented for an award at this, or any other, University. All sources are acknowledged as References.

Chapter 1: Introduction

1.1 Aims

The assumption has been made that parchment was made in the region of the place in which the document was written. However, certainly as early as the seventeen-nineties, it was clear that the parchment had not necessarily been made locally: a parchment of that fate from Hereford bore the name of a London stationer.'

(Ryder 1963, 541)

The aim of this project is to develop the first detailed overview of the post-medieval English parchment industry. This particular industry is one routinely overlooked by historians and archaeologists and this work constitutes the only in-depth investigation of the parchment industry of this period. However, not only is there ample evidence on which to create a detailed outline of the size, location and processes of this industry, but that this research will greatly contribute to our understanding of the past from both the new data it will provide on this time period, as well as potentially contributing new material to the debates surrounding the agricultural revolution, and the neglected area of stockbreeding, but also by providing essential historical context for groundbreaking new studies on historical DNA (hDNA) found in parchment.

However, being that this is the first detailed review of this industry, there is very little academic literature to highlight the key components of the industry, as well as the key factors shaping the industry. As a result this project is divided into two sections. Firstly, the piecing together of the history of the industry, assessing the size and structure of the industry and the various processes that occurred during production. Having established the outline and processes of the industry and any changes over time, the second section will explore the driving factors shaping the development on the industry. Put simply, the results of the first section should raise important new questions that need to be asked of the historical record and section two will attempt to answer these questions, taking the study beyond the industry itself to address questions from broader research agendas.

A review of the key changes in this industry, particularly those concerning the price of materials, the objectives of manufacturers and the fluctuations in the progress and efficiency, should prove significant in further developing our understanding of the post-medieval agricultural change and the wider-economy more generally. Furthermore, this research will help us to understand when paper became the primary 'hardware' for recording information. It will also offer new data to interpret the chronology and geography of the agricultural revolution, through the hitherto neglected area of livestock improvement. All the areas discussed above are topics that will be reviewed in this project and from which a good understanding of the location and processes of the parchment industry from the seventeenth to the nineteenth century will be developed.

Perhaps however, as stated earlier, the most consequential aspect of this research will support the advancement of these scientific techniques, currently deployed in the field of archaeology, to be applied in the study of the post-medieval period. The research of hDNA analysis appears the most quintessential use for this research, though it is by no means limited to this area alone. The recent investigative fervour surrounding the scientific study of parchment through the analysis of hDNA, as well as chemical and spectrographic analysis (discussed further in section 2.5 of the literature review), should benefit from research of this nature, greatly supporting its application on the post-medieval period.

1.2 The Research Question

What was the structure, size and geography of the parchment industry between 1650 and 1850 and what light can the results throw onto wider research goals in a variety of disciplines including hDNA studies, historical archaeology, and agricultural history, relating to the chronology and geography of agricultural improvement?

1.3 Objectives

To complete a literature review of both materials written recently and those written during the seventeenth to nineteenth centuries. The sources reviewed can then be used to conduct a detailed overview of the structure of the parchment industry, looking primarily at; the parchment manufacturing process, the uses for parchment, the socio-economic status of the industry and the overall condition of the industry during these centuries. This will involve reviewing a variety of external factors, such as; changes in law, taxation, the price of various agricultural products, the paper industry and transport.

Once completed, a more detailed analysis of the data can be undertaken, reviewing correlations in the data and assessing which factors were most significant in shaping the development of the parchment industry. In order to conduct such an analysis, a detailed review of the agricultural landscape between 1650 and 1850 must be completed, primarily investigating the location of various sheep breeds and the various agricultural systems to which they most suited. Any information on the geography of the parchment manufacturing industry and the identification of any centres of production will not only offer further information on this previously unstudied industry, but more specifically provide greater validity to post-medieval hDNA studies by offering further clarity on the origin of parchment samples. Furthermore, this work will assess the key factors in the changing industry and their effects on parchment quality over time.

Finally, a review of the impact of this research. Reviewing if this new information contributes to current debates surrounding agricultural improvement, more specifically

the timing and significance of an agricultural revolution, as well as how it affects the results and methodologies of future hDNA studies.

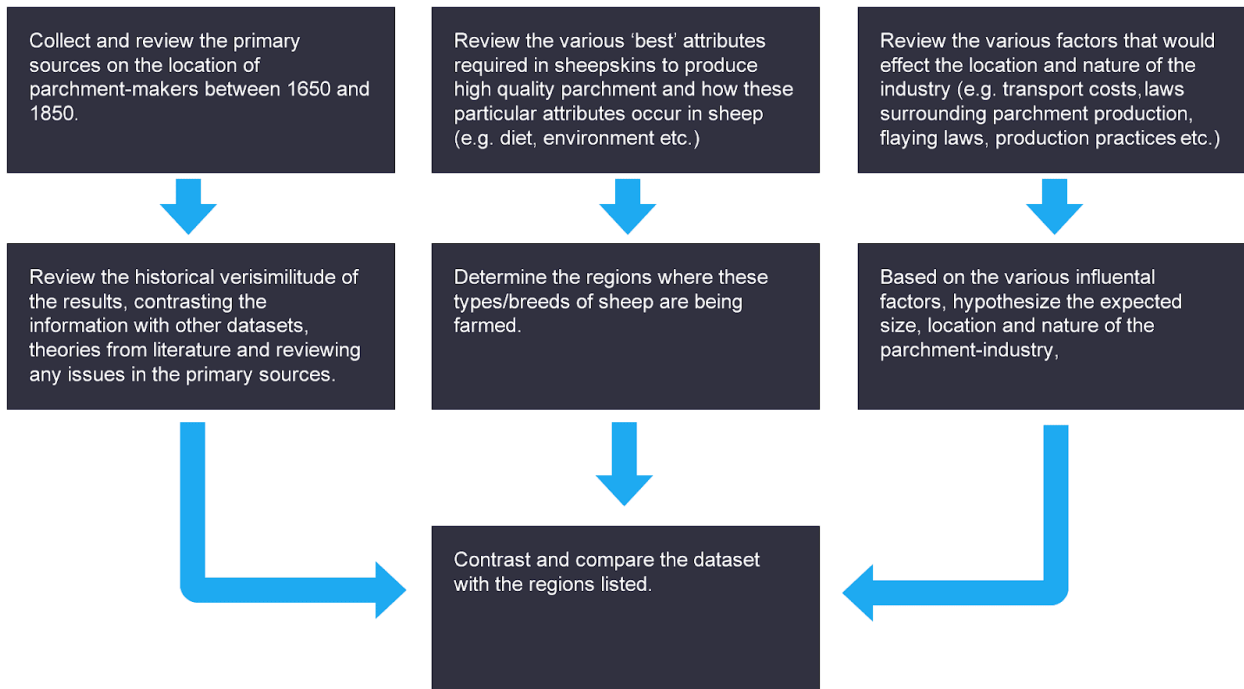


Figure 1: Depiction of Research Process

Figure 1 shows the research process that will be adopted. This process should allow for detailed analysis of the location of the industry, while also allowing for the review a significant number of external factors shaping the industry. This form of research allows for the more successful adoption of the *chaîne opératoire* method (see section 1.5) and should also provide a solid bedrock of information on a variety of topics on a subject otherwise untouched in the historical and archaeological literature.

1.4 Chaîne Opératoire

'Without fertilizer, no harvests, without livestock, no fertilizer, which has such an immediate impact; without seeded pastures, no livestock; finally, without the elimination of fallowing, no or very few seeded pastures; all is linked in agriculture, its system must be total'

Instruction to the National Convention 1794

(Cited in: Mazoyer and Roudart 2006, 313)

Much of the data surrounding the production of parchment is intrinsically linked to other areas of study. There is likely a number of inter-relationships between a variety of processes within the parchment industry and the broader agricultural economy. For example, the price of sheep, mutton and wool would have shaped the market and must be understood to be able to understand the dynamics of the parchment industry. Furthermore, issues such as changes in agricultural systems, cultural changes, legal changes, foreign policy changes would all have been entangled in the shaping and development of the industry. There are likely very clear links between many features of the parchment industry and the wider English economy, many not listed here, though the nature of these relationships is not always immediately obvious.

By using the methodological tool of *chaîne opératoire* it is possible in many cases to unravel the logical sequences that caused and affected certain changes. In other words, the correlations found between various linked markets can be analysed and used to make logical conclusions as to what happened. Perhaps the clearest description of this process can be found in Frederic Sellet's 1993 paper *Chaîne Opératoire: The Concept and its Applications* which states this method 'aims to describe and understand all cultural transformations that a specific raw material had to go through' (Sellet 1993, 106). Knowing the importance and manufacturing processes of certain materials allows inferences to be made as to the certain practices that were occurring, as well as to understand the logical steps taken to achieve these outcomes and to then map and understand various industries and agricultural practices.

Chapter 2: Literature Review

2.1 Primary Sources on the Parchment Industry between 1650 and 1850

The post-medieval parchment industry has remained 'hidden' in the both the historical and archaeological record. The primary resources are often sources that briefly touch upon the parchment trade, though the parchment industry was not usually their primary concern. Such documents included encyclopaedias, essays on livestock, farmers letters, tours of England, texts on the subject of the leather trade and legal documents, to name a few examples. Although these indirect sources are relatively numerous, there is a dire need of recording, comparing and contrasting, as well as a detailed analysis testing their validity. Unfortunately, validity has proved to be a significant issue, with the key components of the industry often being closely guarded secrets amongst parchment-makers. In 1775 Lalande highlighted this issue when writing his *Encyclopaedia*, stating, 'anyone writing an article on the mechanical arts will learn, after having for some time gone from workshop to workshop with cash in his hand' that they will often be paying for 'the most preposterous misinformation' (Cited in: Blom 2005, 47).

This project constitutes the first detailed investigation into the parchment industry during this period and so almost all information pertaining to the industry will prove important, and therefore a significant amount of information has been collected. The following chapters will therefore include a comprehensive review of all the major processes and influences of the parchment industry, hopefully creating the foundation for future studies in this area.

Firstly, in regards to how parchment is made, there are a number of texts from the eighteenth and nineteenth centuries which describe the process (see: Ballard 1882, 65-66; Houghton 1728, 326; The Saturday Magazine 1838, 134; Smellie 1771, 456; Chambers 1728, 351; Saxl 1954, 94; Blanch 1774, 42-43). However, these descriptions require thorough analysis, particularly as none of the authors referenced above were actually parchment-makers themselves. The work of Chambers (1728) and Smellie

(1771) are encyclopaedias and perhaps therefore were less likely to have been particularly thorough investigative pieces on the parchment trade, similar issues of validity remain with the *Saturday Magazine* article (The Saturday Magazine 1838). Ballard (1882) and Blanch's (1774) works are descriptions of the leather trade, only briefly reviewing the parchment industry, though these texts share strikingly similar descriptions of the manufacturing process. Finally, Houghton's work is perhaps the most useful. Written in 1694, though not published until 1728, it was written after an interview with a parchment-maker, reciting the production process in great detail. These few primary sources often share material details but they provide a vital historical platform from which to build a fairly thorough understanding of the process and whether it changed over the centuries.

Just as there are few contemporary descriptions of the production processes, so there are also only a few texts describing the industry on a macro-scale. Those that do exist appear to only describe the process of the materials through the industrial system. For example, Houghton (1728) and an article in *The Saturday Magazine* (1838) describe parchment-makers purchasing their skins directly from butchers (Houghton 1728, 326; The Saturday Magazine 1838, 134). However there are various different descriptions of the process. For example, Chambers and Smellie described the process as being started by the skinner and finished by the parchment-maker (Chambers 1728, 351; Smellie 1771, 456), while a later text describes the skins as being purchased directly from the abattoirs or slaughter-houses (Poole 1852, 275) and Knight, who describes the London industry, wrote about a 'skin-salesman' who acted as an agent between the sellers and the fellmongers (Knight 1842, 26), who then sold to the parchment-makers. Finally, Hagadorn states that from the sixteenth century onwards, English parchment-makers purchased their skins from fellmongers (Hagadorn 2012, 169), though it should be noted that he draws this conclusion by referencing two texts, neither of which supply compelling evidence, but instead simply outline the jobs of fellmongers (see: Kite and Thomas 2006, 72; Thomas 1983, 6). However Hagadorn does show evidence of Parisian parchment-makers purchasing their skins locally (2012, 170), which could perhaps reflect the English model. The directories and insurance records of the *Sun Office* and *Royal Exchange* insurance groups, two of the larger insurance groups that emerged around the turn of the eighteenth century, may also offer some insights into the roles of

parchment-makers during this period. Overall, the literature differs greatly on the process of the exchange of materials and whether there are differences over time, geographical regions, or simply authors who are mistaken as to how the process occurs, is not clear. The primary sources therefore provide a conflicting picture of how the industry functioned, at least on a macro-scale, again highlighting the need for greater research in this area.

A number of primary sources do provide some indication as to the scale and location of the industry. For example, Chambers describes parchment as making a 'very considerable article in the French commerce' with large quantities being sent to 'England, Flanders, Holland, Spain and Portugal' in the late 1720s (Chambers 1728, 351), a claim supported in *The Saturday Magazine* (1838, 134). Despite this, little is known about the exact quantities or where they were transported to within England. Also, in regards to where it was being made in England, it is clear that large quantities were being made in Bermondsey, London (Knight 1842, 18; Pendred 1785, 33, 37; Yeomans 2006, 134). This area had a long history of tanning and with Knight's detailed 1842 description of the parchment industry in the area (Knight 1842), it is possible to say with confidence that this was a major centre for parchment production.

Unfortunately however, this appears the majority of the literature on the topic. The historical information on the post-medieval parchment industry is incredibly fragmented, with only a small number of texts referring to the industry, and often only in a few pages. Of the more detailed summaries that do exist, many describe different systems, with the majority of them have never been subject to any academic scrutiny. However, a full review and analysis of these texts should begin to offer outlines of some of the major aspects of the industry, providing a reasonable overview of its history.

2.2 Modern Literature on the Parchment Industry

There is a significant lack of any modern literature on the parchment industry between the sixteenth and nineteenth centuries. This is an issue perhaps best highlighted recently by the lack of reference to any such documents in a number of modern studies on hDNA, in which providing an historical context for results would otherwise be essential (see: Teasdale *et al.* 2015; Collins *et al.* 2015; Campana *et al.* 2010). Despite this lack of literature, there are a number of texts on parchment in the Middle Ages, and

perhaps more importantly, there are also a number of texts on the medieval manufacturing processes, which could prove useful for a later historical study of the industry (see: Clarkson 1992; Gullick 1991; Bicchieri *et al.* 2008).

A number of texts on hDNA analysis highlight the need for greater research on the parchment industry (Burger *et al.* 2000). Species determination and STR-genotyping from ancient DNA in art and artefacts have provided a comparison of the genetic status of animals or plants with historical data and have greatly increased our knowledge, 'not only about the material itself but also about domestication, cultivation, planting and herding practices' (Burger *et al.* 2000). Bower *et al.* write that if an extensive DNA database of known provenance was created, then future studies showing identical or very similar hDNA identities could use it to determine the origin of their own samples (Bower *et al.* 2010).

Campana *et al.* write however that their results showed multiple hDNA signatures, in other words that their results were affected by the environment in which the skins and parchment were kept during production (2010, 1324), an issue that can begin to be combated once a better understanding of the post-medieval parchment manufacturing process is developed. It seems safe to assume that Campana *et al.* would have reviewed or even re-published their results if they could answer either of these issues, but clearly the material does not exist. In fact their only reference to the history of parchment is to a text by Ronald Reed (1972), however Reed only references modern methods of making parchment and a single recipe from 800BC. Ultimately there is a significant gap in understanding about the structure of the industry, and how parchment was made between the sixteenth and nineteenth centuries. Overall, all these studies only cover a very small number of primary and secondary sources on the history of the parchment industry, despite the clear benefits associated with reviewing within a more clearly defined historical context, though this appears to be due to a lack of literature on the topic than of choice.

Despite a lack of literature on these areas, there does appear to have been a cluster of work on parchment between the 1950s and 1970s, though primarily discussing how parchment is currently made and what methods and source materials contribute to the

manufacture of the highest-quality parchment (Ryder 1958; Ryder 1960; Ryder 1964; Ryder 1969; Reed 1972; Reed 1975; Reed 1991).

The state of the parchment industry has also been measured by the quality of the parchment over time, which a number of studies showing the steady decline of parchment quality over the centuries. Ryder covers 200 samples of parchment between the eleventh and nineteenth centuries, to determine the relative quality (Ryder 1991, 31-32). Relatively, it can be argued that seventeenth and eighteenth centuries parchment was of the worse quality than the medieval (Rogers 1887, 601; Ryder 1964, 70; Clarkson 1992, 5). Many writers have therefore made the claim that this shows the decline of the parchment industry and the rise of the paper industry, with cheaper, lower-quality parchment being made in order to compete. However, few writers appear to have considered the possibility of changes in the quality of the materials available to be used for making parchment, an area that will be reviewed in this project.

Yeomans (2006) is one of the only people to map parchment-makers using parish records. Her work covers the Bermondsey area in London, which was the key area for tanning in London and most likely therefore, the main centre of parchment production for all of England. This work might provide a useful methodology for the current study and data collection, as well as providing key information about the structure of related industry in London.

Similarly Hagadorn (2012) reviews the parchment industry in eighteenth-century France discussing elements of the industry such as; how parchment was made (2012, 169), how skins were preserved (2012, 171), the common use of 'adult sheep, as opposed to lambs' sourced from local butchers by French parchment-makers (2012, 170) and how the market functioned more generally. This work provides a useful methodology, but also a model of how a parchment industry would operate in that time period, in a culture and economy that is relatively similar to England's. It should be noted that the French parchment industry has been well-studied and is very well-documented, a luxury not applicable to the study of the English parchment industry. Fitzsimmons, for example, has studied the integration of parchment-makers in Paris with other corporations (Fitzsimmons 2010), and this might provide an insight into the role of English guilds in the parchment industry. Indeed, one might expect the French and English parchment

industries to share many similarities both in scale and processes making both of these pieces of work useful in both understanding the industry and creating a methodology for future research.

In conclusion, despite little information being available on the history of the parchment industry, a number of texts detailing the composition of parchment and the effects of breed-type, diet, environment, grease content and age on the overall quality. Combining this information with the overview of the various texts discussing parchment quality over time will offer some insights into the possible changes occurring in sheep farming in the past. These texts should also offer a number of interesting research possibilities for reviewing any future conclusions made on the parchment industry between the seventeenth and nineteenth centuries.

However, literature surrounding the history of the parchment industry between 1650 and 1850 is extremely rare. Very little is understood in terms of the size of the industry, its geography, its source materials, product prices, taxation laws, manufacturing laws, manufacturing practices or the various processes that occurred between an animals slaughter, the manufacture of parchment and the products eventual sale. More detail is known on the London and French parchment industry, though the literature here also remains limited. The overall lack of literature on this topic further highlights the need to initiate an investigation into this significantly overlooked industry and presents a source of historical data on a time period severely lacking in economic, historic and archaeological information.

2.3 New Areas of Research

There have been a number of groundbreaking new research methods surrounding parchment that have been developed in recent times. A plethora of new scientific methods have been adopted, for instance the chemical and spectroscopic analyses of parchment has allowed archaeologists to identify the inks and other products used on parchment for writing or decorative purposes (D'Agata *et al.* 2007). In 2000 it was shown that historic DNA (hDNA) could be 'isolated from most of the various biomaterials' and this hDNA has the possibility to be used to 'determine the organic remnant's genus/species of origin, and on the other hand, to create the genetic profile of an individual animal' (Burger *et al.* 2000). Hence, this new research could determine the breeds of animal populations used in parchment production and help to determine the timing, or existence of an 'agricultural revolution' by developing a detailed understanding of the animals being used in the agricultural system, assessing the timing of changes in sheep breeds due to changes in farming techniques, and developing a better understanding of the various objectives of farming communities. However this technology has primarily been focused on more specific rare medieval parchment samples (see: Stinson 2011, Teasdale *et al.* 2017, Stinson 2009, Clarke 2001), however the studies conducted creates a number of possibilities for similar research on the post-medieval period. However, studies of this nature, as stated earlier, require research on the processes of the parchment industry and how the parchment was prepared, for example as was warranted for the studies conducted on the Dead Sea Scrolls (see: Poole and Reed 1962).

There are of course still areas of concern with this research, for example Campana *et al.* in 2010 presented how DNA found in parchment is more complex than first thought, with the manufacturing process affecting the hDNA extracted as a result of cross-contamination during the industrial production process (Campana *et al.* 2010). However, as Teasdale *et al.* (2015) discuss, the form of hDNA research used by Campana *et al.* has 'well-documented deficiencies, particularly with regard to controlling and estimating contamination' and that this next generation sequencing now being adopted generates 'many orders of magnitude more data' (Teasdale *et al.* 2015, 2). These methods are clearly becoming increasingly accurate and it appears to be only a matter

of time before they are more widely applied to a range of archaeological research. However, in order to understand the results of these tests it is imperative that they be understood within the historical context. Therefore a detailed understanding of the industry and the manufacturing techniques is required before the results of these experiments can be fully understood. It also important it be understood where parchment samples originate in order to understand to what geographical region the results of any hDNA studies apply. As a result, the commonly adopted method of reviewing any stationers stamp or taxation stamp to determine the origin of a sample of parchment must also be questioned.

Overall, it remains particularly unfortunate that despite the incredibly interesting work on hDNA, its application to the sixteenth to nineteenth centuries has remained in its infancy, due in no small part to a significant lack of historical information on the parchment industry during this period. However, there is by no means a lack of information on this area and there therefore exists a great opportunity for research in this area.

Chapter 3: Overview of the Industry

3.1 Uses for Parchment

From modern collections of parchment it is clear the material was still widely used well into the early nineteenth century for a variety of purposes. However parchment was predominantly used for legal documents, for example, being the material used for the custody of charters, patents, acts of parliament, commissions, chirographs, deeds and recognizances, all of which were kept by the 'Master of the Rolls' (Chambers 1728, 208, 507) as well 'cockets', which were forms for recording goods that had been taxed (1728, 242). Parchment was also used in the manufacture of pocket-sized memorandums (Sibly 1808, 67), while parchment off-cuts were often used for the manufacture of glue (Smellie 1771, 456; Sibly 1808,112). With parchment being the material used for such a huge variety of products it appears clear that the industry must have remained of fairly considerable size, particularly with the rapid population increase between the fifteenth and nineteenth centuries (see: Wrigley and Schofield 1981). Furthermore, the nature of the documents, recording; property, acts of parliament, tax, apprenticeships, licenses and so on, likely means parchment was a material of high status, it being almost exclusively reserved for high status documents. These were also documents often required to be kept for a long period of time, testifying to the view of parchment as a high status material and one of greater state of cultural and physical permanence. Furthermore, the demand for the products listed above can only have increased over the eighteenth and nineteenth centuries as a result of the huge population increase that occurred over these centuries and the commensurate rise in bureaucracy and litigation. As time went on however, many of these documents were instead made of paper, but as we know for many modern large collections of parchment, the process was perhaps slower than many have presumed.

3.2 Who was Selling the Skins?

Unfortunately very little is recorded about the parchment industry in regard to the processes prior to the manufacture of parchment from skins. Exactly who was flaying

the skins and from whom parchment-makers were purchasing skins is challenging to determine from the limited literature and primary evidence.

In the seventeenth and eighteenth centuries Houghton described skins for manufacturing parchment being sourced from butchers (1728, 326), suggesting that the butchers flayed the skins which were then purchased by tanners and parchment-makers. Similarly, a number of the laws passed during this period on the topic of flaying skins, referred to butchers as the primary sources for flayed skins. For example, in 1603 the *'Act concerninge Tanners Curriers Shoemakers and other Artificiers occupyinge the cuttinge of Leather'* refers to butchers as those flaying animals, though also refers to there being various other trades that involved the cutting of leather (1 Jas. I c.22). In fact, for nearly all the laws on flaying that succeeded this Act, butchers are referred to as those primarily flaying animals. Similarly, in 1806 *The Flaying Act Considered; As, Without Benefiting the Public most Severely Oppressing the Butchers of London* (An Impartial Observer 1806) details the damaging effects of the flaying laws on the butchers of London. The author refers to the 'industrious butchers' being fined extremely large amounts of money for damaging skins (1806, 15). Finally, in 1808 when the inspection of skins in London was reorganised, the Butchers Company were assigned to appoint seven people to inspect all skins (Chitty 1824, 353). This law also included the Curriers Company and the Cordwainers, but given the many references to butchers and the power given to them in this law, it seems very likely that butchers were the primary flayers of carcasses.

A Treatise on the Laws of Commerce and Manufactures and the Contracts Relating Thereto, with an Appendix of Treaties, Statutes, and Precedents, published in 1824 also specifically refers to Butchers as those who flay and sell skins (Chitty 1824, 347). It refers to 'butchers, and others who flay carcasses', as desposing of the raw or salted skins to tanners who then sell them on to other workers of skinned-goods (1824, 347). However, it is not required that the skins be tanned prior to making parchment and so perhaps it is more likely that the parchment-makers purchased their skins from the butchers or fellmongers.

Chambers (1728) however describes the process of making parchment as being 'begun by the skinner, and ended by the parchment-maker' (1728, 351). Similarly, the 1771 *Encyclopaedia Britannica* suggests that the process begins with skinners (Smellie 1771,

456). This could refer to butchers, but a number of historical sources make a distinction between skinners and butchers (Bailey 1784, Campbell 1747, 332, 339; Kent 1798). Ultimately, it can only be determined that the initial stage of the process is started with the skinning of the animal by someone other than the parchment-makers, though in the majority of cases this was done by butchers.

In regards to who sold the skins to parchment-makers, the process in London is fairly well understood. In 1842 Charles Knight elaborated on the processes that occurred in London, discussing who actually sold the skins after they had been flayed. He states that the skins were sold to the various manufacturers such as the wool-staplers, leather-dressers, and parchment-makers, by fellmongers in the area (Knight 1842, 29). These dealers of skins were found throughout England during the eighteenth and nineteenth centuries; Bailey's (1785) directory lists over 20 listed fellmongers across England, though it was likely there were a great deal more.¹

A decade later, Poole wrote that the skins of sheep were 'carried loose from the abattoirs and slaughter-houses to the tanneries, either loose, or in casks without heading, for the purpose of being tanned into leather, which is used in various ways; as covers for books, parchment, harness, &c.' (1852, 275). This description of the process remains somewhat odd, as parchment was not actually tanned during its manufacture. However Knight also describes these skins being transported through London, stating; 'Who is there that has not, at some time or other, had his ears dinned and tormented in the London streets by a cart, rattling and rumbling over the rough stones, and laden with sheep-skins?' (Knight 1842, 26). Whether this occurred exclusively in London or more widely across England's towns and cities is difficult to determine. However it does offer another example of fellmongers plying their trade, purchasing flayed skins and selling them on the streets of London.

¹ It is also worth noting that a few of the fellmongers listed in Bailey's 1784 directory are often listed as being both fellmongers and skinners.

It appears that skinners and butchers almost exclusively flayed the skins, and then sold the skins either directly to tanners, parchment-makers, or to skin salesmen and fellmongers, who would then sell on the skins. Unfortunately, there is little in the literature on the exact process. It appears that many people could be involved in the sale of parchment and skins, with the materials passing through many places (and presumably geographical locations) prior to reaching the stationer. However the records that do exist show that the skins were flayed primarily by butchers and skinners, then sold either directly to the manufacturers of skin-goods or to fellmongers to sell. In London in particular, skins were purchased from slaughter-houses and then sold throughout the city by skin salesmen.

It also appears that in many instances fellmongers would also be parchment-makers. Despite laws preventing tanners from selling skins (see section 7.2), the laws did not extend to parchment-makers. The insurance policies shown in section 3.5 show the secondary occupations of those listed. Of the 17 individual parchment-makers listed, around 47% of them were listed as also being fellmongers. This would have been of a significant benefit to parchment-makers as they would then have access to the specific skins required for the manufacture of high quality parchment. Furthermore, it would have allowed for two sources of income, a position not available to many others in the various skin trades, and perhaps necessary given the low incomes of many parchment-makers.

In conclusion, the skins were flayed primarily by butchers and skinners, then sold either directly to the manufacturers of skin-goods or to fellmongers to sell. There are also many instances where the parchment-makers were both source the skins and use them to manufacture parchment.

3.3 How was Parchment Manufactured?

'Good parchment must be thin, strong yet flexible, and have a smooth surface.'

(Ryder 1991)

There are a number of historic texts on how parchment was manufactured, although there are discrepancies in some of the more precise details. A particularly detailed description of the process from the period under discussion can be found in *Husbandry and trade improv'd: being a collection of many valuable materials relating to corn, cattle, coals, hops, wool, &c.* (Houghton 1728, 325-328) which has been summarised below:

1. Leave a heap of skins for between six hours to three days, according to heat or coldness of the climate. The colder the climate, the longer the skins must be left.
2. Hang the skins up on smooth poles until dry.
3. Wool can then be scraped off. In hot weather this can be done the next day, but in cold weather it may require a week.
4. The skins are then put into a pit of lime and water where they lie for a week.
5. The skins are taken out and laid about the head of the pit, where the water runs from them for five to six hours.
6. They are then put into a second pit, limed further and begin to look whiter, where they lie for about three weeks, being drawn two or three times a week.
7. Then they are put into a third pit, which Houghton calls *the ripening pit*, where they lie for about a fortnight, again being drawn two or three times a week.
8. Then they are taken out of the pits and stretched upon harrows (the frames).
9. The flesh is then drawn off with drawing knives, 'drawing from the upward parts downwards with strong and frequent draughts' (Houghton 1728, 326).
10. The back is then shaved with *a shaving knife*.
11. The skins are then dried, 'in a windy room in a hovel', and if winter they can be dried in the sun, if summer, they should be kept out of the sun. (Houghton 1728, 326)
12. The bellies are then shaved with a pumice stone and the skin is cut down from the harrows.

As stated, this is perhaps the most detailed outlining of the manufacturing process during the eighteenth century. However it is worth comparing these details with a variety of other descriptions from various sources in order to highlight possible variations in the process.

The first step is rarely mentioned in primary texts, besides an 1838 article in *The Saturday Magazine*, which states that the skins are first de-haired, then smeared with

quick-lime on the flesh-side and then were 'Folded once in the direction of their length, laid in heaps and left to ferment for ten or fifteen days' (The Saturday Magazine 1838, 134). The initial step of allowing the skins to deteriorate before removing the wool is also a standard step for modern parchment-makers and appears unavoidable both then and now as a necessary step, allowing for the wool to be removed more easily. Hanging the skins and scrapping the wool were the same as the standard process for tanning leather. They are also steps taken in the manufacture of modern parchment samples as well as being steps outlined in a variety of other historical texts (Yeomans 2006, 33; The Saturday Magazine 1838, 134; Smellie 1771, 456).

One improvement in the manufacturing process that did occur was the 'splitting process', which involves splitting the skin and using only the flesh-side for parchment (Plenderleith & Werner 1971, 45; Ryder 1991, 31; The Saturday Magazine 1838, 134), though this was a change that appears to have occurred very early in this period. In fact parchments lacking follicle remains, with 'an open mesh of coarse collagen fibres suggesting the flesh side of a split skin' have been found in samples as early as the thirteenth century, though becoming common from the sixteenth century onwards (Ryder 1969, 534-535).

Putting the skins in a lime pit, washing them and then stretching the skin over a frame were also clearly standard steps in making parchment and are confirmed elsewhere in the literature (Reed 1991, 26; Smellie 1771, 456; Yeomans 2006, 33; Ballard 1882, 65-66; The Saturday Magazine 1838, 134; Ryder 1983, 730-731; Hagadorn 2012, 169). However, many washed skins on site while others appear to have cleaned skins in fresh running water. This appears true at least in 1619, when complaints are recorded about parchment-makers washing skins in Northamptonshire rivers (Page 1930, 26-30). This may explain the evolution towards the increased usage of pits for cleaning skins. There is also an example of an individual named Mr Cogan who washed skins in running fresh water in Bristol, claiming that, although slower, this would sufficiently soften the skins (Ballard 1882, 70). Although seemingly not the norm, at least in London, this may have been adopted by many in the English countryside, though presumably not in major cities due to the issue of severe pollution of local water supplies.

There are only a small number of sources that detail how long the skins were required to be in the pit (or pits), with the overall amount of time varying depending on the skins used. Watt (1906) describes having to leave greasy skins in a lime-pit for a week, or even ten days (Watt 1906, 439), suggesting the period of time they were left in these pits would have been variable depending the levels of grease in the skins. Also, modern parchment-makers lime the skins for a far shorter period than three weeks and yet it appears the manufacturing process, despite mechanisation, has remained very similar. The skins were limed numerous times and in different pits, or the same pit with different solutions, and the process seems to have been clearly understood by writers both then and now, however the time taken liming the skins appeared to differ significantly.

The final steps in the process, from stretching the skins to the pumice, are described in a number of other texts (see: Smellie 1771, 456; Yeomans 2006, 33; Ballard 1882, 65-66; The Saturday Magazine 1838, 134; Ryder 1969, 532; Plenderleith and Werner 1971, 45). However, the time it would have taken for the skins to dry was dependent on the weather and the skins used.

In conclusion, the range of literature offers a very clear and detailed overview of the history of the manufacturing process of parchment, with the process remaining very similar over time. However, the profession of parchment-maker was a difficult and required a great deal of skill and training.

3.4 The Socio-Economic Position of the Parchment-Maker

Unfortunately, there are very few primary sources that allude to the socio-economic position of parchment-makers. However, it is also important to consider that perhaps most parchment-makers were located outside of major cities (discussed section 4.3) and so would have proven difficult for writers of the time to judge the scale and revenue of the industry.

| Profession | Sums given with an apprentice: | Sums necessary to set up as a Master: | Hours of working: | Page Number: |
|-----------------|--------------------------------|---------------------------------------|-------------------|--------------|
| Parchment-maker | to 10 | 50 to 100 | 6 to 9 | 337 |
| Tanner | 5 to 10 | 100 to 1000 | uncertain | 339 |
| Fellmonger | 5 to 20 | 500 to 2000 | Daylight | 334 |
| Skinner | 10 to 50 | 100 to 2000 | 6 to 8 | 339 |
| Stationer | 20 to 30 | 100 to 2000 | 7 to 8 | 339 |

Table 1: Campbell's London Tradesmen
(Campbell 1747, 334-339)

Campbell's *'The London Tradesman: Being a Compendious View of All the Trades, Professions, Arts, Both Liberal and Mechanic, Now Practised in the Cities of London and Westminster'*, offers overviews of the sums given with apprenticeships, the cost of setting up as a Master and the working hours on a wide variety of professions in London. However, even in a text as thorough as this, even Campbell confesses to his inability to determine the incomes of journeymen parchment-makers (Campbell 1747, 321). Campbell does however list some key figures that may prove useful (see Table 1). His data shows the fees surrounding parchment-making as being some of the lowest of any London-based skin-related profession. This data combined with the quote from Campbell (1747, 321) appears to show the profession was one of little financial merit, with Campbell describing the profession as requiring 'neither strength nor ingenuity, nor is there much profit attending it, and very little of it manufactured in town, so little at least, that after the strictest enquiry, I cannot find what wages is given a Journeyman' (Campbell 1747, 321). However, parchment-making was clearly a fairly highly-skilled trade, with prior apprenticeship training and an in-depth knowledge of the production

required to partake in the profession. Campbell however was unlikely to have actually known the parchment manufacturing process, it being a widely protected trade secret, and so his opinion appears conjectural. However, Campbell does clearly show that parchment-making, at least within the city of London was a profession of relatively low income.

This conclusion is further supported by *The Book of Rates*, which shows the excise licence for parchment-makers cost as little as £1, which was far lower than most professions, and again, lower than related professions (Anon 1787, 109), though this may be due to the already high stamp duty set on parchment (discussed section 5.1). However, any aspiring oil leather dressers would have had to pay double the rate of a parchment-maker, and a tawer of leather would have paid five times this amount (1787, 109). However, the fact the government felt capable of issuing both licensing costs and stamp duty indicates the market still made enough money, firstly to survive the costs, but also that it made enough money to profitably enforce nationwide licences and tax. However, when comparing the costs with similar professions of the time, it seems safe to conclude that for many parchment-makers, the profits remained relatively small.

The incomes shown in the Witherby data (see appendix 1) do however show some parchment-makers were making huge sums of money by the end of the eighteenth century. Perhaps a huge spectrum existed for profit-making potential, with small and large parchment works coexisting, however it may also suggest that the incomes of parchment-makers increased significantly during the eighteenth century with a rise in litigation and legislation. However, perhaps a more likely situation is that the already low incomes of parchment-makers coupled with the intensive taxation and regulation of the market may have forced smaller parchment works out of business. Overall, despite a lack of data on this area, it is possible to see either an increase in profits for the period, or a huge range in the levels of production of the various parchment firms.

3.5 Effects of the Growing Paper Industry

It is important to note that the sixteenth to the nineteenth centuries were a time that most writers consider to have seen the steady decline of the use of parchment and the beginning of the dominance of the paper industry (Lyll 1989, 11-29; Ryder 1991, 26; Reed 1991, 217). Though this is not necessarily a reflection of the socio-economic status of parchment which, as shown earlier, was still widely used for a variety of purposes, most of which were documents of major significance. However, it is often remarked for example, that after the introduction of paper, the quality of parchment declined and the parchment industry fell into serious decline (Rogers 1887, 601; M. L. Ryder 1964; Ryder 1991; Clarkson 1992). It is rarely disputed that a causal relationship exists here, however a widespread number of other factors appear to have been ignored after the finding of such a 'neat' correlation in the historical data. This decline could also be the result of a forced change in manufacturing methods, a change in the quality of the source materials used in its production, government policies, or due to a decline in demand for specifically high-quality parchment and shift to a more homogenous product. Furthermore, more recent research has shown that the quality of parchment appears to have actually increased between the sixteenth and eighteenth centuries, followed by a second sudden decline in quality around the turn of the eighteenth century (see Appendix 2), indicating the introduction of paper and the subsequent decline of parchment is not the whole story. Certainly the introduction of paper could explain this initial decline, however answers still need to be found for this second fall in quality, for if parchment quality and the state of the industry is intrinsically linked, there are clearly other factors that contributed to the eventual collapse of this industry.

A direct link is often drawn between the rise of the paper industry and the subsequent decline of the parchment industry. However as Trolander states, 'actually what drove the rise in paper initially was improving economic conditions in England during the late fourteenth and early fifteenth centuries, which created demand for skilled religious and state administrators who relied on paper as a medium for record keeping' (Trolander 2014). Furthermore, if accepted that there were consistently around 15 million living sheep each year (as stated in Apostolides *et al.* 2008, 43), then it could have proven cost-effective to have produced parchment during this period, with the huge supply of

skins lowering the cost of this key source material. Also, although the rise of paper would have naturally affected what some parchment-makers were producing, many began developing new uses for their parchment, 'To meet this sudden new challenge of the printed book, parchment-makers of the sixteenth century found an outlet for their product by using it as a full binding material to cover the early paper editions an activity which they themselves largely undertook and developed' (Reed 1991, 217). Parchment was still heavily involved in the production of books, and yet there still exists, 'a chasm in our knowledge of the origins of the skin materials used in the construction of books' (Neate *et al.* 2011), which is further evidence of the importance of this research. Finally, the significant population increase between the eighteenth and nineteenth centuries (see: Brownlee 1915, 221-222; Wrigley and Schofield 1989, 577; Wrigley 2011, 170-171) needs to be considered. Provided that parchment maintained any remotely significant usage during these centuries, the demand for the product was likely to have increased substantially. Again, understanding what parchment was used for during seventeenth to nineteenth centuries is therefore very consequential.

Overall it is clear that traditional parchment products were in decline during a period when the use of paper was increasing across England. The term 'traditional parchment products' being key here, as it appears parchment was beginning to be used in different ways in order to survive, though the extent of what parchment was actually used for remains mostly unknown. This also brings into question the traditional view of the parchment industry falling into decline as a direct result of the widespread introduction of paper. A review of the changing parchment quality, transaction sizes and number of parchment-makers would answer many of the questions surrounding this debate. In fact a review of these details would offer a far clearer picture of the widespread introduction of paper across England as well offering more information for those studying the changes occurring in the English book trade. Furthermore, the traditionally held view of the widespread adoption of paper being the direct and final cause of the decline of the industry should be questioned.

3.6 The Price of Parchment

The price of parchment is a source of data rarely used by writers when discussing the agricultural revolution, despite its value in offering insights into an entire unstudied industry, the value of livestock and the various leather and skin trades. However, despite the potential gains, there exists two key issues with the data on parchment prices. Firstly that parchment prices from the eighteenth century are difficult to obtain, and secondly, that parchment often came in a variety of quantities, making comparisons of price over time difficult. For example some sales were of individual parchment skins, some by the dozen and others by rolls, a legally defined term meaning twenty skins (The Saturday Magazine 1838,134). This being said, there is a number of fairly comprehensive datasets on parchment prices.

3.6.1 J.E.T. Rogers Parchment Prices

Roger's lists a significant number of parchment transactions before 1682 but none thereafter (Rogers 1887, 575-606). This perhaps reflects the decline of the parchment trade and a belief that the later prices were not important enough to include, or perhaps that the industry moved away from production for universities, from which Thorold received most of his prices (Rogers 1887, v). Similarly, it could be a result of prices were no longer recorded in the same materials and sources, as after a 1711 act (9. Ann. c.11) parchment prices were being set by the government, with the government also becoming the almost sole buyer of parchment (discussed in section 5.1).

Figure 2 presents a graph of the parchment transactions in Roger's work with the values converted into pence in order to better illustrate the changes over time and to allow for simpler data comparisons. Furthermore, transactions of vellum have been removed, as well as two transactions for parchment rolls (though they can be found in Appendix 3).

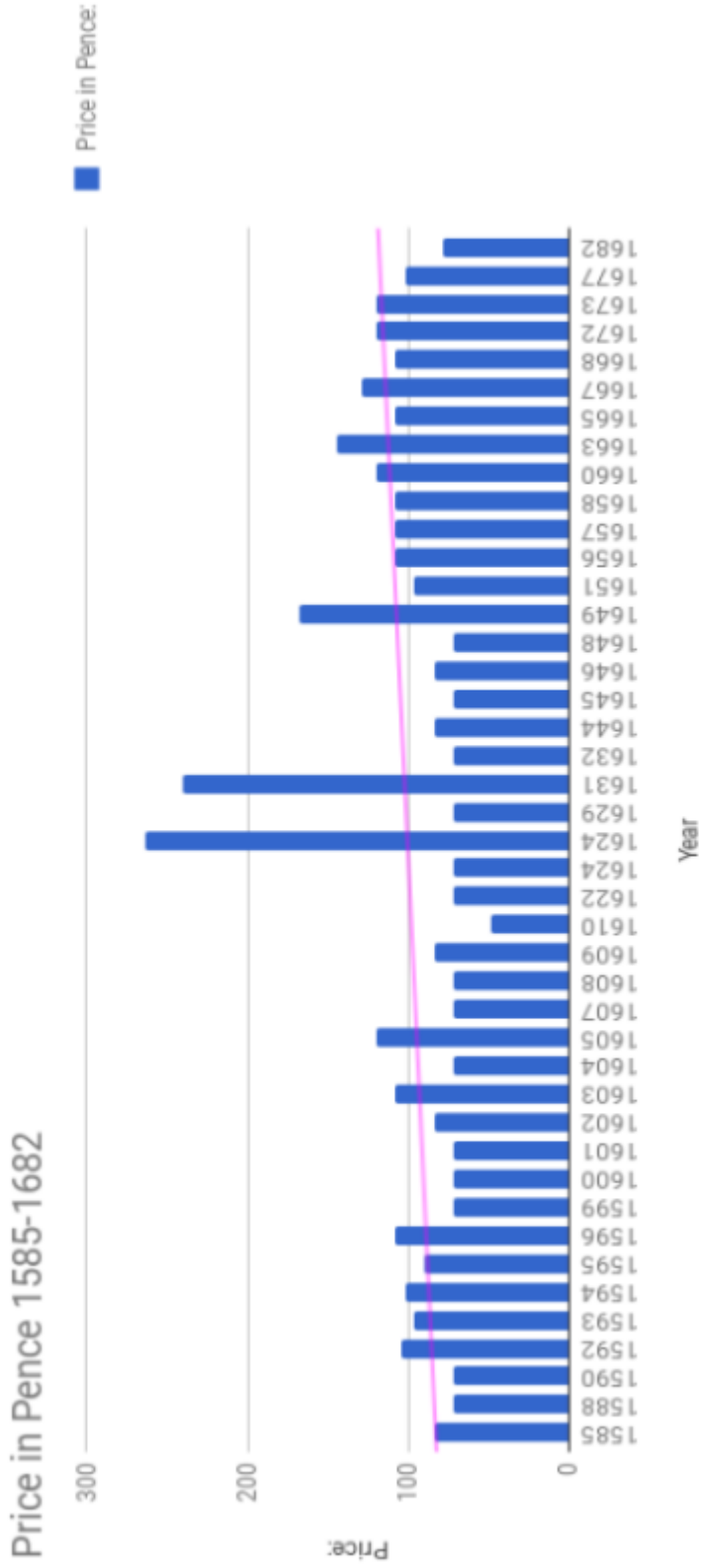


Figure 2: Thorold Prices 1585-1682

Source: Rogers 1886, 575-606

Prices converted into pennies in order to illustrate here.

The transactions collected show the price of parchment to have increased, though at a fairly slow rate (see figure 2). There are a number of very high transaction values, perhaps being the sale of very high quality parchment for specialist products. Unfortunately, with transactions as small as these, significant variability can occur. However Rogers does state that there was a 114% increase in the price of parchment between his collection of 1541 to 1582 parchment transactions, and his 1583 to 1702 data (Rogers 1887, 794), though did not publish these transaction values in any later volumes.

Ultimately, the prices collected by Rogers show that the price of parchment could vary quite significantly, with some transactions showing a dozen skins selling for considerably more than others, though the price of parchment seems to have remained stagnant for much of this period.² Even the 114% increase does not constitute a huge increase when compared to other price rises of the time. When adopting the same periods of comparison to Clark's collection of prices (Clark and Lindert 2006), mutton increased by 149.72% between 1541 to 1582 prices compared to the 1583 to 1702 prices. Barley increased by 105.46% and oats by 90.84%. However if the price of parchment had failed to increase by any significant amount by 1682 (as shown in figure 2), and then increased by 114% by 1702, parchment must have had a very sudden increase in price.

3.6.2 Gregory Clark Prices

These prices are from a spreadsheet compiled by the economic historian Gregory Clark from the University of California, a document later re-formatted and converted to metric by Professor P. Lindert (Clark and Lindert 2006). Unfortunately, the original source of parchment prices has not been listed, with the only other instance of these prices being presented by Professor Clark were in an unpublished conference paper titled 'Towards a Global History of Prices and Wages' (Clark 2004). This collection of prices is however, one of the most comprehensive collections available and spans, admittedly with some gaps, from 1274 to 1706 (see figure 3).

² It is also worth considering that the variability of prices was perhaps an indication of the variability of parchment quality

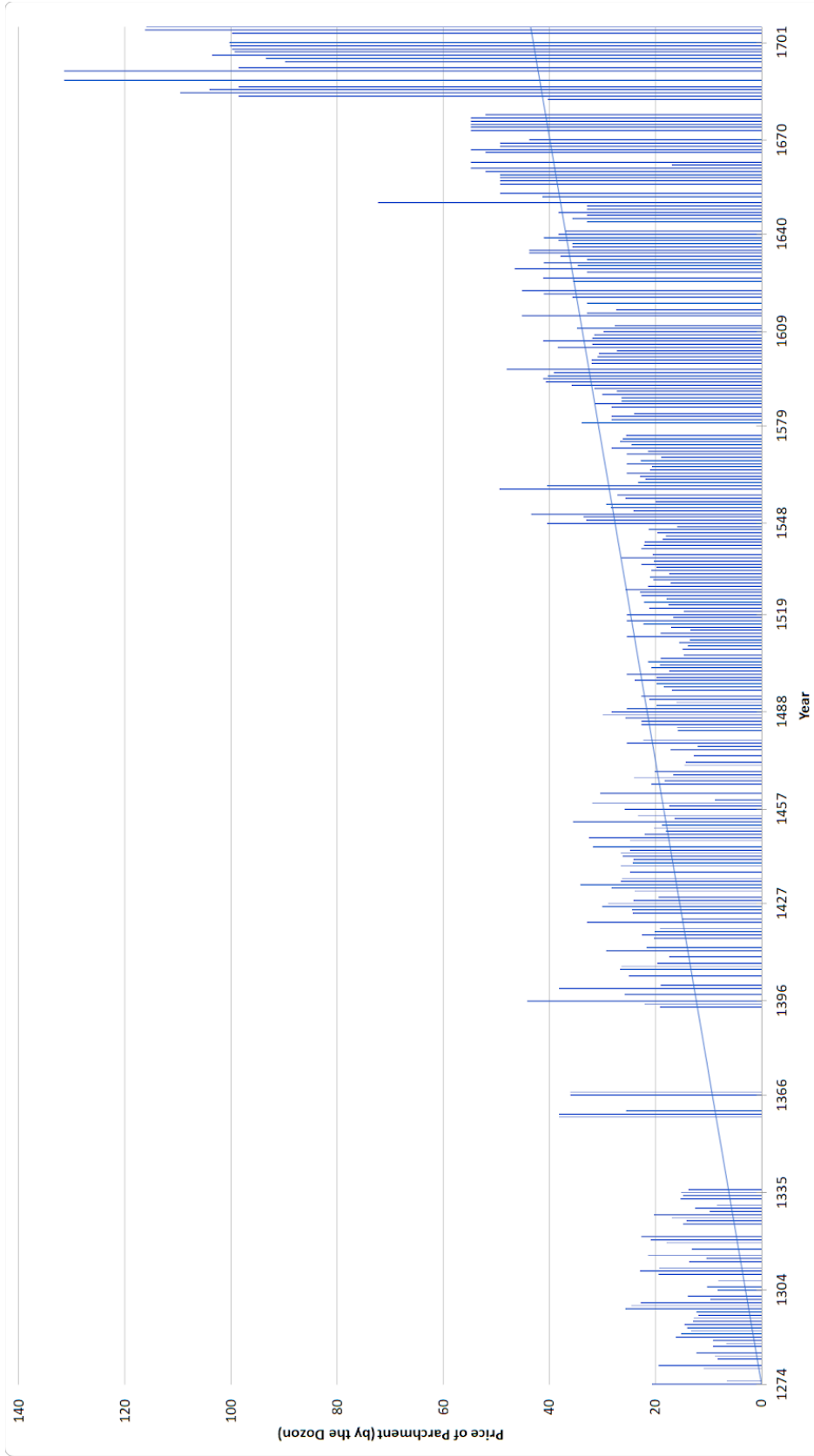


Figure 3: Clark Parchment Prices 1274-1706
 Source: Clark and Lindert 2012

Similar to the results of Roger's 1887 work, the prices shown in Clark's work present a long history of a slowly ascending price for parchment followed by a sudden price increase by the end of the eighteenth century. This sudden increase perhaps being an increase in prices being set by parchment-makers as a result of the advent of new forms of taxation on some parchment products. However, Hughes (1941) writes; 'the contracts have been made with only two or three great stationers or others entered into partnership with them who engross thereby to themselves the whole dealing and have it in their power to put higher prices upon the office than they otherwise could', with this being true at least until 1711 (Hughes 1941, 248). Unfortunately the prices end 1706, and a review of the original source material could help to shed light on these dramatic price changes and the sudden lack of parchment prices. There is likely some connection however with the High Treasury beginning to set prices in 1711, as well as becoming the exclusive purchasers of parchment. To conclude however, the market appears fairly stable, with the prices only increasing slowly and furthermore appear to support the prices collected in Roger's listed transactions.

Even when comparing Clark's prices to the inflation in the prices of goods from the period, as well as the average wages of the period, the increase in the price of parchment appears fairly substantial (see Appendix 4). However, when comparing the percentage increase in the average value of Clark's 1541 to 1582 parchment prices with the average value of his 1583 to 1702 prices, in a similar method to Rogers, the value of the parchment actually decreases by 9.8%. There is however a spike in the prices of parchment in Clark's work, similar to the Roger's price spike, with Clark's appearing to occur around 1683, with the following year seeing a 100% increase in the price of parchment. Both of these datasets seem to show the price of parchment as being stagnant for hundreds of years before a quite sudden spike roughly around 1683-1684.

This considerable stagnation in prices may indicate a decline in the demand for parchment, and in part, a decline of the industry more broadly. It may also however show an ability by parchment-makers to dramatically lower prices through increasingly efficient methods of production and drastically increasing supply or lowering quality, though this appears unlikely given manufacturing methods remained consistent for

several centuries.. The results of this section will be revisited in the conclusion to understand these changes within the context of other changes occurring in the market.

3.6.3 Witherby Publishing Group Data

This section will review the data from the Witherby Publishing Group (see appendix 1) collected by Sean Doherty of the University of York (Doherty 2018). The records show a number of transactions that occurred with four parchment-makers during the eighteenth century with fairly significant sums of money being exchanged.

The data appears to show that a very different type of parchment market had emerged by the end of the eighteenth century, with parchment-makers generating very significant incomes. Unfortunately there is no information on the quantities of the parchment being sold, but even if one grants a significant increase in the price of parchment, the four individuals listed are clearly making a considerable quantity of parchment. This is in stark contrast to the few dozens being sold in various parts of the county, as shown in Roger's 1887 work.

Furthermore, it indicates that the price of parchment must have increased, for if the price of parchment remained stagnant and the price of parchment skins remained similar to earlier centuries, these four individuals would be making incredibly vast amounts of parchment. For example, the average price of a single sheet parchment during the seventeenth century according to Rogers data (1887), was just under a shilling. If the value for parchment had remained similar until the later eighteenth century, Noah Crook for example, a parchment-maker from the Witherby data, would have been manufacturing between 7000 to 10,000 sheets of parchment a year.

The Witherby data provides a clear indication that the price of parchment must have increased during the eighteenth century. Furthermore, it shows a possible changing market structure in the industry. The four individuals from the Witherby data were making very significant sums of money and producing very large quantities of parchment, and yet prior to the eighteenth century the transactions sizes appear to have been far smaller and from a variety of parchment-makers. Perhaps this marks the rise of larger parchment works and a move away from smaller-scale parchment-makers.

3.6.4 Conclusions

Overall, the nature of the records on the prices of parchment is sporadic, containing fairly substantial gaps in information. The general consensus across the datasets however shows a fairly stagnant market until towards the end of the seventeenth century, when there appears to have been an increase in the price of parchment. Even when compared to the general inflation in the prices of goods from the period, the increase in the scale of parchment production, at least per site, appears fairly substantial. Unfortunately, the prices available in the literature stops a few years prior to new legislation being enacted whereby parchment prices were to be set by the High Treasury.

The setting of prices, coupled with the implementation of various laws surrounding the production of parchment that were being set throughout the eighteenth and nineteenth centuries appear the likely culprits of the increasing prices as inferred from the Witherby data. Furthermore, a nineteenth-century writer under the pseudonym 'An Impartial Observer' wrote that these laws surrounding the quality control of parchment production and the flaying of skins was expected to reduce the price of goods, but that instead they caused a number of goods to increase in price (An Impartial Observer 1800, 20)

3.7 Salt Prices

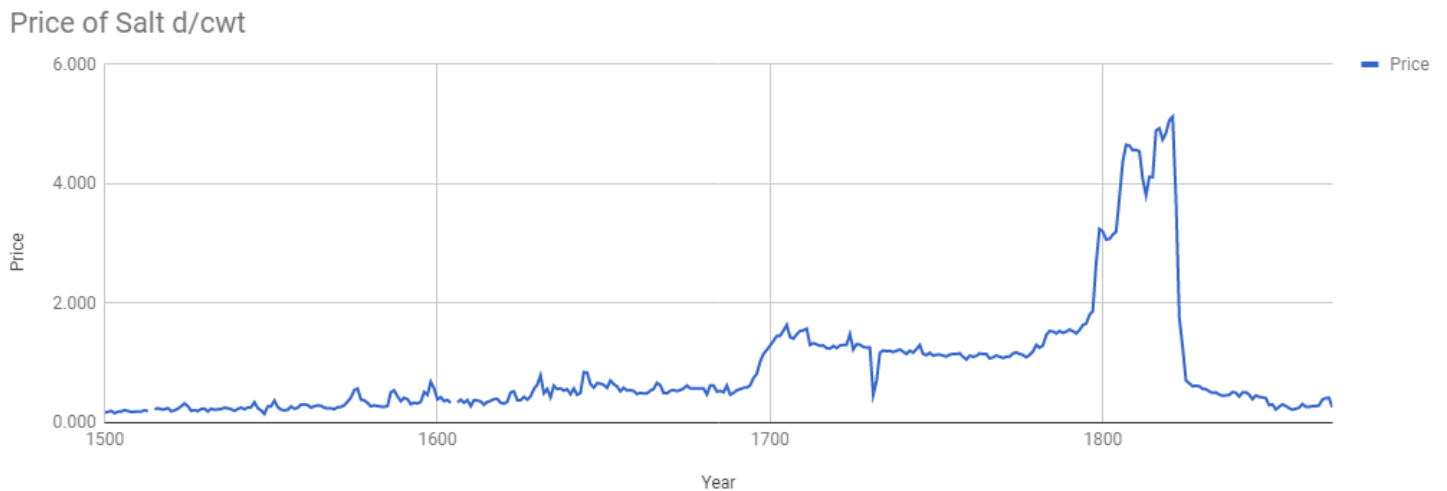


Figure 4: Salt Prices 1500-1850
Source: Clark and Lindert 2006

The price of salt would have been a major influencer on the development of the parchment industry. Without the application of salt to skins, the majority would have only lasted between two to three days before they would become unusable. Each skin, at least in more modern skins, requires roughly two cups of salt for every pound of hide and each skin to be salted twice (Churchill 1983, 20). This is a fairly considerable quantity of salt.

In 1643 a Board of Excise was created and issued an early tax on salt. This tax appears likely to account for the early rise seen above. It was withdrawn 1660 but reinstated in 1693 (6 Wil. & Mar. c.7). This tax was then continued, and in some particular cases, were increased in 1696 (7 & 8. Wil. c.31). The tax was then extended again 1698 (Pulteney 1731, 8³). In 1702 the salt commission was founded, which overlooked and enforced the tax on salt. This tax on home produced white salt was by this point several times its market value and was twice the rate on imported foreign salt (The Salt Association 2018).

³ This law was passed under 9th and 10th years of King William, however I have yet to find the exact chapter pertaining to this extension of the law for this period of time. There are however many extensions made in the 9&10 Wil. c.44 law and so perhaps it is this law to which Pulteney refers.

In 1730 the commission was ceased and the salt tax ended (3 Geo. II c.20), and this would explain the very sudden dip in the price of salt around this period shown in figure 4. Lord Carteret when speaking in the House of Lords stated that, in regards to the various taxes set up and the effects they had on the 'manufacturers and artificiers' of the country stated; 'no tax lay so heavy upon them as this tax upon salt' (Parliament. House of Lords 1742, 66). After the country was 'free from such a heavy burden' (Parliament. House of Lords 1742, 67), the prices again rose to pre-taxation prices. Then, despite protests, the duties on salt were reinstated in 1732 (5 Geo. II c.6), this being the likely cause of the return to high salt prices post-1732. In 1798 the salt commission was abolished and in 1825 the tax on salt was removed, though the price remained fairly high during this period, most likely as consequence of the Napoleonic Wars.

The high prices for salt during this period likely restricted many parchment-makers to sourcing skins locally, with any skins sourced further than a days travel likely being in an unusable state by the time it arrived.

Chapter 4: Data on the Location of Parchment-Makers

This section will present 676 records of parchment-makers between 1600 and 1900 from a variety of record-sets, including; apprenticeships, probate records, baptisms, directories, marriage records, records on crimes, militia lists, data from the Witherby Publishing Group, an unpublished site report and a variety of references to parchment-makers from various authors. The records go beyond 1650 and 1850 scope of this project in order to further assess the validity of pre-census materials, assessing whether the numbers prior are particularly low or show any clear record-keeping biases.

4.1 Review of Sources

Overall, it is the census data that provides the most significant proportion of the records in the data collected (see appendix 5). However, these records only cover the period after 1851. Prior to this period, probate records and baptism records constitute the majority of the records employed in this study, the latter being used in preference to probate records where possible, with baptism records being produced when the parchment-makers were still alive and engaged in the trade.

The majority of all these records have been sourced from the ancestry website, *Findmypast.co.uk*. Websites of this nature constitute perhaps the most significant participation in the digitisation of the historic record, turning the process into a financially viable business model. As such, many of these sites now almost exclusively own access to the digitised forms of these records, which, although present the issue of paywalls to research projects of this nature, provide the opportunity to collect and interpret huge datasets in a relatively short period of time. Until the archives sector or academic community finds a viable method to digitise these records and make them more accessible to the general public and academic institutions, use of ancestry websites such as *Findmypast.co.uk* are almost unavoidable. However, as this project hopes to show, use of sites such as this present the incredible importance of 'bridging the digital gap', as termed by *The National Archives* in their current national digitisation project (The National Archives 2018).

The records collected of the eighteenth century are primarily made up of apprenticeship and probate records (see Appendix 4). These two records types are consistently found throughout the various periods. Partly as a result of the various duties associated with such documents, but also due to the importance of inheritance, land and the nature of parchment-making as being a highly skilled profession. However there is the issue of geographical bias in these records. One such example may be York, which holds a very significant number of apprenticeship records, due in part to the *City of York Freeman and Apprentices* records that span over eight centuries. This may bring into question the very significant number of records found here prior to the eighteenth century, however, with the records being kept all the way up until 1930, the later lack of records does offer further validity to the eventual decline of the northern parchment industry, at least in the Yorkshire region.

The eighteenth century records offer a greater variety of records types. This is mostly in part to the new and improving forms of records being kept and issued. This allowed for the use of more baptism and marriage records as oppose to probate records, with the former offering greater historical validity, having been recorded when the parchment-maker listed would have still been alive. Regardless, these probate records do offer some insights into the socio-economic position of parchment-makers during the time period, with a seeming trend appearing to show a growing number of wealthy parchment-makers over time, however, a more detailed analysis of these documents is required. There is also an increase in directory records, with the recording and publishing of trade directories becoming an increasingly common undertaking during the period. However, there is an significant lack of parchment-makers being listed in these directories, both national (see Appendix 6) and local (see Appendix 7). This highlights two key points. Firstly, the lack of parchment-makers in major towns and cities, where most trade directories covered. And secondly, it further highlights how 'hidden' parchment-makers are in the historical record and the need for the use of digitised local record sets.

Finally, the nineteenth century offers the largest number of records, with 424 records during this century alone. The records collected do go beyond what is considered the

scope of this project (1650-1850), however this use of later, higher volume of records should highlight any errors with the data that immediately preceded it.

4.2 The Scale of the Industry

Upon on first glance, 676 parchment-makers listed over a 300 year period seems rather few, at least when considering that the 1841 census lists 5,957 tanners and 6,982 tanners operating during 1841 alone (A Vision of Britain 2018). Furthermore, parchment is still being used for a wide variety of products during this period (see section 3.1).

There are a variety of possible reasons for this figure. It may be a lack of representation of parchment-makers in the historical record. Already it has been shown parchment-makers were rarely mentioned in various trade directories (see Appendix 6 and 7). This appears significantly in part due to parchment-makers operating outside of major towns and cities. This appears very likely given the various smells and pollutants involved in parchment production, as well as the need by many for a fresh water supply, meant many were restricted to operating outside of major cities. Parchment-makers were also required to send the finished products to inspectors on the outskirts of towns and cities (see section 5.2) and so there may have been little benefit to actually operating within larger towns and cities, to pay higher rents and to then send the product out of town for inspection, then taxation in London and eventual sale by stationers. What forms of record-keeping existed during this period being even more sparse in the English countryside. The only major cities in which parchment-makers were consistently found in the historical record, namely Salisbury, York and London, we find a significant number of records.

Furthermore, perhaps many did not list their occupation as a parchment-maker. Unlike butchers, curriers and tanners, it was legally permissible that parchment-makers, glove-makers and a number of other light leather producers, could work other professions such as tanning, cutting or selling skins, or manufacturing other leather goods (see section 5.2). For example, many parchment-makers listed in section 4.5 were also fellmongers. There was also strong connections between parchment-makers and glove-makers. Many were organized together in various guilds in many locations over long periods of time. For example; York between at least 1144 and 1419 (Hoffman 2011, 184; Saxl 1954, 18), Salisbury between 1613 until at least 1757 (Haskins 1912, 80, 204,

737), London (Saxl 1954, 18-19), Norwich (Crouse 1768, 175), Chester (Freemen of Chester 1992, 18), Warwick (Craig 1960, 287) and Paris (Fitzsimmons 2010, 13) are just some places where parchment-makers and glove-makers had been organised together. Glove-makers would have had, in most cases, the necessary tools, while also using similar types of light skins, primarily sheepskins. Finally, parchment manufacture was a highly skilled occupation, though many of the laws of the period allowed for those without apprenticeships to work on parchment, provided they were under the supervision of trained parchment-makers. Perhaps many people working on parchment were listed as 'labourers' or 'servants' and were not themselves listed as 'parchment-makers' in the historical record.

However, the number of parchment-makers collected in the data presented in section 4.3, appears to actually represent a fairly accurate overview of the number of parchment-makers. These numbers after all do not offer insight into any changes in the scale of production in various parchment works. The 1841 census for example only lists 297 parchment-makers over the age of twenty in all of Great Britain, with only two operating in Scotland (A Vision of Britain 2018). There is no huge increase from the data collected and this census data. Furthermore, this number is fairly significant when compared to the paper industry. The 1841 census lists 933 paper-makers. Paper now produces the majority of materials for the book trade and as the primary writing material. However, Trolander estimates only one third of paper was produced for these purposes, with the rest being produced for other products (Trolander 2014, 27). It is perhaps a surprise then that an industry producing a material for so many uses, producing across the country (2014, 28) unlike the parchment trade, only employed just over twice the number of producers. Especially considering the fairly laborious process that was still involved in paper production during the period (see: Campbell 1747, 125-126).

The Witherby data (appendix 1) also shows parchment-makers of the period producing very high volumes of parchment. Furthermore, the parchment industry employed a fairly significant number of manufacturers in spite of the industry only operating out of a relatively small number of production centres. The various economic motivations for larger parchment works, particularly the contracts between the High Treasury and larger firms shows that the scale of production increased (discussed in chapter 5). In other

words, the number of listed, trained parchment-makers may be relatively low in the historic record, however the levels of production at these firms may have increased significantly.

Overall, the data shows that the parchment industry was remained an industry of significant economic importance. There remained a significantly large, highly-skilled workforce operating in England. The scale of this industry further highlights the need for this research and highlights a significant source of future data and historical information.

4.3 Map of Parchment-Makers

This section reviews the maps made on the database created. All the maps are shown below, however an interactive map is also available online at:

<https://drive.google.com/open?id=1cYHpfVWXK77s8yffkx3q6gN4ho8j8Eu6&usp=sharing>

An overview of the data is also available in appendix 8, with a detailed table of the specific towns and cities recorded in appendix 9 and the types of records used during each period is located in appendix 4.

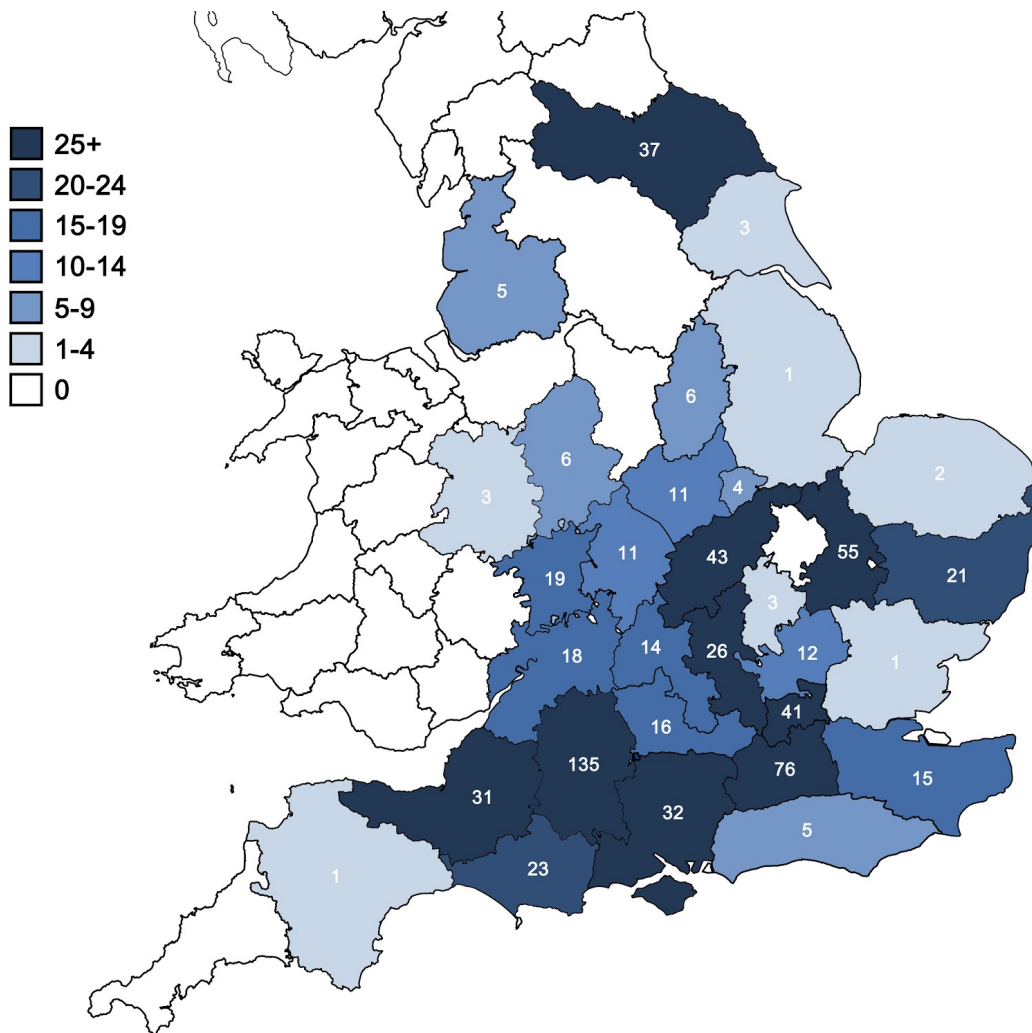


Figure 5: Map of Parchment-Makers 1601-1901

1601-1650

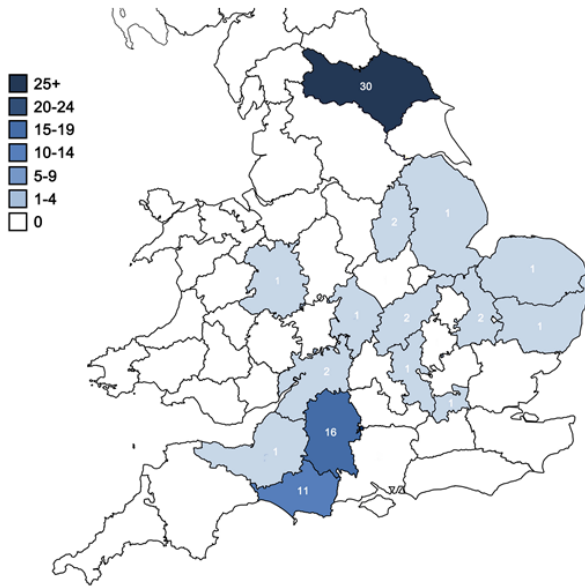


Figure 6: Map of Parchment-Makers 1601-1650

1651-1700

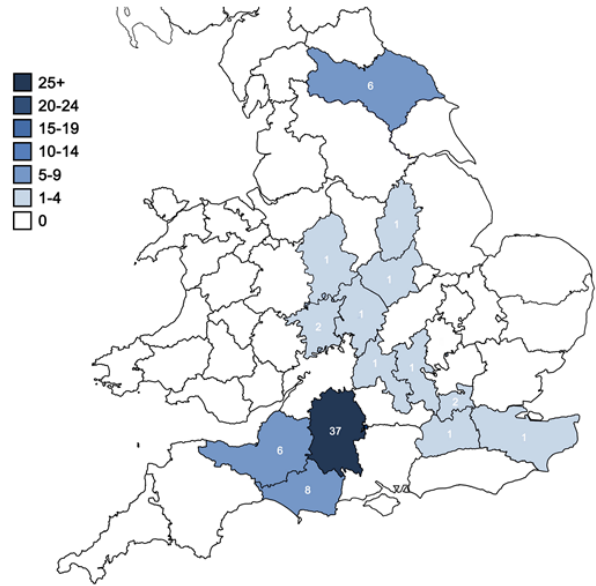


Figure 7: Map of Parchment-Makers 1651-1700

1701-1750

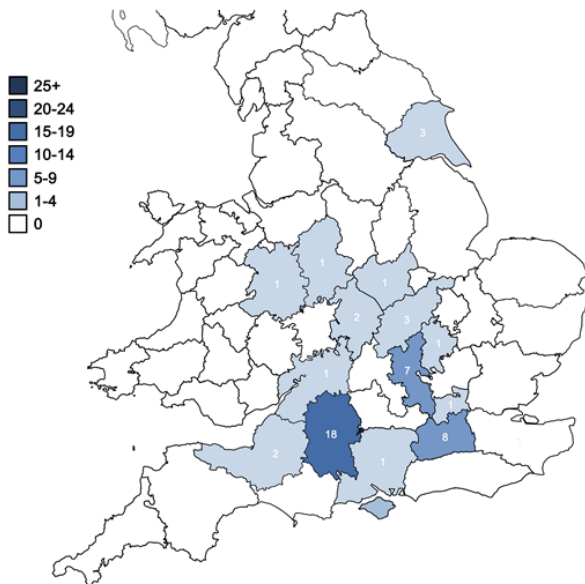


Figure 8: Map of Parchment-Makers 1701-1751

1751-1800

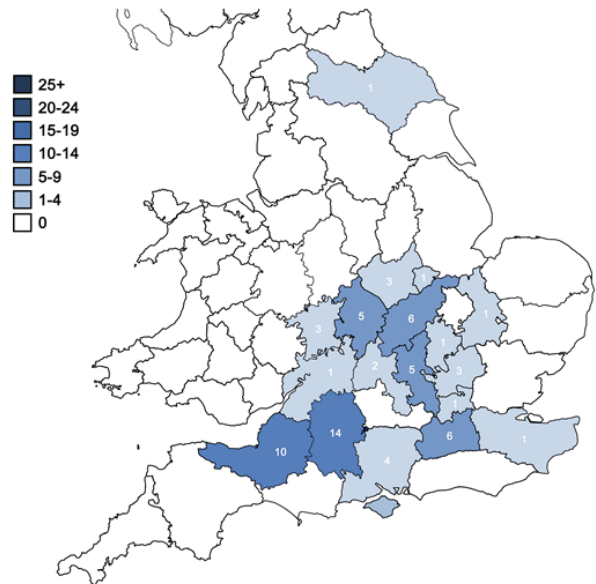


Figure 9: Map of Parchment-Makers 1751-1800

4.3.1 Review of the Data

The maps highlight several key aspects of the data. Firstly, a lack of parchment-makers in the far south-west and the north of England. In particular it appears there were a fairly significant number of parchment-makers operating in York until the end of the seventeenth century, though there was a very sudden decline in these numbers over time. This likely suggests a decline in what was once a fairly major centre of parchment production, perhaps unsurprising due to a once flourishing book trade (Palliser and Selwyn 1972, 207) and the once high number of those purchasing legal and religious materials in the region (see: Winters 2012). The subsequent decline of the parchment industry was perhaps therefore related to the decline of the book trade industry that had occurred in the region, however there a number of other possibilities are discussed in the second half of this project..

Secondly, the data shows a fairly consistent number of parchment-makers in the Midlands. The figures here are not significantly high, however they remain relatively constant during between 1601 and 1900. The parchment industry may have survived in this region due to the number of developing urban centres, however if population density and demand for local parchment supplies were directly correlated, it would be expected that this trend would continue in the more northern regions. It could be stated that this is the result of bias within the documentary records, however the trend continues very clearly in the later census data of 1851 and 1861. Perhaps the most significant early conclusion that can be made is that there is no correlation between developing urban centres and centres of parchment production.

The data instead shows some very clear centres of production in the south of England, primarily in the regions stretching from Somerset to Middlesex and between Middlesex through to Cambridgeshire and Suffolk. In fact there appear to have been some very clear towns and cities that were centres for the production of parchment between 1650 and 1850 (see Appendix 9). The top ten locations with records of operating parchment works account for just under 44% of all parchment records from all the data collected.

The parchment-makers listed in Salisbury, Sherborne, Marlborough, Malmesbury and the neighbouring town of Charlton represent a significant proportion of the data, with 115 of the parchment-makers for these five locations alone. Salisbury in particular was

consistently a city with relatively significant number parchment-makers and was famous for its production of parchment, at least during the nineteenth century (Aubrey and Britton 1847, 95). Malmesbury also had a history of parchment-making, being an area which around c.1800 had very few industries of significance besides 'the manufacturing of leather, gloves, parchment and glue (Moffatt 1805, 162, 167). Aubrey and Britton offer a possible theory that this was the result of 'strong waters' in the region, well-suited for the washing skins (1847, 95).

Sawston, Cambridgeshire and Bury St Edmunds also offer interesting results. Sawston for example shows very few records being found for parchment works in the region until the nineteenth century, after which the data suggests the development of relatively large parchment industry emerged. A similar trend exists with the town of Bury St Edmunds, with only one record appearing between 1601 and 1800, though with 20 records appearing in nineteenth century. It appears something has occurred that has either allowed for, or supported, the growth of two large centres of production during the nineteenth century.

The persistent number of records in Middlesex and Surrey (primarily Bermondsey and Southwark) is however of little surprise. The boroughs inside the City of London offered significant benefits to parchment producers, being able to source from local abattoirs, as well as providing access to a incredibly vast trade network both nationally and overseas. The city also had a significant local market, being the one of the largest cities in Europe with a large demand for legal documents, particularly from the central government. However, a significant tanning industry had long been associated with the settlements just beyond the outer reaches of London. Yeomans highlighted the eighteenth and nineteenth century existence of a parchment industry in this area as well as its two major periods of production (Yeomans 2006). These industrial suburbs were outside the punitive guild taxes enforced in the city of London, offering even greater financial benefits to parchment-makers, and other workers of skinned goods.

Overall, the data shows a number of very clear centres of parchment production over the period as the nexus for a fairly significant parchment industry across the country as a whole. Despite the traditional belief that the parchment industry fell into significant decline following the widespread adoption of paper (as discussed in section 3.4), it

appears a significant number of parchment-makers were still operating at least until the late eighteenth century. The majority being located in South West England, the Fenlands regions and London, or at least in very close proximity to London.

4.4 Sun and Royal Exchange Insurance Policies

A key source of information on the locations of parchment-makers can be found in *The British Book Trades 1775-1787* which lists a number of insurance policies taken out by parchment-makers with the *Sun Fire Office* and *The Royal Exchange* insurance companies (Maxted 1992). These records are by no means extensive, the records only cover twelve years during the last quarter of the eighteenth century, and they also only represent two of the insurance companies during a time when at least six were operating in London and eight in the provinces (Maxted 1992, vi). However, these policies state where the parchment-makers were located as well as offering a more detailed insight into the value and size of the firms and any secondary occupations the individuals held. Interestingly they further validate a number of the centres of production presented in section 3.3, with Salisbury, Malmesbury and St Margaret's (in Marlborough) all listed. Coventry (10 parchment-makers) and Leicester (7) are also listed, these also being areas with a slightly higher than average number of parchment-makers (see Appendix 8).

Perhaps more surprisingly is the number of parchment-makers listed with high value insurance policies. Particularly as, although different for the *Royal Exchange*, the *Sun Fire Office* only insured against fire until the end of the nineteenth century (Dickson 1960, 110). This means that five individuals (records 10, 12, 16, 17, 21) held fire insurance policies of a very high value, particularly when compared to a number of other insurance policies of those in other professions (see: Maxted 1992). The value of these policies is a clear indicator of the size and value of some of the parchment works in operation during this period, as well as further highlighting a number of key centres of production.

| No. | Name | Value of Insurance | Location | Year | Secondary Occupation | Page No. | Policy Type |
|-----|--------------------------|--------------------|-------------------------|-----------|---|----------|-------------|
| 1 | J Abell | £300 | Coventry | 1780 | | 1 | S |
| 2 | W Abell | £800 | Leicester | 1778 | | 1 | S |
| 3 | B Allen Jr | £200 | Bedford | 1779/1781 | Fellmonger | 1 | R |
| 4 | M Allen | £500 | Bedford | 1781/1782 | Fellmonger | 1 | R |
| 5 | T Bailey | £300 | Saint Margarets | 1778 | Fellmonger | 3 | S |
| 6 | T Bailey | £200 | Saint Margarets | 1778 | Fellmonger | 3 | S |
| 7 | T Ball | £500 | Oundle | 1777 | Fellmonger | 4 | S |
| 8 | T Ball | £500 | Oundle | 1779 | Fellmonger | 4 | S |
| 9 | J Crook Jr + J Crook Snr | £900 | St Margarets, Wiltshire | 1777/8 | Fellmonger | 22 | S |
| 10 | J Crook Jnr | £1,300 | St Margarets, Wiltshire | 1780/81 | Fellmonger, dealer in cottons | 22 | S |
| 11 | Noah Crook | £200 | Marlborough | 1781/82 | | 22 | S |
| 12 | T Gibbs | £1,000 | Salisbury | 1777 | | 35 | S |
| 13 | J Peck | £800 | Eynsham | 1786/87 | Fellmonger | 68 | S |
| 14 | B Porter | £500 | Tanhouse Lane, Hull | 1779/1780 | Skinner and tanner | 70 | S |
| 15 | E Pugh + A Willis | £550 | Andover | 1778/79 | | 70 | R |
| 16 | J Seymour | £1,600 | Spon Street, Coventry | 1780 | Fellmonger and glue maker | 78 | S |
| 17 | J Seymour | £1,000 | Spon Street, Coventry | 1783/84 | Fellmonger and glue maker | 78 | S |
| 18 | J Shrimpton | £400 | Marlborough | 1780 | Chair and basket maker, hardware man, oatmeal maker &c. | 79 | S |
| 19 | R Triniman | £200 | Salisbury | 1781/82 | Tripe dresser | 88 | R |
| 20 | R Triniman | £200 | Salisbury | 1782/83 | Tripe dresser | 88 | R |
| 21 | G Young | £1,500 | Salisbury | 1779 | | 98 | S |

Table 2: Sun Fire Office and Royal Exchange Insurance Records 1780-1779

Source: Maxted 1992

4.5 Parliamentary Papers 1844

To further test the validity of the previous data collected from primary sources (section 4.3), below are figures published by H.M. Stationers Office (HMSO 1844, 1-237). This data shows there to have been relatively few parchment-makers operating throughout England during the nineteenth century, identifying 357 parchment-makers, though only 302 of them being over the age of 20, likely due in part to the number of young parchment-makers in training as apprentices. This data supports the location of many of the major centres of production across the south east, below a line from the Wash to the Bristol Channel. It further shows the lack of any parchment manufacturing industries in the North of England, or the south West. The spreadsheet containing this information is available on the CD included in this project.

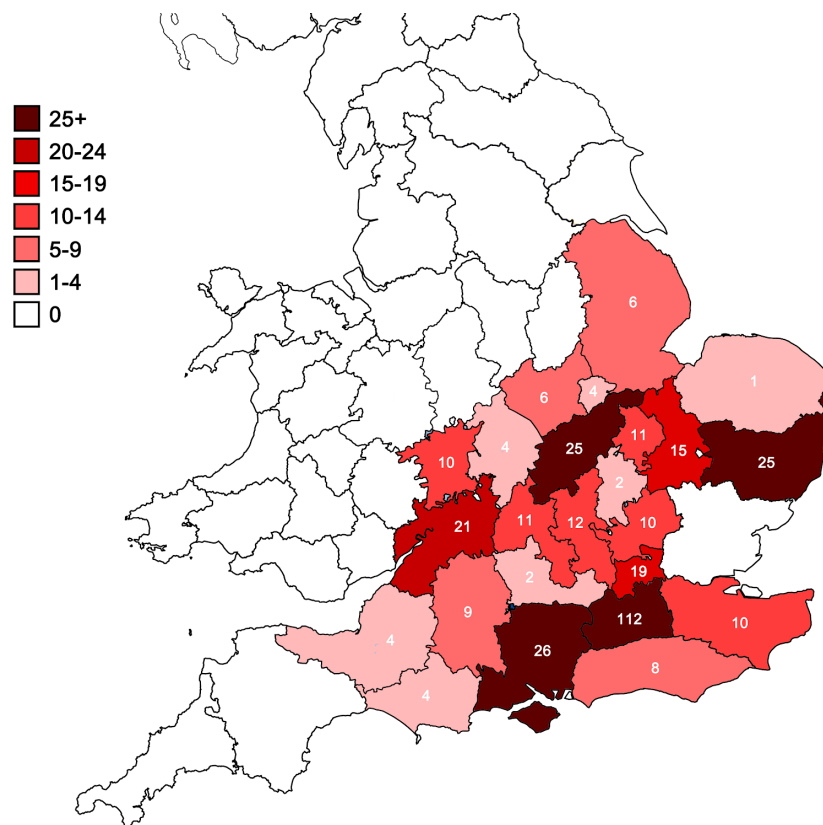


Figure 12: Parliamentary Paper 1844
Source: H.M. Stationery Office 1844, 1-237

Chapter 5: Parchment Laws

Despite the often sporadic nature of many of the records of the seventeenth, eighteenth and early nineteenth centuries, there still remains a reservoir of information in records pertaining to tax and law. The history of parchment industry can be, in part, ascertained from what is found in these records. The significant events and changes that occurred in the parchment industry, as well as many of the main economic pressures of the period can be determined by a review of this information. The period was marked by increasing levels of government regulation of various industries and the parchment industry was no exception. Taxation in particular played a key role in driving market forces and with the growing development of early capitalism and the improved trade and transport networks, all these areas will have played key roles in shaping the parchment industry during this period.

5.1 Parchment Taxation

The 1688 revolution had plunged the country into 'financial commitments on a level previously unimaginable' (Beckett 1985, 287) and as such, the period of 1650 to 1850 was subject to a plethora of new and extensive taxation laws in order to raise money for the crown. In 1694 the Bank of England was established, and this can perhaps be seen as the focal point from which after a wave of various money-making government acts were created, primarily centred around the implementation of temporary taxation laws, the majority of which were later extended or made permanent.

However, no review of the laws specifically pertaining to the taxation of parchment exists. As such, a review of all laws pertaining to parchment has been conducted and an overview of parchment taxation laws can be found in appendix 10, with a table of acts in appendix 11. This history of these laws must first be understood before reviewing the effects they had on the market.

The laws passed implementing duties on various parchment-based products, similar to many products and materials taxed during this period, were very extensive. There were a number of laws passed during the seventeenth century, with many legal documents

being subject to various stamp duties, along with strict organisational changes, only allowing trained individuals to partake in certain skinned-based activities, for example tanning, flaying and parchment-making. However, the most significant and extensive act occurred in 1711 during the ninth year of Queen Anne's reign (9 Ann. c.11). As stated in appendix 10, *all* parchment would now be taxed and was required to be sent to London for inspection and the issuing of duties. Furthermore, the movement of skins, the network of the parchment trade and the market value of parchment was now all essentially under the total control of the government.

This is hugely significant in the development of the parchment industry. Any parchment-maker situated in, or around London was now at a great advantage. After this act, stationers would now purchase parchment (set at a fee fixed by the High Treasury) and have the parchment issued with the necessary duties in London and then distribute the parchment across England, sending the parchment to one of the many stationer offices set up across the country. With the distribution network of parchment almost exclusively owned and run by the government, and with the market value set far lower, the survival of a parchment work could only be achieved with an increased market share, reduced production costs and a steady demand for parchment from a local government-run stationer. The reduction in production costs being of particular significance and a standard only achieved with an increased scale of production, a local supply of high quality skins (likely purchased in relatively high quantities), the improving efficiency of the manufacturing processes (though combined with a likely reduction in parchment quality) and minimal land rents and local tax rates.

Stationers were also certainly capable of stockpiling parchment supplies, further increasing government control of the market. The industry was therefore likely subject to great fluctuations in the levels of demand, with the now almost exclusive purchaser of parchment (the government) offering beneficial treatment to larger parchment works. The government could control how much it purchased, and at what price, and consequently, at least from the parchment-makers perspective, the market was likely to have been incredibly volatile with huge barriers to entry.

Over the next century, the laws covering the taxation of parchment became increasingly extensive (see appendix 10). The result of these increasing duties and various attempts

to improve their implementation would have placed further strain on the smaller parchment works and further incentivising the development of southern-based larger parchment works, capable of increased economies of scale and of providing a steady supply to government stationers.

However, the actual success of these laws must be questioned. The persistent re-issuing of old duties, the development of new duties, stamps and regulations, as well as the continuous attempts to strengthen the government's market control brings into question the success of previous laws. Conversely, with the necessity that all parchment be stamped, and the continued implementation of new stamps and increasingly difficult to bypass regulations, any black market would likely have declined significantly over time.

Furthermore, it must also be considered that the extent of these laws and the incredible amount of government investment may instead indicate the success of these laws. By the early nineteenth century, the amount of money being made from stamp duties on various products made almost exclusively from parchment was considerable (see figure 13), and with the government controlling the value and production of parchment, very large sums of money were clearly made. The fact that these laws were continuously enforced and reissued over the course of a century, under the separate rule of four separate monarchs may be a testament to the success of profit made by the government and the continuous attempts to access further profits in already lucrative market, though at the likely expense of the success of the industry itself. The highly regulated and difficult conditions were only

*Net Produce of the duties on Stamps in England in the year ending
5 January, 1807¹*

| | |
|--|------------|
| Probates | £346,581 |
| Bills of exchange and promissory notes | £515,959 |
| Composition on promissory notes by the Bank of England | £32,000 |
| Sea policies | £199,819 |
| Receipts | £126,782 |
| Pawnbrokers licences | £4,680 |
| Lace dealers licences | £2338 |
| Appraisements and licences | £3553 |
| Fire policies | £3023 |
| Ale licences | £117,620 |
| Game certificates | £94,628 |
| Legacies | £234,911 |
| Fire Insurance | £335,193 |
| Newspapers and almanacks | £262,414 |
| Pamphlets | £370 |
| Advertisements | £101,727 |
| Medicines and medical licences | £33,522 |
| Hats and hat licences | £43,390 |
| Gold and silver plate | £70,276 |
| Cards | £24,482 |
| Dice | £2298 |
| Post-horse licences | £185,503 |
| Stage coach " | £157,162 |
| Race-horses | £708 |
| Deeds, Law proceedings (not before specified), also sea policies for the country (not Scotland) | £1,225,275 |
| Newspapers and almanacks in Scotland, which cannot be distinguished | £4,124,224 |
| Total | £4,124,224 |

¹ Add. MSS. (Huskisson Papers) 38750, § 257. Many of the items in the above list only became subject to stamp duty after 1780.

Figure 13: Net Produce of the duties on Stamps in England in the year ending 5 January 1807
Source: Hughes 1941, 264

completely abolished in 1815, likely as a result of widespread social unrest of the period and the various petitions made by many of the various members of the workers and traders of skinned goods (see appendix 12) and not due to any failing in regards to the funds raised for the government budget.

5.2 Laws Surrounding the Manufacture of Parchment

The examiners have attained the faculty of discovering the most trifling and frivolous reasons for inflicting punishment for unavoidable offences, insomuch, that the said fines are now nearly doubled.'

(An Impartial Observer 1800, 23)

From the sixteenth century through to the nineteenth century the implementation of a series of increasingly intrusive laws surrounding the flaying of animal skins is apparent. A detailed overview of these laws had been conducted and is available in appendix 12, as well as a table outlining the specific laws available in appendix 13.

The act of 1603 was the first act regulating the quality of skins and various skin-based products and remained the only major defining regulatory act for over a century (1. Jac. c.22). The law was likely a response to the decline of the guilds, as well as the significantly declining overall quality of parchment that had occurred in the previous century (see Appendix 1). The steady improvement of parchment over the seventeenth century and the lack of any newly issued laws regulating parchment manufacture appear a testament to the success of this law.

However, the later eighteenth century manufacturing regulatory acts appear a response to the 1711 law (9 Ann. c.11), the act essentially granting control of the movement, price, distributors and tax rates of parchment, giving government almost complete control of the market. The implementation of these laws was likely to enforce the maintaining of high quality parchment despite a reduction in the market value of parchment overall. Essentially, the government put parchment-makers in the position of being legally required to produce high quality parchment but for a far lower price. However, the persistent failure of the laws success, with the decline of parchment quality during the eighteenth century (see: Appendix 1; Rogers 1887, 601; Ryder 1960, 131; Ryder 1964, 70; Clarkson 1992, 5) may be the likely cause of the reissuing and intensification of the various regulatory measures.

The repeated implementation of similar laws also seems to show the persistent failures of the laws preceding them, or at least, that this was the belief of the governments of the time. These laws were likely to have deeply affected the parchment market, as

growing government regulation of the various professions involving the manufacture of goods from animal skins grew exponentially during these two centuries, setting strict manufacturing guidelines and limitations as well as the implementation of widespread fines. This period in general saw an ever-increasing level of intervention by government in various industries and markets, the various laws surrounding the flaying of skins were therefore part of a larger regulation of standards and markets by government.

Unfortunately, even in spite of the incredible magnitude of the changes that occurred over the following century, it was clear the changes were not sufficient to see any significant improvement, or even maintaining of parchment quality (see Appendix 1). In 1806 a book was published by 'An Impartial Observer' titled *The Flaying Act Considered: As, Without Benefiting the Public most Severely Oppressing the Butchers of London* (1806). This text widely criticised the 1803 law (43 Geo. III c.127) introducing the new fines and inspections to London, stating all parchment must be taken to Leadenhall Market for inspection if manufacture within a 15 mile radius of the site. The Act also instituted a fine of 2s 6d for anyone in possession of neglected or damaged skins, with an extra half penny for every damaged skin. Below is a quote from 'An Impartial Observer' on the subject of these fines:

'Nothing stronger proves the inattention of the industrious butcher to what was passing parliament, than the very great disproportion of fines this act enforces; for it will hardly be credited, that sheep and lamb-skins, which (independent of wool) are, on a fair average, worth only seven-pence halfpenny from the butcher to the purchaser, are liable to a fine of three-pence, which, with the salesman's charge, and inspectors fee, amounts to four-pence farthing, while the severity of the examiners has been extended to censure nearly one-third of all brought before them.' (An Impartial Observer 1806, 15)

The laws had clearly made the production of leather and parchment very risky affairs due to the incredibly severe fines. The author of this text continues to discuss the failure of the law to understand the parchment-making process. They describe the operation of converting sheep skins to parchment as 'a very delicate operation' and one that causes 'frequent cuts and gashes' (An Impartial Observer 1806, 19). This being considered, as well as the fact that inspectors were paid for every skin found to have been damaged (Chitty 1824, 351), it appears very likely these laws would have resulted in a great

number of (often unwarranted) fines. The law incentivised officers to consistently find cuts and blemishes on skins, in an industry where cuts and blemishes were almost inevitable. Defects in the skins were not always immediately visible, depending on the physico-chemical treatment that had been applied in the vat, however in many cases the defects could only be recognised later, when the material was actually put to use (Minard 2011, 150). The smaller parchment works of the period, particularly those without large contracts with stationers, must have struggled significantly during this period. If only a small number of skins were considered damaged, the parchment works would receive very significant fines and the possible seizure of much of their stock.

It is also worthy of note that the 'Impartial Observer' also refers to many of the flayers outside of London as being often untrained and consequently being the primary source of damaged skins (An Impartial Observer 1806, 5-6). This may indicate the high level of specialisation in London and the failure of early laws to ensure high quality flayed skins outside of London. However, it may also have simply proven pragmatic to state this, as the author may be attempting to have the 1803 law retracted while hoping to continue profiting from the highly intrusive laws affecting the rest of England.

By the time these laws were eventually repealed (after a significant number of petitions from various groups), the effect on the parchment industry must have been substantial. Even if laws preceding the 1800 act (39 & 40 Geo. III c.67), which implemented the creation of inspection points to be set up outside each city, had been widely ineffective, the effect on the industry between 1800 and 1815, at a minimum, must have been very significant. A huge number of smaller parchment works must have collapsed or been forced to merge with other firms. The widespread fines and inspections and the incentivisation of inspectors to find damaged skins, would have put further strain on the market, with only the larger firms, capable of creating a more homogenous product and able to afford the inevitable fines capable of surviving.

5.3 Who is enforcing these laws?

The 1603 act (1 Jac. I c.22) states that all leather goods within three miles of London must be inspected and sealed before they can legally be sold. Eight individuals were therefore appointed to inspect and tax skins and hides, these individuals were

designated the role of 'searcher and sealer', and these individuals were changed each year. They would each record all sales of leather, hides, and skins, as well as recording the name of the buyer and seller, the price of the leather and any issues regarding the quality of the products. Any individual selling products sold that had not been 'searched and sealed' would have their goods confiscated. In the event of goods being seized the company of cordwainers, the company of carriers and the company of tanners would each elect two individuals, with no connection to the accused, who would examine the goods and determine whether the goods were 'sufficient and serviceable'. Strangely however the law does not discuss the maintaining of these laws beyond the three mile radius of London set out in the act, suggesting those outside of London were perhaps beyond the scope of any government regulation of product quality. If true, there would have been a fairly significant incentive to produce parchment outside of the city of London.

Then in 1694 the Treasury established a number of offices (see appendix 14) and hired a number of commissioners to distribute stamped parchment throughout the country, in order to maintain this new tax, they were what Hughes calls, 'retailers of stamped paper' (Hughes 1941, 247). It is fortunate that it appears the first list of these distributors was recorded (see Appendix 15). According to the *Calendar of Treasury Books* there were thirty-six distributors of stamped parchment and paper across England and Wales, spread across almost every county. However, it appears there may have been a number of stampers, an even smaller number of officers and only a single inspector of parchment (see: Shaw 1935, 636-648). As a result of this system it appears the Treasury would sign contracts with certain parchment-makers to insure the steady supply of parchment throughout England (Hughes 1941, 248-252). The contracts were made with only two or three great stationers and others who entered into partnership with these stationers, who 'engross thereby to themselves the whole dealing and have it in their power to put higher prices upon the office than they otherwise could' (Hughes 1941 248). These contracts greatly benefited the stationers however, claiming an allowance of six percent of each stamped paper or parchment batch sold, while many of these distributors 'transgress much' in charging higher prices than was permitted (1941, 252). It appears to have been a grossly inefficient system, and one fraught with corruption, though one that greatly encouraged the reduction of parchment production costs.

Each county had an office with a commissioner of stamps and these commissioners were reported to have stamped all the parchment and paper legally used in England at this time, as well as to have made a record of such activities. An investigation into these individuals and the volumes of parchment they stamped in their respective counties would offer further evidence of key centres of parchment production and usage in England, though as of yet it has not been possible to locate these documents. Also, for most of this period it seems all parchment was required to be inspected at least once a day for quality and tax purposes (Leadbetter 1755, 339; Ashworth 2003, 246), and so perhaps even more data exists. The nature of these laws also highlights the high volumes of parchment still used across England, a point further supported by the fact that as late as 1714-1715, parchment was still generating huge sums of money from stamp duties (see: Shaw and Slingsby 1957, 385).

The 1710 act (9 Ann. c.11) offers greater clarification on this issue. This law states that officers were appointed to weigh the skins and issue the necessary duties, as well as mark the hides, skins and parchment to denote the charging of a duty. The act does not however specify if these officers are inspecting the quality of the skins, though a later text indicates this to be the case. In 1778 a text titled *Instructions for Officers of the Duties on Hides in the Country* details how the excise officers at this time were instructed to inspect the skins (Great Britain. Commissioners of Excise 1778). It was instructed that the excise officers must 'insert in an entry-book, which is to be kept at the Excise Office, copies of all the entries made by tanners, tawers, &c.' (1778, 5) and furthermore, that they must weigh and mark the skins (1778, 7). However it appears these officers were also required to investigate the quality of the skins: 'When you discover that any Tanner, Tawer, or Oil-dresser, &c. has diminished, shaved, or impaired his skins contrary to law, between the time of taking them out of the materials, and weighing them, or has neglected to keep his hides or skins that not been duly marked' officers must in such cases 'give notices therof as soon as possible to your Collector or Supervisor, that the offenders may be prosecuted as the law directs.' (1778, 7-8).

Unfortunately it cannot be said with complete certainty if these officers were inspecting the skins quality prior to this, however it appears to have been a long history of those taxing the parchment to also inspect it, going back to the 'searchers and sealers' of

London. Furthermore, as early as 1671, the English government had created offices for excise officers, places where officers who would examine and stamp skins would be based (Hughes 1941, 247). A later text even details how the excise officers of the early nineteenth century would inspect skins quality and then stamp the skins with either an 'S', marking them as acceptable skins, or 'D' for damaged skins (Hughes 1941, 351). Overall then, those in charge of distributing the duties on these goods were also inspecting the materials and goods for quality. This being the case, a great number of skins and parchment goods would have been inspected in London, due to the number of goods that were required to be transported there for tax purposes (see section 6.1) as well as the large market for parchment in the city.

However the 1800 act (39-40 Geo III c.66) saw to the creation of a number of places outside of major towns and cities specifically for the examination and inspection of skins. It was written that these assigned locations will not exceed three miles, nor be less than two miles from each city or town to which they are assigned (Chitty 1824, 348). The inspections of London also changed slightly in 1808, when it was determined that the inspectors would be named by the Butcher's Company, the Currier's Company and the Cordwainers (Chitty 1824, 353), who would each appoint seven individuals. Ultimately however this did not last long, with the various regulations and inspectors being removed from English law during the nineteenth century. This act marks the last attempt by the government to control the development of the parchment industry until the repeal of the various acts between 1808 and 1815.

5.4 Effects on Parchment Quality

There is a general consensus that parchment between the seventeenth and eighteenth century was of far lower quality than parchment of the medieval period (Rogers 1887, 601; Ryder 1960, 131; Ryder 1964, 70; Clarkson 1992, 5). Current research by Sarah Fiddymant at the University of York offers further clarity on parchment quality (Appendix 1). This research involves reviewing a large number of parchment samples to assess changes in quality over time, based on the development of a Parchment Quality Index (PQI), measuring the levels of damage that occurred to parchment during the manufacturing process. This research shows two very clear period of decline in the quality of parchment.

The first sudden decline begins around the fifteenth century and has many possible causes, though Fiddymont has presented a clear correlation with the changing proportion of parchment to paper used in the market, based on the data presented by Lyall *et al.* (1989, 11-29). The sudden influx of paper led to the steady dismantling of the infrastructure of the parchment-making industry, and would, in part, explain this sudden decline. However the detrimental effects of the plague must also be considered. Parchment-making was a highly skilled profession, with knowledge of the various processes having been well-kept secrets within the profession, and the dramatic population decline in the mid-fourteenth century likely saw the loss of much of the inherited knowledge. It may have taken many generations before this knowledge was disseminated across England once more.

However, the cause of the second sudden decline between c.1710 and c.1830 remains something of an historical anomaly (see appendix 1). There are a number of possible causes, for example, the continued competition with paper, though it appears unlikely to have caused such a sudden decline so late. The effects of the influx of the new breeds, which were generally far less suited to the production of high quality parchment presents another plausible theory. However as stated earlier, the majority of the major parchment works in the country were primarily located in regions where the older, more suitable breeds remained. Furthermore, the decline appears to occur before the new breeds, such as those of Ellman and Bakewell, had made any noticeable impact on English agriculture. Finally, there is the possibility of European wars causing the decline in quality. France, in particular, was a significant producer of parchment (Massey 1763, 58) and a major exporter of parchment to England for a number of centuries (see: Gullick 1991, 154-156, *The Saturday Magazine* 1838, 134; Chambers 1728, 351). However, there is no evidence French parchment was of significantly better quality than English parchment and England was still importing 'vast quantities' of parchment around 1728. If the higher quality parchment of previous centuries had been that of French origin, then it would be expected the quality would have risen significantly again by 1728 (Chambers 1728, 351).

However the most plausible primary cause of this sudden decline was the 1711 Act (9 Ann. I c.11), as well as many of the laws that followed it. Firstly, the yearly setting of

prices by the High Treasury was likely very detrimental to the quality of parchment. In order to set the price of a product a universal measurement needed to be established. Prices could have been set to a certain quantity of parchment, for example, one piece of parchment, which was set to a duty of 6d in this Act. Similarly, it could be set to the weight of parchment. This being possible as all inspectors were required to weigh parchment before denoting a duty, but they would also record the value of the parchment after weighing (9 Ann. I c.11). Each method fails to take into consideration the quality of the parchment, a subjective characteristic, one not mentioned in any law during the period.

The results, over time, would be little incentive to produce high-quality parchment as parchment-makers would receive the same price for a low quality piece of parchment as they would from a high quality product. Furthermore, being unable to improve profits with increased prices, firms could now only do so with an increased market share and reduced production costs. Over time, competition over a reduction in production costs was likely more significant than any competition over parchment quality.

Furthermore, the strict regulations set on the production of parchment would have greatly discouraged the production of higher quality parchment. The risk associated with finely flayed skins, as well as over-liming skins, the removal of wool, the scraping of skins and removal of fat deposits would be so high, as any damaged skins would result in high fines and the seizure of parchment and skins, that it seems likely to have greatly discouraged the production of high quality parchment. The quality of parchment only increases (see Appendix 1) after the repeal of the variety of acts pertaining to the setting of prices and the extensive regulations surrounding the production of parchment that occurred in the first half of the nineteenth century, (see section 3.4). This difficult period was likely best navigated by larger parchment works, capable of producing large quantities of a more standardised quality of parchment that, though perhaps not of great quality, met the strict criteria set out in these acts while reducing production costs.

5.5 Conclusions

Overall, the various laws on taxing parchment clearly played a key role in the development of the industry. With all parchment moving through London, one might

expect the industry to be larger in the south, given the huge price implications for transporting parchment from the more northern regions. Secondly, clear deals were being struck between the Treasury and stationers, and between stationers and parchment-makers, in order to make large amounts of parchment more cost-effectively (at least in theory). Larger manufacturers and larger trade routes meant increased economies of scale, but perhaps more importantly, allowed for a more efficient method for taxation. The whole system appears to have greatly incentivised the development of larger parchment works, declining parchment quality, and a geographical shift to the southern regions. These developments are likely to have forced the small-scale parchment works to either develop a partnership with larger parchment works in order to be a part of the huge deals that existed at the time, or to stop manufacturing altogether. Also, the percentage based charges set on each bulk of parchment sold, the economies of scale related to industry and the steadily developing systems for processing and distributing large amounts of parchment will have greatly shaped the parchment industry between 1711 and 1815.

Chapter 6: The Location of Sheep Breeds

6.1 Sourcing Sheepskins

These skins are difficult to describe in general terms for they differ enormously in size, fat content, general quality of the fibre network and the types of epidermal structures they elaborate, depending on a multitude of biological factors of which breed, age, environment, diet and conditions of rearing are the most obvious.'

(Reed 1972, 41)

The skins most ideal for the manufacture of parchment had specific characteristics that made them better suited for the manufacturing process. The quality of the skins could be affected by a variety of possible factors. Therefore, it must be determined which skins were best for the production of parchment and which breeds of sheep under which agricultural system would be best suited to producing skins used in the manufacture of parchment. Furthermore, having established the significant financial benefits of sourcing skins locally, as well as the high risks involved with using low quality skins due to possible damages to the final product, establishing which breeds were best suited to parchment-makers is vital to a study of this nature.

6.1.1. Fat Content

'the surface should be firm, free from grease, of good even colour and as smooth as possible'

(Reed 1972, 125)

The fat content of an animal drastically affects the quality of the skin for its use in manufacturing parchment. During the manufacturing process parchment-makers remove the fat hypodermic layer of the skin in order to make a smooth surface, free from grease. Failure to remove the grease from the skins results in the discolouration of the final product (Reed 1972, 21-24; Saxl 1954, 6) as well as the possibility of marked ridges on the parchment (Reed 1972, 132). Removal of all fragments of grease is a difficult and time-consuming task (Reed 1972, 132), particularly before the mechanisation of the parchment manufacturing process (Saxl 1954, 31-32). Significantly

fatter sheep would have caused even great difficulties as in many cases the fat cells could infiltrate the connective tissue, residing in the dermal layer of skin, which would have proven an even greater challenge to parchment-makers (Reed 1972, 30). Reed also stated that fat can cause weakness at the epidermal junction causing the dermal and epidermal layers of the skin to split (1972, 43). However, this appears to be of most concern in skins sourced from older sheep, though one might presume that skins originating from fast-maturing sheep may suffer from this defect at an earlier age given the 'relatively unstable' collagen development in some fast-maturing breeds (Henrickson *et al.* 1984, 168). The removal of grease, if not completed after the initial exposure to the lime pits, many craftsmen would use gesso, quicklime, powdered bones or chalk (see Reed 1972, 148-149), though the most common solution was the application of additional treatments of lime (Yeomans 2006, 33). Overall, the more grease that had to be removed, the longer it would take to make parchment and the process would be more costly. The increased workload may also have increased the likelihood of the damaging of skins, a particularly significant issue given the various laws surrounding skin and parchment quality between 1650 and 1850.

The fat content of sheep between the sixteenth to nineteenth centuries was likely to have varied significantly, and determining which breeds produced usable skins and which did not is a difficult task. Even today, both the overall fat content and the distribution of fat in sheep appears to be very variable (see: Palop 2016, 7). It also appears very likely that parchment-makers were unable to avoid using fatter breeds of sheep over time as many of the breeds in England and Wales grew in size during this period due to changes in breeding practices and husbandry (Davis and Beckett 1999; Henderson 2016, 25-31). Ryder's work may also support this, as the eighteenth century parchment samples he reviewed were of a greater thickness (1991, 31) and studies have shown a correlation between skin thickness and diet. Sheep fed on a diet of lower nutritional value can see a reduction in their skin thickness over time, while sheep intensively fed larger diets will keep thicker skins (Williams and Thornberry 1992, 140). It can be concluded that the skins of fatter, faster-maturing breeds were likely to have been spurned by parchment-makers in favour of smaller breeds with lower deposits of grease.

6.1.2. The Age of Sheep

Another key factor in determining the quality of a sheep's skin is the age of the animal. Younger animals tend to have higher quality skins for parchment-making due to their finer grained surface (Reed 1972, 35-36). Older animals however, despite being larger and providing more skin per animal, tend to have inferior fibre networks and increased chances of skin defects and irregularities (Reed 1975, 35-36). They are also more likely to have far greater deposits of fat due to longer lives of eating and, depending on the breed and farming system, very little exercise. They are also more likely to have greater deposits of fat spread throughout their entire bodies, including their skin, causing great difficulty to parchment-makers. With greater age also comes a greater propensity for a variety of pathological conditions and connective tissue disorders, as well as damage to the skin from mites, insects and physical trauma (Reed 1972, 35-37).

Even when considering the issues connected with older sheep, the harvesting of lamb skins is a far more costly enterprise. Lambs produce far less usable material for parchment-makers and yet require very similar levels of skill, time and production costs as full-grown sheep.

Another key area in regards to the effects of ageing on sheepskins is the difference between the older, native breeds of England and the so-called 'new breeds' which reached maturity far quicker. A clear example being that of Bakewell's New Leicester sheep, a breed that matured in only two years and had a far greater propensity to fatten (Youatt and Weld 1837, 25-26). In these faster-maturing improved breeds, the dermal collagen grows far more quickly than in the skins of the native breeds. This rapid growth of collagen, results in the collagen becoming 'relatively unstable' and therefore the 'leather obtained from intensively fed animals had a lower breaking point strength than those obtained from regularly fed animals' (Henrickson *et al.* 1984, 168). Similarly it has been argued that the 'increased growth rate must be accompanied by increased collagen degradation or reduced collagen synthesis', and 'this is true whether the increase results from nutrition or from selection for growth rates' (Lawrence *et al.* 2012, 44).

Unfortunately, given the wide variety of breeds from the resulting cross-breeding from the sixteenth to nineteenth centuries, it is difficult to determine which breed exactly

presented a significant problem. However, it can be concluded that the skins of fast-maturing, intensively-fed breeds were overall more delicate than those of the more 'naturally' raised sheep and therefore it seems likely that parchment-makers would have avoided sourcing their skins from sheep farmed intensively for their mutton.

6.1.3. Diet and Environment

'a larger carcass inevitably meant longer, heavier and coarser wool'

(Wykes 2004, 51)

Diet clearly affects the quality of skin, with over-feeding resulting in issues of collagen development and a weak fibre network, as well as higher levels of grease (Henrickson *et al.* 1984, 168; Reed 1972, 37). However there are a variety of agricultural systems with different foodstuff and feeding methods which Reed (1972) reviewed to assess the impact of diet on the skin quality (Reed 1972, 36-42).

Firstly, Reed concluded that stall-fed sheep typically have looser, thinner hides compared to sheep that roam pastures for their food. This is partly due to the lack of exercise, a common issue with the larger sheep as, in the words of the nineteenth-century land survey John Middleton, 'animals that are intended to be fattened with the most speed, the least food, and the greatest profit are, or ought to be, kept still, and as free from exercise as possible' (Middleton 1807, 436). It is also due to the diet of stall-fed sheep. These animals would have experienced 'artificial feeding', for example; barley, oil-cake, potatoes and food-waste and this diet, as Reed states, results in skins that are often softer and more spongy in character (1972, 37).

Reed goes on to write that the woolled downland sheep generally had large skins 'uniform in texture', though with large deposits of grease (1972, 41). This was in stark contrast to the mountain and hill-reared sheep, which, typically produce stronger, higher quality skins (1972, 37). They also have thinner skins with a tighter dermal network, with a finer grain and far less grease (1972, 41). The hilly and mountainous districts have great tracts of uncultivated lands which provided rough grazing for a number of sheep (Fussell 1964, 49). The mountain and hill-reared breeds found in these areas often had slower rates of maturity (relative to the improved breeds), and they

generally had increased levels of exercise as they roam for their food (1972, 42). These factors help to create a tighter dermal network and consequently, stronger, thinner skins, more ideal for making parchment.

The environment and diet of sheep plays an integral part in developing high quality skins and as Reed describes, the more 'natural' the conditions in which the sheep are raised, the better (1972, 37). We can therefore conclude that the parchment-makers using the skins of the naturally fed, roaming sheep (typically hill-reared) would be producing the highest quality parchment, and, given the increased strength of the skins (resulting in fewer defects) and the reduced levels of grease, would be producing parchment faster and with fewer damages to the material and with less wastage.

6.1.4. Wool Sheep

'Breeding for mutton, however, and breeding for wool, are distinct and different objects, and will in some measure depend on situation; for those soils which produce the finest wool, are not adapted to raise the greatest weight of mutton; and on the other hand, those soils which fatten most, in equal proportion deteriorate the wool'

(Rudge 1807, 306)

Between 1650 and 1850 there were a great variety of sheep breeds, with a varying range in the quality of their fibre networks and types of epidermal structures. At either end of this spectrum existed the two extremes of wool breeds. Firstly, the woolled sheep with epidermal growths of fine, soft and curly wool (Reed 1972, 41). The latter breeds were the 'hair type' (often referred to as heath sheep) which had coarse, thick and tough fibres (1972, 41).

The woolled type of sheep produced the worst skins for parchment-makers. Sheep with a high number of follicles, particularly those with a high ratio of secondary to primary follicles such as the Merino sheep, produced skins that were loose in texture of a poor quality to parchment-makers. The extensive glandular structures would prevent the dense packing of the connective tissue fibre networks (1972, 41). Furthermore, the persistent shearing of sheep has an effect on sheepskin thickness (Lyne 1961, 152; Wodzicka 1958; Wodzicka-Tomaszewska 1960, 197), an issue mostly affecting sheep bred primarily for their wool. Overall, the better the sheep for producing finer wool, the worse it would be for manufacturing parchment.

The latter breed, the 'hair type' on the other hand had thick fibres and fewer follicles, therefore producing a far more firm fibre network (Reed 1972, 41), and therefore better skins for parchment (see figure 14).

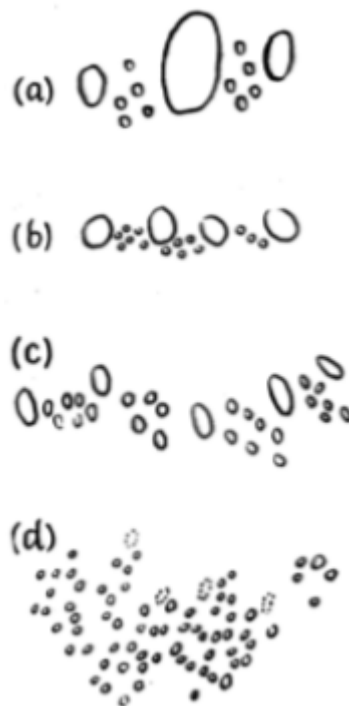


Figure 14: Fibre Groupings - Dead Sea Scrolls

(a) Skin of wild sheep; (b) Hairy sheep or goat in Dead Sea Scroll parchment; (c) Medium-woolled sheep in parchment from Murrabba'at; (d) fine-woolled sheep in Dead Sea Scroll parchment

Notes: The hairy sheep or goat (b) is stated in the text to have been more likely a sheep than a goat (Ryder 1960, 135)

Source: Ryder 1960, 13

There were of course a greater variety of sheep breeds than those purely bred for wool and the purely hair-type of sheep. There were also medium-woolled sheep, producing fewer follicles with a lower ratio of secondary to primary hair follicles (see figure 14). These sheep were primarily the downland sheep bred for the production of mutton. The larger carcass resulting in longer, heavier and coarser wool (Wykes 2004, 51), the skins were generally thick and fairly uniform in texture (Reed 1972, 42), though unfortunately still proving difficult for parchment-makers due to their high deposits of grease. Overall, the ideal breed for parchment-makers was one that had not succumbed to either extreme of specialisation for either wool or mutton production. The hill-reared sheep of Britain therefore developed favour amongst many producers of light leathers (e.g. gloves) and presumably therefore, parchment-makers. These sheep produced thinner skins with tighter dermal networks (Reed 1972, 41) and were therefore of the highest quality for parchment-makers.

Overall however, there was a huge variety of sheep breeds, but the studies into fibre and follicle networks show that sheep with tighter and firmer fibre networks were best for making parchment. These were generally less woolly sheep with lower grease deposits, ones not subject to extreme specialisation, unimproved sheep, with the fatter improved breeds promoted by Bakewell and others for either intensive mutton production having skins that were too greasy, and the wool-producing sheep having skins that are too loose in texture.

6.1.4.1 Historical Survey of Sheep Used

Ryder (1960) reviewed the diameter of fibres and follicles in a variety of parchment samples ranging from twelfth to the nineteenth century. The results found that most of the fine-wool samples came from the medieval period while most of the medium-wool samples came from the sixteenth century onward, and finally the coarsest samples appear to have been from the eighteenth century (Ryder 1960, 131). This work also shows that throughout these centuries there were still attempts to use 'hair sheep'. This is similar to Hedwig Saxl's results (1954) which reviewed the development of sheep breeding and a variety of samples and concluded that there was a progression from medieval times, which saw sheep with very few hair follicles to more modern

sheepskins, which showed a great number of crowded hair follicles. The results of this paper, similar to results of Ryder's work, suggest that sheep were being bred to produce more wool over time, or that producers of parchment were being more selective over the skins they used.

It is also worthy of note that, according to Ryder's work, hair sheep were used in all centuries, including the eighteenth century (Ryder 1960, 131). However, when discussing the hair-bearing sheep an eighteenth century writer stated that; 'the pure breeds of this sort are scarcely anywhere to be found among manufacturing nations' (Anderson 1797, 320). However Anderson also states that sheep such as these have often not been separately categorised, and have 'almost entirely escaped the notice of naturalists and others' (Anderson 1797, 320). It appears likely then that many of these sheep were still being used in the English agricultural system, though were often overlooked by the agricultural writers of the time, who were more concerned with the breed capable of producing high levels of mutton or wool. Anderson even goes on to write that 'there is a much greater proportion of the hair-bearing race among the breeds of sheep in the southern parts of the island' and that a Mr Lisle had heard of these sheep under the name 'rowety-wool' (Anderson 1797, 330). The word 'rowety', means a poor area of land, either an area recently harvested, and/or having been left unploughed for some time (see: Lisle 1757, 157; Fussell 1966, 39; Bath & West of Eng. Agr. Soc. 1792, 85). These sheep were therefore likely found in lands of high levels of 'waste', with little attention paid to the quality of the breeds being farmed.

In general however, despite clear benefits of using the skins of coarse woolled sheep, during the eighteenth century many parchment-makers were either becoming less concerned with parchment quality, or, in most cases, did not have a supply of the more sheepskins from coarse-woolled breeds.

6.1.5. Conclusion

It appears the best sheepskins for the manufacture of high quality parchment come from sheep that have not been intensively farmed to produce quantities of mutton or wool. The most suitable sheep are most likely the hair-type of sheep, as they have tighter dermal networks. Similarly, sheepskins from smaller, hardy sheep, ones that

roam for their food and mature at the slower rate to many of the improved breeds of the period would have been greatly advantageous to parchment-makers. The areas of England which did not follow the route of intensive sheep farming, and did not employ the improvements of farmers such as Barkwell and Ellman, seem likely to prove best sheepskins for making parchment. These sheepskins would have also been subject to fewer possible damages, a hugely advantageous factor during a period of intensive manufacturing standards and high fines.

6.2 The Location of Sheep Breeds

'The different races of sheep in England are variously distinguished for uncommon size, goodness of flesh, and plenty of fineness of wool.'
(Aikin 1795, 19)

This section of the research will attempt to outline the rural landscape between 1650 and 1850, looking primarily at the location of various sheep breeds throughout England, as well the iconic features of these breeds. It will highlight whether there was any link between the geographic distribution of breeds and the location of parchment works. A link that seems possible, particularly given the wide variety of breeds and their effects on the manufacturing quality (discussed in section 6.1). Furthermore, the ability to purchase skins from great distances was greatly limited by the high costs of salting skins (see section 3.7), but also due to the high transport costs of the period that acted as a 'major constraint on economic activity' (Gerhold 2014, 1).

This section should also highlight when and where the new breeds, like those promoted by Ellman and Bakewell, were used in the agricultural system, the timing of stockbreeding also being an issue of great consequence that is still relatively poorly understood. Perhaps unsurprisingly, as the sheep farming industry during this period has been widely overlooked by many economists, historians and archaeologists. As a result, this section constitutes a much-required review of sheep breed locations based on various tours, reports and works of agriculturalists, though primarily the results of this work are based on the reports produced by the Board of Agriculture.

It is important to consider that the majority of the historical reports were published around the turn of the nineteenth century. This was an important period in sheep farming, coming at the end of nearly thirty years of determined efforts to 'improve' the national agricultural base including the improvement of sheep breeds on a national scale (Ryder 1983, 487).

This chapter will now establish which regions of England were subject to any major changes in sheep farming or wider agricultural objectives. Combined with the

conclusions of section 6.1, this section will determine which regions had access to supplies of high quality skins.

6.2.1. The Downlands/South

'From this central core long fingers of chalkland stretch out north-eastwards through the Marlborough and Berkshire Downs and on into the Chilterns, while south-westwards the chalk downs extend across Cranborne Chase into Dorset, reaching the English channel coast between St Aldhelms's and Abbotsbury'

(Thirsk 2000, 27)

The chalk downlands have had a long history of agriculture and an absence of large-scale industry (Thirsk 2000, 29). For most of the period under examination this region was under 'sheep and corn husbandry', whereby a system of grain production was sustained by maintaining large sheep flocks that were fed on the unenclosed downlands or waste by day, and folded by night on the arable lands to enrich the thin chalkland with their dung (2000, 30). This system was continued even after the introduction of new systems and crops in other counties, as the soil of the chalk lowlands was often too shallow to support the introduction of legumes. Furthermore, many of these regions were particularly late enclosed. Much of the high downland in Berkshire, Wiltshire, Dorset and Sussex remained entirely open and unenclosed at the end of the eighteenth century (2000, 43). A particularly interesting factor as enclosures are often seen as a necessary prerequisite for the instigating of new selective breeding techniques and the adoption of the larger, coarser-wooled breeds (Ryder 1991, 455; Ryder 1964, 70).

This system dominated these regions until the production of new artificial fertilisers in the nineteenth century (Overton 1996, 193). The livestock practices in these counties were therefore sustaining the hardier breeds, capable of travelling great distances in order to fertilise the land, supporting the popular 'sheep and corn' system of the region. Thirsk offers the following overview of this system and the subsequent breeds;

'Here sheep were specially selected not for their propensity to yield mutton or wool, but for their folding qualities. Over the centuries prolonged selection have given rise to the distinctive Wiltshire and Hampshire breeds, and so a Berkshire strain known as the Berkshire Knott.

These animals were large, lanky, and hardy, producing a thin but fine fleece and a small quantity of sweet mutton. Their great advantage was that they were able to range the Downs all day, and had a propensity drop their dung and urine at night, when penned in the fold. They require little water, taking most of what they needed from the grass they grazed, as this too was an important advantage on the bare, open Downs where streams and wells were few and far between'

(Thirsk 1984, 329)

This 'sheep and corn' system was particularly prevalent in Wiltshire, Dorset, the Hampshire downs and Berkshire. Wiltshire in particular had a 'vast quantity of sheep' (Davis 1813, 137), with Defoe estimating around 2-3 million prior to 1724, which, though perhaps an inflated figure, highlights the prevalence of sheep in the region (Cited in: Fussell and Goodman 1930, 146). There was an abundance of one particular breed, a small, native breed 'of middling size, and moderately fine wool' (Aikin 1795, 282), widely used to fertilise the land during the period (Davis 1813, 137). In 1813 Davis offered a concise overview of some of the key issues pertaining to the sheep in the region, describing 'the peculiar aptitude of the soil and climate to sheep; the singular use of sheep-folding on arable land naturally light and loose; the necessity of making sheep the carriers of dung, in situations where the distance from home and the steepness of the hills almost preclude the possibility of carrying it by any other mode' (Davis 1813, 137). As a result, much of this land was limited to 'rough pasture' until the later introduction of later fertilising agents (Aikin 1795, 332), making sheep a necessity in many areas and making the improvement of the carcass not the primary objective for the region (Davis 1813, 139). In fact the use of livestock to fertilise the land was commonplace across much of the Wiltshire in particular (Aikin 1795, 281; Cobbett 1912, 40), with much of the land not being enclosed until after c.1750. Attempts were made to cross the New Leicester with the widespread black-faced hill sheep of the period with a disastrous loss of hardiness (Ryder 1983, 487). Instead, the smallness of an animal was a major recommendation, 'in a country where summer food is scarce, and winter food raised with difficulty' (Davis 1813, 147). These lands also had small enclosed fields and the livestock were often left to graze with the minimum of attendance (Thirsk 1984, 339). Despite attempts to increase the size of the downland Wiltshire breed, the new strain possessed many serious shortcomings, resulting in its eventual degeneration (Copus

1989, 40).

Berkshire was home to a 'pure breed' sheep that had survived for hundreds of years, called the Berkshire Nott. The longwool Berkshire Nott was bred throughout the county for much of the seventeenth century (Trow-Smith 1951, 161) and despite the considerable changes the breed went through (Mavor 1813, 381), it remained a common breed in the region (see: Mavor 1813, 387-390) as it was well-suited to the sheep and corn system due to its ability to travel long distances to fertilise the land (1813, 382). However the Berkshire Agricultural Society also supported the breed by disapproving of crossing breeding until at least 1813, though it was stated that crossing was still fairly common (Mavor 1813, 387-390).

The breed was well-adapted to the chalk downlands according to writers of the time, however it had a poor quality fleece and produced relatively small quantities of mutton (1813, 381). Despite its previous success, Mavor writes that around the turn of the nineteenth century much of the livestock on the downs had been widely replaced by the Southdown breed (Mavor 1813, 381), this being either a reflection of an improvement in the Southdown breed or a change of agricultural system on the lower downs. Attempts were made to introduce the new Leicester breed to the region, though these sheep 'made but little progressed, being confined to a few select flocks only' (Mavor 1813, 391). The Berkshire Nott, survived in the Chiltern Hills even into the nineteenth century, (Ryder 1964, 17) due to the continued reliance on 'sheep and corn' husbandry.

The large Dorset and Mendip breeds were closely associated with the lowlands of Dorset which, under the right circumstances, were known to produce very good mutton (Youatt 1810, 84). The Dorset breed was described as 'tall, and light of body, somewhat resembling the camel in shape and proportion' and was only subject to improvement towards the end of the eighteenth century (Anderson 1778. 168). Nevertheless, It was known for producing a 'relatively finer wool' (Ryder 1983, 488), though this wool was clearly not so fine to attain a high value at market compared to many of the other breeds of the period (see table 3).

| Breed | Sheep Type | Fleece wt (lb) | Wool price / lb (d) | Fleece price (d) | Max. age killed | Live wt (lb) |
|------------|-------------|----------------|---------------------|------------------|-----------------|--------------|
| Leicester | Longwool | 7 | 12.5 | 87.5 | 15 mo | 90 |
| Lincoln | Longwool | 10 | 12.5 | 125 | 15 mo | 90 |
| Cotswold | Longwool | 8.5 | 12.5 | 94 | 15 mo | 56 |
| Romney | Longwool | 8 | 13 | 104 | 3 | 130 |
| Exmoor | Longwool | 4.5 | 12.5 | 56 | 5 | 70 |
| S. Devon | Longwool | 9 | 9 | 81 | 2 | 110 |
| Bamptons | Longwool | 7 | 13 | 91 | 2 | 135 |
| Herdwick | Hill | 3.5 | 9 | 31.5 | 5 | 45 |
| Blackface | Hill | 3 | 8.5 | 25.5 | 4 | 63 |
| Dorset | Middlewools | 6 | 13 | 78 | 2 | 90 |
| Welsh | Middlewools | 1.5 | 13 | 19.5 | 5 | 35 |
| Cheviot | Middlewools | 5 | 13.5 | 67.5 | 3 | 75 |
| Southdown | Shortwools | 6 | 13.5 | 81 | 15 mo | 80 |
| Hampshire | Shortwools | 7 | 13.5 | 94.5 | 15 mo | 90 |
| Shropshire | Shortwools | 7 | 13.5 | 94.5 | 15 mo | 90 |
| Ryeland | Shortwools | 4 | 13.5 | 54 | 3 | 62 |
| Merino | Shortwools | 7 | 14.5 | 101.5 | 2 | 115 |

Table 3: Sheep Breeds Overview

(Ryder 1983, 497) - Calculated from the author of *The New Farmer's Calendar*

B = black face

P= Polled

S = Short wool

W = white face

H = Horned

L = Long wool

V = vari-colour

The chalk lands of Hampshire also required the use of hardy sheep to sustain the sheep-corn system (Copus 1989, 39), with breeds conditioned for the wet and cold conditions of the woodland clays (Vancouver 1810, 360). Despite the later increase in popularity of the Southdown sheep in the region over the old Hampshire breed (Aikin 1795, 286), there were still a great number of locations in the region where the older breeds remained. Attempts were made during the century to cross the Hampshire with the old black-faced Berkshire, and later with the Southdown, though the latter did not occur until around the mid-nineteenth century (Ryder 1964, 11).

These chalk downlands also extended through Sussex. Despite this region primarily producing sheep for wool produce, breeding sheep of 'very competitive excellence' (Young 1808, 296-297), many flocks were still used on the chalky hills primarily to manure the land (1808, 348). The sheep on chalk-hills were primarily fed on wheat (1808, 143), as the turnip was not a viable option. There was a great variety of sheep in the county, however the main breed to occupy the chalk downlands was the Southdown (Young 1808, 300).

Finally, Thirsk describes the chalk downland farming of Kent. Despite the county being primarily a region producing sheep for their mutton (Aikin 1795, 222), the North and South Downs of Kent practiced other agricultural systems due to the hilly nature and chalk soils of the regions. Instead of the large Romney-Marsh breed, widely adopted in the Kent lowlands, the Southdown breed was farmed in the hilly, chalk regions of the county (Boys 1805, 175). On first appearance this appears slightly odd, as the Southdown breed often disliked in similar regions due to its inability to walk great distances (Billingsley 1798, 243), however they were still relatively hardy animals and perhaps the narrow nature of the North and South Downs meant these animals were not required to walk quite as far to the fold as many of the breeds discussed above. However, the more common use of this animal may in part explain why so few parchment-makers were located in Kent until the nineteenth century, when Canterbury became a major centre of production (see section 4.3).

However, it is important to consider that these clear systems did not last forever, the high prices set on arable crops during the Napoleonic Wars led to the establishment of new farmsteads and the further spread of enclosures over the regions (Thirsk 2000, 44) and enclosures were used to convert land previously unsuitable for profitable arable farming. The availability of the kinds of sheep discussed in section 6.1 were very likely to have declined quite dramatically during the Napoleonic Wars. However, for the majority of the period, these downland regions had an abundance of hardy sheep and failed to adopt the new breeds of Ellman and Bakewell on any significant scale. As a result, many of the breeds in this region would be have been particularly ideal for the production of parchment, based on the requirements set out in section 6.1.

6.2.2 The Wolds

Thirsk defines the wold regions as hilly with relatively lightly spread woodland, though that the variety between the English wolds can be quite significant.

The Yorkshire wolds in the East Riding were formerly known for two distinctive breeds in this region, the Holderness and the Wold breed, both small, hardy animals (Strickland 1812, 231). However, farmers in this region began crossing with the New Leicester breed very early, with the principal objective of the 'speedy fattening' of 'great number' of sheep (1812, 51-52). Strickland writes; 'great expense and pains are bestowed by many, in their endeavours to concentrate every good quality observed in the species, in one breed, in order to bring this useful animal to a state of perfection' (1812, 52). Clearly, the aim of this region was to specialise in the breeding of the largest sheep.

Secondly, the Lincolnshire Wolds which were particularly well known as a grazing country, producing animals of great size and weight (Aikin 1795, 130), perhaps most notably, the widespread adoption of Bakewell's New Leicester breed (Young 1799, 365). The New Leicester having been described as 'an indolent animal', one 'indisposed to action' and requiring pasture where it can collect its food with little exercise (Duncumb 1805, 122-123). It was also said to have been subject to some peculiar disorders and as such required much care and attention in the management (Duncumb 1805, 122-123). They were incredibly large animals (see: Marshall 1793, 229-232), capable of being folded at less than a year old and which, 'when highly finished, they appear as a solid lump of flesh' (Marshall 1793, 229, 233). It was certainly not an animal likely to produce the skin necessary for high quality parchment.

Finally, the Cotswolds, which Aikin described at the end of the eighteenth century as 'a long tract of high ground, for the most part bleak and bare, yet affording in many places a short fine grass, for the feed of sheep, and at present principally devoted to the growth of corn' (1795, 163). Despite the use of turnips not being of first importance in farming improvements in the neighbouring Wiltshire, Somerset, and to a lesser extent Gloucester, they were widely employed across the Cotswolds (Crittall 1959, 43-64). Turnips likely being used as a winter fodder that supported the growth of the heavier stocking of livestock. Mixed farming had generally been the standard, however livestock

became increasingly important between 1640 and 1750, with experiments in the use of Bakewell's breeds occurring as early as the first half of eighteenth century (Thirsk 1984, 320-321).

Overall, the various wold landscapes appear to have introduced the newer breeds of Bakewell and Ellman relatively early-on, and farmers in these regions were widely adopting the newly specialized forms of livestock management, stocking a great number of larger breeds for the purposes of producing mutton.

6.2.3 Lowland Vales

The Lowland Vales, are prominent across the centre of the country, occupying large parts of the counties of Buckinghamshire, Bedfordshire, Oxfordshire, Leicestershire, Lincolnshire, Nottinghamshire, and Warwickshire, as well as more patches in Hertfordshire, Essex, East Anglia, Central Yorkshire and through parts of the Berkshire vale (Thirsk 2000, 78). The pastures of the vales were primarily based on the production of mutton as well as the production of second-grade wool (2000, 91), supported by the widespread introduction of the turnip, though in most counties in the Midlands, the soil was better adapted to the farming of cattle (Marshall 1793, 217). Enclosures had spread across many of these regions far earlier than many of the other parts of England (Roberts *et al.* 2016, 129), with a renewed burst of enclosures between 1755 and 1780 (Thirsk 2000, 91). In many of the grazing districts the larger farms had been divided up with enclosed lands, offering greater control over breeding practices. As such, it was the New Leicester and Southdown breeds that were 'central to the improvement which swept across Lowland England in the late eighteenth and early nineteenth centuries (Walton 1983, 175-176). However, the Midlands was still breeding a number of sheep Marshall describes as 'the small and hardy mountaineers', a short-wooled breed kept on the commons and fields of the region.

Buckinghamshire had high quality soil that supported large quantities of crops with only little manure (Aikin 1795, 323) as well as the production of fat lambs for the London market (Priest and Parkinson 1810, 307). The fattening of lambs for London markets appears to have been an objective shared by many counties in close proximity to London.

Leicestershire had quantities of rich grazing land (Aikin 1795, 135), with the eastern and south-eastern regions breeding a great number of cattle to very large sizes, while the northern grazing tracts supported great numbers of sheep (1795, 135-136). The principal sheep breeds of the county were the Old and New Leicester breeds (Pitt 1809, 245) and these Leicestershire breeds were 'very large in size, without horns, and clothed with thick long flakes of soft wool, particularly fit for the worsted manufacturers' (Aikin 1795, 136).⁴ Lincolnshire also bred a large number of New Leicester sheep, as well as the long woolled, large Lincoln breed (Young 1799, 365). It is of little surprise that Lincoln and Leicester exported large quantities of wool (Aikin 1795, 66). Nottinghamshire was also an area with widespread enclosures, with turnip husbandry being widely adopted in the enclosed regions (Lowe 1794, 11) and consequently, the enclosed areas began to see the adoption of the Lincolnshire and New Leicestershire breeds (1794, 33). However, the sheep kept on fallow lands were 'a poor breed', described as a mixture of the forest and Lincolnshire pasture sheep (1794, 11), a breed which may have perhaps proven viable for parchment. However these breeds were by no means widespread. The New Leicester was also found in Warwickshire, principally a feeding and dairy county (Aikin 1795, 151), with great attention paid by farmers to improve the wool and mutton of their sheep. Many breeders were said to have purchased the 'finest Leicestershire rams' at 'the most extravagant prices' to cross with their best shaped ewes (Murray 1815, 161).

Hertfordshire, which Thirsk describes as having 'patches' of these Lowland Vales, though primarily an arable county (Young 1804, 194-195). The primary breeds were the Wiltshire and the Southdown breeds, the former a possible contender for sourcing parchment materials, though these too were not found in any great numbers. Essex also only had 'few breeding flocks' (Young 1807, 308) and generally fattened lambs for spring and ewes for sale at the end of summer (Young 1807, 308). Oxfordshire also primarily an arable county (Davis 1794, 7), with the fertile lowlands in particular having long produced wheat and malt for London market (Havinden 1961, 73). The northern tip of Oxfordshire however had extremely fertile soil (Young 1813, 5) with cattle and sheep important to the region (Havinden 1961, 74), with a large, profitable local breed (Page

⁴ The establishment of the New Leicester in this county attesting to the regions success in sheep farming.

1907, 279-292).

Overall these regions were quite varied, though in the majority of cases many of these regions were not farming a significant number of sheep. Furthermore, in most cases the breeds found here were often the newer, larger Leicestershire breed. However, many farmers in many counties were still opposing the introduction of these improved breeds, for example; Warwickshire, Northamptonshire, Rutlandshire and Leicestershire were all counties with graziers opposing the new breeds (Marshall 1793, 224)

6.2.4 Woodlands and Wood Pasture

Although conceding that there is no single agreed term to define the agricultural systems of this region, Thirsk more broadly defines these areas as 'wood pastures' and 'pastoral lowlands' providing a somewhat clearer idea of the regions. The region primarily stretches from parts of Cheshire to Dorset. Typically, these areas were widely enclosed, with enclosures continuing throughout the sixteenth, seventeenth and eighteenth centuries as a result of agreements rather than as a result of parliamentary acts (Thirsk 2000, 117).

The primary product of Cheshire during the eighteenth century was dairy, while 'less attention is paid to sheep in this than in most counties' (Holland 1813, 286-287). Only a few farmers in the region had the Leicester flocks and paid some attention to their breeds, while there were also some Southdown sheep 'in the hands of a few gentlemen' (Holland 1813, 287). An eighteenth century writer described three fourths of the land being dedicated to pasture, with the grass of the region used, in part to feed horses, but in most cases fed to milking cows, with little attention paid to fattening cows (Aikin 1795, 92). Shropshire too had few breeding flocks, though the sheep that were kept were said to have varied from the small Welsh breeds to the far larger Leicestershire breeds of Leicestershire (Plymley 1803, 259). A great number of experiments occurred in this region, with almost all farmers of different districts having tried almost all the improved breeds (1803, 260-261). However, in general the low parts of the county were primarily used to feed cattle, used widely for production of cheese, while the hilly tracts were for the breeding of sheep producing a fine wool (Aikin 1795, 98-99). The Old Shropshire sheep were prevalent, a very hardy animal that Plymley claimed did not require food from farmers during the winter, nor did they generally drink or require any attention

from the shepard (Plymley 1803, 260).

Staffordshire was also 'not a great feeding county' (Pitt 1817, 69) though the beast was horned cattle and the primary product of the county was milk (1817, 66). However, of the sheep kept in the region the main breeds 'deserving of particular attention, were the native Cannock-heath and Sutton Coldfield breeds, breeds from Leicestershire and the Southdown breed' (1817, 70-71). The native breeds were, under certain management, well disposed to fatten and 'produced mutton equal to that from any other breed' (1817, 71), and produced a fine wool (Pitt 1817, 71 Pitt 1796, 136), while the breeds bred for wool were 'refined and improved in a high degree upon principles introduced by the late Mr Bakewell, of Dishley (Pitt 1817, 71). The region did however continue to breed the older, smaller, black-faced horned varieties, many of which had died out in most counties by this time (Russell 2007, 173-174; Plot 1686, 109), and possibly these un-improved breeds were well-suited to parchment (Russell 2007, 174).

Herefordshire was similar in many respects, with wool a primary export of the county, with the sheep of the region generally small, 'affording a fine silky wool, in quality approaching the Spanish' (Aikin 1795, 105). This county had previously employed the farming of sheep to collect 'food from situations where no other animal was capable of subsisting', but Duncomb suggests that by the end of the eighteenth century 'an opposite system has been adopted, and many thousand acres of the best tillage ground have been converted into pasture of sheep' (Duncumb 1805, 122-123). This allowed for the adoption of breeds such as the New Leicester, however many of the breeds already bred in this region produced a finer wool and in greater quantities (1805, 123).

Worcestershire's primary products were 'corn, cattle, fine wool, hops, cyder and perry' (Aikin 1795, 157), with the sheep of the region being described as being 'of no particular breed' , except the sheep on the commons and wasteland which were breeds of the same origin as the Staffordshire Cannock Heath and Sutton Coldfield breeds (Pitt 1810, 216). The north and east of the country were described as primarily farming flocks of the Leicester and Cotswold sorts, though widely crossed with the New Leicester breeds (Pitt 1810, 217). However the wastelands and hills of the south were generally stocked with Cotswold sheep (1810, 217-218). The northern regions bred sheep generally ideal for the butcher (Pitt 1805, 217).

The majority of the land of Warwickshire was also committed to the breeding of improved breeds, as the following concise summary offered in the Board of Agriculture report states; 'The great attention that has been paid by many eminent breeders in Warwickshire, to improve the wool and mutton of this animal, by selecting the finest Leicestershire rams, and paying the most extravagant prices for them only for a season, to cross with from a selection of the best shaped ewes in the country, has now produced a breed of sheep equal, if not superior to most counties in England.' (Murray 1815, 161). There were large numbers of the New Leicester and Wiltshire sheep in this region, though also with a number of the Southdown, Merino and Welsh breeds on the commons (Murray 1815, 161). Ultimately, the county was not producing breeds of sheep most ideal for parchment in any great number, however the breeds here were varied and with small Welsh breeds creating a possible supply for local, smaller parchment works.

Gloucester was almost exclusively home to what Marshall describes as 'mountain sheep', however the county swept them away during the summer 1782 (Marshall 1789, 208). Following this summer the county developed a wide-range of the improved breeds by the end of the eighteenth century. There appears to be very differing methods for breeding sheep in the county (see: Rudge 1807, 307-312), though with only two clear objectives: either producing large quantities of fine wool, or significant weights of mutton. As a result the Cotswold breed, an animal primarily bred for its mutton and the principal breed of the county, was widely crossed with the Southdowns in an attempt to improve the fineness of wool (Rudge 1807, 305). The pure Cotswold breed had however become 'scarce' by the end of the eighteenth century, with the introduction of the new Leicester being used to improve the breed to create a finer (though also shorter) wool and a more compact and fatty carcass (1807, 306).

A number of woodland lowland areas in Wiltshire, Dorset and Somerset all followed the same paths as many of the counties listed above and were widely enclosed. The result being the introduction of a number of improved breeds. However, these regions were small due to the type of agriculture commons in these counties. For example much of south Wiltshire avoided enclosure, with the 'peculiar shape of many of the manors' and the 'general application of the land' made enclosures impractical (Davis 1813, 44-45). In

Somerset too, there was great resistance to enclosure in the hilly regions. The issue of enclosure was so significant in this county in fact, that the Board of Agriculture report dedicates thirty pages to attempting to disprove the perceived disadvantages of the local population (Billingsley 1798, 48-78), an issue not so intensely discussed in the majority of the other reports. There was also a widespread aversion to improved breeds, the key belief being that the 'deficiency in the fat of the inside would so disgrace their sheep in the eye of the butcher, that they would have lost their old customers' (Billingsley 1798, 243). Despite Billingsley describing the aversions to the the improved breeds as 'fallacious' he later discusses the instance of a Mr. Lowman crossing sheep with the Leicester breed and the significant issue of the new breeds being unable to walk far to the fold, finally concluding that 'if they cannot walk a mile to the fold, they will never gain much ground in this country' (1794, 255). This might explain why so many of the hilly regions of county did not adopt the new improved breeds (see: Billingsley 1798, 76).

Finally, the county of Dorset shared many of the same characteristics listed above. The region was said to have sheep very similar to those in Somerset (Stevenson 1812, 393), though primarily for the purpose of selling lambs to the London market (Stevenson 1812, 393; Aikin 1795, 297). The differing agricultural system of Dorset to many of the neighbouring counties, the system of pastoral farming, likely allowed for the later improvement to the breeds that occurred towards the end of the eighteenth century (Stevenson 1812, 393). Overall however, Dorset may have produced a number of viable sheep for parchment, with the local breed being described as 'tall, and light in body' as later as 1778 (Anderson 1778, 168) as well as the late introduction of the turnip being a testament of the regions refusal to adopt new farming methods (Stevenson 1812, 251).

By the end of the eighteenth century, the majority of these regions were not producing viable sheep for parchment production, besides a few of the more southern counties. It appears much of the woodland regions described by Thirsk was enclosed and quickly began to adopt the improved breeds of the time.

6.2.5 Fenlands

Thirsk describes 'true fenlands' as existing widely across England, the most extensive of

which being the mosses of Lancashire and Cumbria and the Eastern Fenlands of Cambridgeshire and south Lincolnshire (Thirsk 2000, 167), describing the regions as having 'countless drains' and 'watercourses criss-crossing' wide-scale cooperation amongst farmers in the regions.

Westmorland and Northumberland appear to have shared the same breeds of sheep, with Bailey and Culley (1797, 126) and Walls (1901, 141) listing the same three major breeds of the region. None of them particularly fat or woolly (Pigot 1834, 144). Firstly, the Cheviot breed, a short woolled, 'hardy and valuable mountain sheep', bred in the north-west of the county (Pigot 1834, 144). Secondly, the heath sheep, otherwise referred to as the hair-type of sheep (Ryder 1983, 496). A 'pure breed' sheep, typically of a smaller size and as described in the earlier section (section 6.1) as an ideal breed of sheep for manufacturing parchment. Walls even claimed that the heath breed was actually the most common breed in Westmorland (Walls 1901, 141). Finally, the Lincoln and New Leicester breeds, though these were primarily found in the enclosed grazing lands and did not represent a significant proportion of the sheep population in these counties. Similarly most of the Cumberland farmland was populated by a significant number of sheep in the hilly regions (Aikin 1795, 38, 73; Pigot 1995, 15), many of which were said to travel great distances often unsupervised for long periods of time (Pigot 1995, 16). However the Cumberland downlands primarily bred cows, certainly to a larger degree than Westmorland and Northumberland.

The primary breed of sheep in the flat fenlands of south Lincolnshire and Cambridgeshire region was a cross between the Leicester and the Lincoln breed (Gooch 1811, 272; Young 1799, 365). Cambridgeshire in particular, although mostly farming the Leicester and Lincoln cross breed, had a very significant range of breeds, including; Norfolks, West-country, Cambridgeshire, Berkshire, Hertfordshire, South Down, Lincoln and Leicester (1811, 272). Despite a clear propensity for breeding larger breeds, Cambridgeshire still bred some smaller, hardier breeds for some time and remained one of the few regions to farm sheep with coarse wool over fine wool (Ryder 1964, 77). This region therefore may have still bred sheep ideal for parchment production, however there were still a significant number of the newer, larger breeds in this region.

These fenlands then seem to have produced a number of viable breeds, though in a

greater quantity in the more northern regions, while eastern fens instead produced a wider variety of sheep of a wide variety of weights and wool weights (see Gooch 1811, 273), particularly around the southern tracts of Lincolnshire (Aikin 1795, 189) and the northern region of Cambridgeshire (Aikin 1795, 205). Overall, the variability of farming objectives in these regions make a definitive conclusion difficult, however most of the locations appear certainly capable of supplying local parchment-makers with a relatively significant number of viable skins. However, the systems adopted here were certainly not as beneficial to local parchment-makers as the regions adopting the 'sheep and corn' system, a system far more likely to incentivise the growth of a far more lucrative parchment industry.

6.2.6 Moorlands

This section will cover the uplands of the Pennines, the North York Moors, as well as the uplands of Exmoor, Dartmoor and Bodmin Moor. These regions have varying agricultural outputs, with some at this time being entirely uncultivated, covered in peat, or tall, inedible grasses (Thirsk 2000, 188) while others were accessible regions or reasonable agricultural outputs.

The northern tip of the Pennines stretches through west Durham, a region of peaty soils, accompanied with 'yellow orchrey clay or white sand: both of them certain indications of unproductiveness' (Bailey 1810, 10). The south of Durham however bred a significant number of sheep and was formerly famed for having the largest breed of sheep in the kingdom (Bailey 1810, 248), though these were being overtaken by the New Leicester which were slowly being introduced to the region (1810, 248).

The west- and north-ridings of Yorkshire both farmed sheep of possible significance. The North Riding being home to the 'old stock of the northern part of the Vale of York, and of Cleveland', sheep that were 'very large, coarse boned, slow feeders, and the wool dry and harsh' (Tuke 1794, 64). While the West Riding of Yorkshire bred a large quantity of Scotch sheep (Rennie 1799, 186). However, though these sheep were perhaps viable options for parchment production, both the regions were subject to widespread breed improvement along the principles of Robert Bakewell (Tuke 1794, 64; Rennie 1799, 186).

The native breed of Devon was the Exmoor (Vancouver 1808, 338) while Cornwall was

home to the Exmoor, the Dartmoor and many other breeds, while the pure Cornish sheep had become very rare by the beginning of the nineteenth century (Worgan 1811, 148). Despite the surviving native breeds, farmers in both Devon and Cornwall had attempted to introduce a wide breadth of different breeds as well as attempting to cross the local sheep with the new breeds such as the New Leicester by the first decade of the nineteenth century (Vancouver 1808, 341, Worgan 1811, 148). Cornwall in particular was said to be breeding 'flocks of sheep as any count, either as to form, weight of fleece, hardiness of constitution, aptitude to fatten quickly at an early age, or flavour of mutton.' (Worgan 1811, 148). Devon, despite the many attempts at crossing with the New Leicester breed, still appeared have a number of native breeds, though many were still bred for their wool growing properties (Vancouver 1808, 342) and the Exmoor, its native breed, was a longwool breed of fairly considerable size. Overall, there is again a possibility that there were some breeds in this area were viable options for parchment-makers, but ultimately the objectives of many of the farmers in the two counties were in stark contrast to what was required.

The moorlands in general were not areas of any significant agricultural output, and unlikely to support any great parchment industry. Even the counties in which Moorland farming took place generally adopted agricultural objectives in contrast to farming sheep most viable for parchment production.

6.2.7 London's Hinterland

The final section deals with a region not defined in most agricultural histories however, most of the counties surrounding London appear to share a similar agricultural output in the production of lambs of the London market. The defining feature of many of these counties being their proximity to London rather than any shared agrarian characteristics. Many of the farmers located nearer to London primarily farmed sheep to sell lambs into London, included; Sussex (Davis 1813, 140; Pitt 1810, 216-217; Young 1808, 297), Buckinghamshire (Priest and Parkinson 1810, 307), Essex (Young 1807, 308), and a number of the farmers of Middlesex (Middleton 1813, 434), as well as the farmers of Surrey breeding Dorsetshire sheep (Stevenson 1809, 536) which were a very popular breed amongst farmers producing lambs for the London market.

The sale of lambs was likely a difficult and expensive occupation, requiring the transport

and sale of a very delicate and relatively expensive commodity. The counties therefore in close proximity to London were at a great advantage. Another reason for the large lambing market in this region was also perhaps the inability of the region to compete in the specialised breeding of sheep for mutton and wool with the Midland and northern regions due to topographical restraints.

6.2.8 Conclusion

Andrew Copus stated that sheep had three major uses within in the English agricultural system: the production of mutton and tallow, the production of wool, and the fertilisation of arable land (1989, 36). Having reviewed the agricultural regimes of the key regions, and the types of sheep preferred, it has become clear that those using sheep for the fertilisation of arable land were the most suited to providing skins for parchment making. These regions appear to be predominantly in the 'sheep and corn regions', with particular emphasis on the south-west of England and some of the fenland farming regions. Also, as Copus states, 'any attempt to provide fattening fare would have been incompatible with the other objective of the sheep-corn farmer of that time, maximizing cereal output' (Copus 1989, 39), with the poor soils heavily reliant on the use of sheep to produce satisfactory crops (Cook and Williamson 1999, 185). This being important as the main area for high cereal production appears to have been the south-west (1989, 39), likely due to the history of the specialisation of this market, but seemingly also due to the soil quality in the region. The systems in these heavy clay areas relied heavily on the use of sheep for fertilising arable land, while the objectives in the region appear to be in contrast to the supporting of larger breeds. An article in the *Farmer's Magazine* offers a short summary of the fodder grown in these heavy clay regions:

'Clover, vetches, and cabbages, are the only crops which can be raised as food for sheep or cattle on the latter; and cabbages cannot be eaten off by sheep on such land. There is more expence in the production and consumption of the crops on wet clay land, than on a dry friable soil; and therefore the expence of improving such land is greater. The crops must be carted to be consumed in the yard by stock, and the dung carted again into the field: besides, the injury done to the land in wet weather by carting off the corps is great. Vetches and clover may, however, be folded by sheep in

the summer months on clay soils.' (The Saturday Magazine 1838, 188)

The Midlands and more northern regions (though excluding most of Cumberland, Northumberland and Westmorland) were generally better suited to the specialised breeding of sheep for either mutton and wool production. This was due in part to the prevalence of enclosures which gave greater control to the selective breeding practices of landowners, though also due in part to the topography of the regions. For example, the diets and levels of exercise of the sheep could greatly affect the quality of the wool (see section 6.3.4). Lisle writes that clover-grasses cause sheep to develop coarser-wool, while 'the better the hay' the finer the wool. Lisle particularly recommends the hill-county hay (Lisle 1757, 358). Furthermore, the growing of legumes, according to Lisle in his book *Observations on Husbandry*, and particularly the cultivation of the turnip, resulted in better conditions allowing shearing to take place earlier than normal (cited in: Ryder 1983, 485). The soil in any region would greatly dictate the type of breeding that could take place, for example, in the Board of Agriculture report on Gloucester there is a concise description of the severe limitations of certain soils;

Those soils which produce the finest wool, are not adapted to raise the greatest weight of mutton: and, on the other hand, those soils which fatten most, in equal proportion deteriorate the wool, it being a fact ascertained by experience, that wherever fine woolled sheep have been introduced on more luxuriant soils than they were bred, or accustomed to, the wool has increased in quantity, but become coarser in quality.' (Rudge 1807, 306)

The primarily mutton producing regions emerged in areas of enclosures, where it was possible to grow large quantities of winter fodder which allowed for intensive year-round feeding. Also, the ability to separate their sheep across a lot of land (Young 1796, 489) and keep the level of exercise in these animals to a minimum with small enclosed fields and artificial feeding.

As stated in an 1838 article in *The Farmer's Magazine*:

The quantity of food produced by turnips, and by two years of clover and vetches, will enable the farmer to keep and fatten a large quantity of sheep on the ground, which will, by their trampling, and by the manure left on it, give to this kind of soil the best preparation for the succeeding crops of corn' (The Farmer's Magazine 1838, 188).

In conclusion, the objectives of the farmers in the south-west (excluding the West County), the eastern fenland and most northern regions of England, for many years, hindered the adoption of the newer breeds which were spreading across England under the banner of 'improvement'. Breeds in these regions were crossed with other sheep, though appear to have remained hardier animals, not being bred primarily for either wool or mutton. However, the introduction of many artificial fertilisers in the later nineteenth century (Cook and Williamson 1999, 193) and the more economically preferable position of mutton and wool over cereal following the levelling of prices in the 1820s (Copus 1989, 44), may have resulted in some farmers changing systems. Overall though, for the majority of the period under discussion the agricultural systems in these regions appear to have been breeding sheep better suited for parchment production and until at least the first half of the nineteenth century, the south-western and fenland counties were likely to have produced the most viable sheepskins for parchment-makers.

This is greatly significant as parchment-makers with a high supply of local, viable skins were at a great advantage. As discussed, parchment-makers for much of the eighteenth and nineteenth centuries could not compete over price (see section 5.1) and were held accountable to incredibly strict manufacturing standards, standards particularly difficult to attain with the use of fatty or weak skins. The parchment works with a local supply of quality skins were therefore likely producing a higher quality product at a lower cost and therefore, able to bargain for the lucrative contracts offered by the High Treasury during the period. Furthermore, the likelihood of parchment works being able to transport skins from distant locations is questionable, given the increasing prices for salt, the strict laws controlling the movement of skins and parchment and the high transport costs of the period. As a result, it is unsurprising that the regions with a higher supply of high quality skins are in the majority of cases, the locations with a higher number of parchment works (see section 4.3).

Chapter 7: Conclusions

7.1 Conclusion

This work has provided the first systematic studies of the post-medieval parchment industry, shedding light on a previously unknown industry. It has highlighted that it was not only of significant size, but survived the influx of paper during the fifteenth and sixteenth centuries, producing high volumes of parchment up until at least 1850. This work also includes the first major collection and review of a significant number of both historical and modern literature on the post-medieval parchment industry, tying together hundreds of years of information and presenting a plethora of historical texts on which to develop future research.

Overall, the parchment industry went through very significant changes between 1650 and 1850. The industry appears to have developed from a large collection of small firms operating across England, with parchment-makers of relatively low income or turnover, engaging in small-scale production and transactions. Between the sixteenth and nineteenth centuries, the increasing regulation, increasing taxation and a drastically increasing population, resulted in the control of production being shifted to a smaller number of larger firms. These firms primarily aimed to compete through a reduction in production costs and the manufacture of a more homogenous product, resulting in the slow decline in parchment quality over time. The results of this research also highlight that the industry shifted as agricultural improvement moved across the farming nation, clinging onto areas where livestock improvement was slow to take hold and where older, hardier breeds survived.

Finally, the work has highlighted the extent and significance of government intervention on a number of skin-based industries during this period. The collection and interpretation of a number of parchment taxation laws, and of laws on the regulation of manufacturing standards has also been the first of its kind. The results of this particular analysis offer a primary cause of the sudden decline in parchment quality during the eighteenth century, as well as the eventual decline of the parchment industry, requiring

the reconsideration of the traditional view of the widespread introduction of paper being the sole cause.

This project has answered all the questions set out in its aims and objectives, though has also highlighted the importance of future research on this previously unstudied industry. Furthermore, it has provided the first detailed overview of post-medieval parchment production and determined the key factors influencing its development, while also presented a number of key indicators that can be researched to enrich our current understanding of the post-medieval period. Overall, the results accrued have widespread applications and this project has shown that there exists a plethora of literature and historical data capable providing a basis for further investigation.

7.2 Discussion

This work highlights some key issues in any models used for post-medieval hDNA studies that find any relationship between when parchment was dated and when it was produced. Furthermore, it highlights the issues of determining the manufacturing origin of parchment from any stamp duties or stationers marks, with parchment often being moved great distances for tax purposes before being distributed across England by a series of stationers offices. Thankfully, this work does present some clear centres of parchment production, as well as a more widespread geographical shift of parchment firms to the south of England over time. Any post-medieval parchment samples analysed in any hDNA study are, in most cases, likely representative of the regions last to adopt agricultural changes associated with an 'agricultural revolution'. Any future hDNA studies on the period between 1650 and 1850 must now consider these results. Such studies are unlikely to represent any agricultural changes in the north of England, or, in most cases, any regions adopting the intensive production of mutton or fine wool. However, any hDNA research that finds a shift in the types of animals being farmed can now more confidently state when the period of agricultural improvement had spread across the majority of England, for the regions from which skins were collected for parchment production were primarily the region's that were late to adopt these changes.

The results of this research are not only significant to hDNA studies, but also contribute to the debate of agricultural improvement, particularly in regards to determining the

timing of the adoption of new sheep breeds and stockbreeding techniques, though also the chronology and geography of agricultural improvements more generally. Firstly, if there was a 'sudden' agricultural revolution that occurred between 1650 and 1850, it did not result in any sudden or major changes to the parchment industry. The changes that did occur, primarily in regards to livestock improvement, occurred over a 200 year period and were variable depending on geographical location and the agricultural objectives within that region. These results strongly suggest that no such sudden change occurred, particularly as mutton was a more important resource than beef during this period (Kerridge 1967, 303; Mathias 1969, 65), and with any sudden improvement likely to have strongly affected this particularly important market. Furthermore, the results indicate that the industry shifted as agricultural improvement moved across the farming nation, it clung onto areas where livestock improvement was slow to take hold and where older, hardier breeds survived. As a result, this research can offer further clarification on the development and geographical movement of agricultural improvement between 1650 and 1850, with an emphasis on the changes in sheep farming, another industry often overlooked in modern literature.

Furthermore, from the results of this research, it is also now understood that the decline of parchment quality that occurred at the turn of the eighteenth century was primarily due to legal changes and the subsequent changing market processes, rather than as a direct result of the introduction of new breeds of sheep. This should contribute to the current work of Sarah Fiddymont but also to studies on parchment quality more broadly. It also highlights the danger of drawing a causal relationship between agricultural improvement and any industries decline during this period, with growing government intervention also being a hugely significant, though often overlooked factor likely affecting the development of a number of industries.

In regards to the size of the industry, and the growing scale of production, future research on the specific large scale producers of parchment would be greatly beneficial. In many of the parchment centres of production, clear family-led parchment firms appear to own and run a number of parchment works, for example the Crook family, with; Noah Crook, Thomas Crook, John Crook Snr. and John Crook Jnr. all operating different parchment works in Wiltshire during the eighteenth century. A more detailed review of the sources used in this project, combined with a review of local resources of

Wiltshire would offer greater detail on the development of the scale of production of parchment during this period, but also the development of a monopolistic market structure in certain regions. This work should constitute a firm basis on which future investigations can be conducted.

Overall, the significance of this research should drastically affect the interpretations of any hDNA studies on the post-medieval period. Any changes found in the hDNA data during this period can now be interpreted within the historical context. Correlations can now also be drawn between the data and the various historical changes that occurred during this period. This work has also contributed to a number of debates and currently held theories on the period, while also highlighting the importance for further study in this area and demonstrating the value of digitised local records.

Appendices

Appendix 1: Witherby Publishing Group Data

Collected by Sean Doherty of the University of York (Doherty 2018)

| Name | Location | Year | Supplying how often | Av. value | Total value | Notes |
|------------|----------|------|---------------------|-----------|--------------|--|
| Noah Crook | Abingdon | 1795 | Twice a month | £30 | £386 | Orders placed about 1.5 months in advance. Paid in advance |
| | | 1796 | Twice a month | £26 | £265 | |
| | | 1797 | Twice a month | £30 | £164 | |
| | | 1798 | Once a month | £40 | £225 | |
| | | 1799 | Once a month | £40 | £96 | |
| | | 1803 | Once a month | £40 | £140 | |
| | | 1804 | Once a month | £40 | £597 | |
| | | 1805 | Once a month | £40 | £94 | |
| | | | | | £2038 | |

| Name | Location | Year | Supplying how often | Av. value | Total value | Notes |
|--------------|-------------|------|-----------------------|-----------|--------------|---|
| Thomas Crook | Marlborough | 1795 | Three times per month | £26 | - | Orders placed about <1 months in advance. Paid in advance |
| | | 1796 | Three times per month | £30 | £674 | |
| | | 1797 | Three times per month | £26 | - | |
| | | 1799 | Four times per year | | - | |
| | | 1800 | Four times per year | | £637 | Incomplete years |
| | | 1802 | Four times per year | | £206 | |
| | | | | | £1517 | Last two years |

| Name | Location | Year | Supplying how often | Av. value | Total value | Notes |
|-------------|-----------|------|---------------------|-----------|-------------|------------------|
| Thomas Rake | Salisbury | 1796 | Once a month | £30 | £120 | Incomplete years |
| | | 1797 | Once a month | £30 | £169 | |
| | | 1798 | Once/twice a year | £40 | £65 | |
| | | 1801 | Once/twice a year | £40 | £58 | |
| | | 1802 | Once/twice a year | £40 | £85 | |
| | | 1803 | Once/twice a year | £40 | £221 | |
| | | 1804 | Once/twice a year | £40 | £247 | |
| | | | | | £966 | |

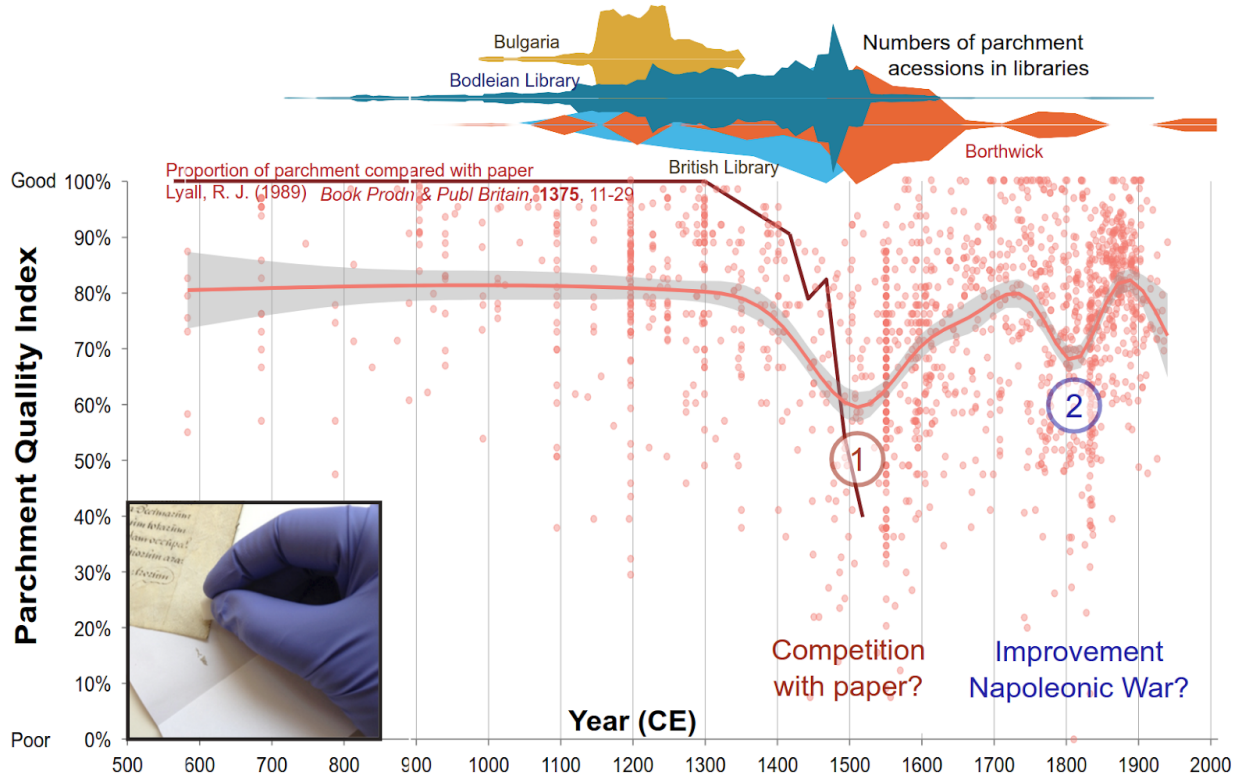
| Name | Location | Year | Supplying how often | Av. value | Total value | Notes |
|---------------|----------|------|----------------------------|-----------|-------------|--|
| Samuel Bishop | Bristol | 1798 | Twice/three times per year | | £21 | Only a few purchases across the year, but multiple years. Specialist, certain type of parchment? |
| | | 1799 | Twice/three times per year | | £47 | |
| | | 1801 | Twice/three times per year | | £39 | |
| | | 1804 | Twice/three times per year | | £41 | |
| | | 1805 | Twice/three times per year | | £34 | |
| | | 1806 | Twice/three times per year | | £21 | |
| | | | | | £205 | |

Stamped Parchment Sold - (LMA) Witherbys 4682/E/01/001 (page 21-22)

| | 1798 | 1799 | 1800 | 1801 | 1802 | 1803 | 1804 | 1805 | 1806 |
|--------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|
| J | <i>n.d</i> | 794 | 769 | 995 | 827 | 874 | 799 | 859 | 932 |
| F | <i>n.d</i> | 782 | 1047 | 936 | 929 | 1047 | 1034 | 851 | 1092 |
| M | <i>n.d</i> | 855 | 727 | 1030 | 1179 | 814 | 1098 | 1002 | 1106 |
| A | <i>n.d</i> | 903 | 1000 | 941 | 1028 | 1005 | 910 | 946 | 1279 |
| M | <i>n.d</i> | 972 | 1312 | 1230 | 1012 | 1100 | 1001 | 1147 | 1263 |
| J | <i>n.d</i> | 1036 | 879 | 1236 | 1151 | 1139 | 1077 | 1128 | 1117 |
| J | <i>n.d</i> | 780 | 1251 | 1182 | 1069 | 1031 | 867 | 1061 | 1058 |
| A | <i>n.d</i> | 763 | 789 | 676 | 779 | 810 | 761 | 906 | 920 |
| S | <i>n.d</i> | 711 | 849 | 549 | 660 | 722 | 913 | 667 | 686 |
| O | 933 | 996 | 904 | 928 | 972 | 933 | 1054 | 977 | <i>n.d</i> |
| N | 813 | 1283 | 896 | 950 | 1136 | 914 | 821 | 1040 | <i>n.d</i> |
| D | 1119 | 788 | 1033 | 851 | 822 | 928 | 704 | 1056 | <i>n.d</i> |
| Total | 2865 | 10663 | 11456 | 11504 | 11564 | 11317 | 11039 | 11640 | 9453 |

Appendix 2: Parchment Quality

Source: Fiddymment 2018



Appendix 3: List of Roger's Parchment Transactions

Source: Rogers 1887, 575-606

| | | | | | |
|------------------------------------|------|--|------------|-------------------------------------|------|
| Mendham 1585 4 Parchment Skins | /7. | Eton 1604 4 Skins Parchment | /6. | Eton 1651 6 Skins | /8. |
| Worksop 1588 Skin Parchment | /6. | Oxford 1605 3 Skins Parchment | /10. | Winchester 1656 Parchment 3 doz | 9/- |
| Eton 1589 2 Rolls Parchment | /18. | Oxford 1607 2 Skins Parchment | /6. | Winchester 1657 Parchment 4 doz. | 9/- |
| Oxford 1590 Skin Parchment | /6. | Oxford 1608 2 Skins Parchment | /6. | Winchester 1658 Parchment 1 doz. | 9/- |
| Gawthorp 1592 2 Skins Parchment | /10. | Cambridge 1609 1 Skin Parchment | /8. | Winchester 1660 16 Parchment | /10. |
| Oxford 1592 2 Skins Parchment | /6½. | Oxford 1610 4 Skins Parchment | /4½- | Winchester 1661 2 Rolls | 12/- |
| Oxford 1593 Sheet Parchment | /8. | Chatham 1624 Parchment 5 doz. | /6. | Winchester 1663 8 Parchment | 1/- |
| Oxford 1594 5 Skins Parchment | /8½. | Oxford 1629 Parchment 8 doz. | 6/- | Winchester 1665 Parchment 2 Doz. | 9/- |
| Gawthorp 1595 1 Skin Parchment | /7- | Oxford 1632 Parchment 15 doz. | 6/- | Winchester 1667 Parchment 1 Doz. | 9/- |
| Oxford 1595 Parchment Skin | /9- | Winchester 1644 4 Skins 3 Bridles | /7- 1/4 | Winchester 1668 16 Skins | /9- |
| Oxford 1599 9 Skins Parchment | /6. | Winchester 1645 4 Skins | /6. | Winchester 1672 12 Parchment | /10. |
| Oxford 1601 16 Skins Parchment | /6. | Oxford 1646 10 Sheets Parchment 12 Skins | 3/2 /7. | Winchester 1673 12 Parchment | /10. |
| Oxford 1602 8 do. Parchment | /7. | Winchester 1648 8 Skins | /6. | Winchester 1677 7 Parchments | 5/0 |
| Oxford 1603 8 Skins Parchment | /8. | Oxford 1649 78 Skins | 1/2 | Cambridge 1682 20 Sheets | 13/- |

Appendix 4: Cumulative Percentage Increase of Products and Wages

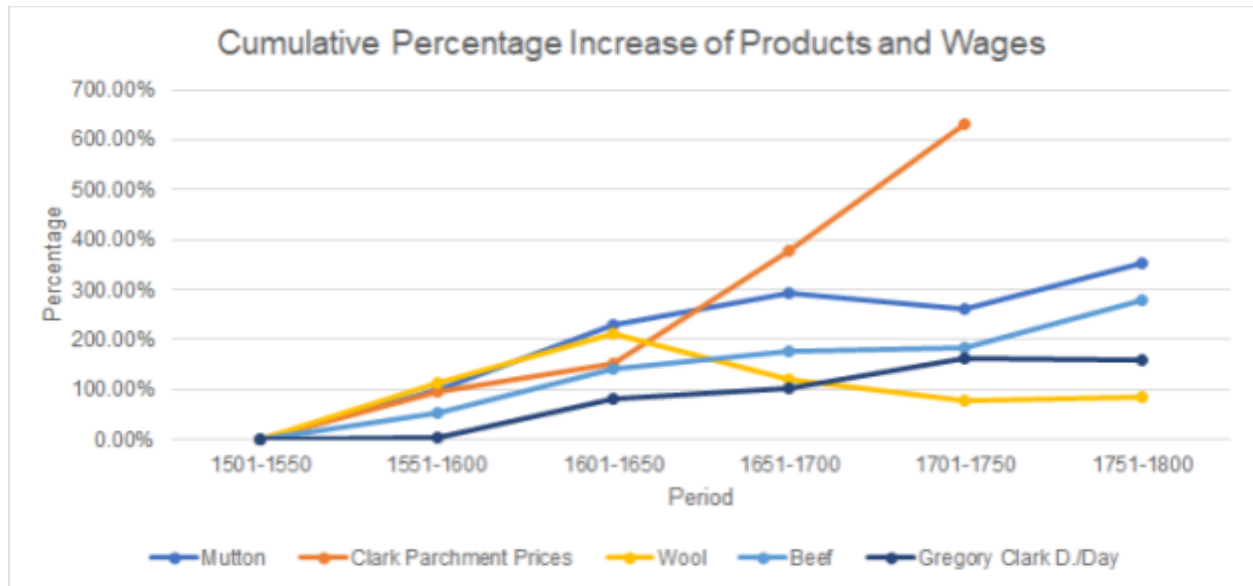


Figure 12: Cumulative Percentage Increase of Products and Wages

Sources: Mutton, Wool, Beef - Clark 2003, Appendix Table 2
 Parchment - Clark and Lindert 2016
 Denarii per Day Wages - Clark 2007, 99-100

Appendix 5: Types of Records Collected

| 1601-1650 | |
|----------------|-----------|
| Record Type | No. |
| Death/Will | 40 |
| Baptism | 1 |
| Directory | 0 |
| Marriage | 0 |
| Apprenticeship | 29 |
| Census | 0 |
| Reference | 3 |
| Total: | 73 |

| 1651-1700 | |
|----------------|-----------|
| Record Type | No. |
| Death/Will | 47 |
| Baptism | 1 |
| Directory | 0 |
| Marriage | 8 |
| Apprenticeship | 11 |
| Census | 0 |
| Reference | 1 |
| Total: | 68 |

| 1701-1750 | |
|----------------|-----------|
| Record Type | No. |
| Death/Will | 20 |
| Baptism | 5 |
| Directory | 1 |
| Marriage | 13 |
| Apprenticeship | 6 |
| Census | 0 |
| Reference | 5 |
| Total: | 50 |

| 1751-1800 | |
|----------------|-----------|
| Record Type | No. |
| Death/Will | 16 |
| Baptism | 10 |
| Directory | 18 |
| Marriage | 11 |
| Apprenticeship | 3 |
| Census | 0 |
| Reference | 3 |
| Total: | 61 |

| 1801-1850 | |
|----------------|------------|
| Record Type | No. |
| Death/Will | 22 |
| Baptism | 112 |
| Directory | 8 |
| Marriage | 39 |
| Apprenticeship | 0 |
| Census | 0 |
| Reference | 1 |
| Total: | 182 |

| 1851-1900 | |
|----------------|------------|
| Record Type | No. |
| Death/Will | 0 |
| Baptism | 0 |
| Directory | 0 |
| Marriage | 0 |
| Apprenticeship | 0 |
| Census | 242 |
| Reference | 0 |
| Total: | 242 |

| 1601-1901 | |
|----------------|------------|
| Record Type | No. |
| Death/Will | 145 |
| Baptism | 129 |
| Directory | 27 |
| Marriage | 71 |
| Apprenticeship | 49 |
| Reference | 13 |
| Census | 242 |
| Total: | 676 |

Appendix 6: National Directories

National Directories:

| The Trade Directory | Year | Reference | Number of listed parchment-makers |
|--|------|-----------------------|-----------------------------------|
| Pigot and Co's Commercial Directory | 1834 | Pigot 1834 | 0 |
| Slater's Royal National Commercial Directory | 1857 | Slater and Pigot 1857 | 2 |
| Pigot and Co's Commercial Directory | 1828 | Pigot 1995 | 0 |
| Slater's Royal National Commercial Directory of Scotland | 1852 | Slater and Pigot 1852 | 1 |
| Kelly's directory of stationers, printers, publishers, booksellers, papermakers, & c., of England, Scotland and Wales | 1936 | Kelly 1936 | 20 |
| Bailey's British Directory | 1784 | Bailey 1784 | 9 |
| <i>The London and Country Printers: Booksellers and Stationers Vade Mecum</i> | 1785 | Pendred 1785 | 13 |
| <i>Pigot and Co's New Commercial Directory of Scotland for 1825-1826... Together with the most extensive Directory of London</i> | 1825 | Pigot and Co 1825 | 11 |
| <i>The universal director; or, The nobleman and gentleman's true guide to the masters and professors of the liberal and polite arts and sciences</i> | 1763 | Mortimer 1763 | 1 |

Appendix 7: Local Directories

Local Directories:

| The Trade Directory | Year | Reference | Number of listed parchment-makers |
|---|------|-----------------------|-----------------------------------|
| Parson and White's Directory of Leeds | 1840 | Parson and White 1840 | 0 |
| Ibbetson's Directory of the Borough of Bradford | 1845 | Ibbetson 1845 | 0 |
| Kent's directory, for the year 1798; containing an alphabetical list of the names and places of abode of the directors of companies, persons in public business, merchants... of London and Westminster... and Southwark, etc | 1798 | Kent 1798 | 0 |
| Smith's Directory of Halifax | 1874 | Smith 1874 | 0 |
| White's Directory of Leeds, Bradford, Etc. | 1866 | White 1866 | 0 |
| Williams and Co's Directory of York | 1844 | William and Co 1844 | 0 |
| The Post Office London Directory | 1852 | Kelly and Co. 1852 | 13 |
| Sketchley's Bristol Directory | 1775 | Sketchley 1775 | 2 |
| <i>History, gazetteer, and directory of Leicestershire, and ... Rutland: together with the adjacent towns of Grantham & Stamford</i> | 1846 | White 1846 | 1 |
| <i>Directory & Gazetteer of Worcestershire</i> | 1855 | Billing 1855 | 1 |

Appendix 8: Overview of Parchment-Maker Data

| County: | 1601-1650 | 1651-1700 | 1701-1750 | 1751-1800 | 1801-1850 | 1851-1900 | All Periods: |
|---------------------------|-----------|-----------|-----------|-----------|------------|------------|--------------|
| Bedfordshire | 0 | 0 | 1 | 1 | 1 | 0 | 3 |
| Berkshire | 0 | 0 | 0 | 0 | 9 | 7 | 16 |
| Buckinghamshire | 1 | 1 | 7 | 5 | 3 | 9 | 26 |
| Cambridgeshire | 2 | 0 | 0 | 1 | 31 | 21 | 55 |
| Devonshire | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| Dorset | 11 | 8 | 0 | 0 | 4 | 0 | 23 |
| East Riding of Yorkshire | 0 | 0 | 3 | 0 | 0 | 0 | 3 |
| Gloucestershire | 3 | 0 | 1 | 3 | 0 | 11 | 18 |
| Hampshire | 0 | 0 | 1 | 3 | 8 | 20 | 32 |
| Hertfordshire | 0 | 0 | 0 | 3 | 5 | 4 | 12 |
| Kent | 0 | 1 | 0 | 1 | 1 | 12 | 15 |
| Lancashire | 0 | 0 | 0 | 0 | 5 | 0 | 5 |
| Leicestershire | 0 | 1 | 1 | 3 | 5 | 1 | 11 |
| Lincolnshire | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| Middlesex | 1 | 2 | 1 | 1 | 10 | 26 | 41 |
| Norfolk | 1 | 0 | 0 | 0 | 0 | 1 | 2 |
| North Riding of Yorkshire | 30 | 6 | 0 | 1 | 0 | 0 | 37 |
| Northamptonshire | 2 | 0 | 3 | 4 | 4 | 30 | 43 |
| Nottinghamshire | 0 | 1 | 0 | 0 | 0 | 5 | 6 |
| Oxfordshire | 0 | 1 | 0 | 2 | 2 | 9 | 14 |
| Rutland | 0 | 0 | 0 | 1 | 0 | 4 | 5 |
| Shropshire | 1 | 0 | 1 | 0 | 1 | 0 | 3 |
| Somerset | 2 | 5 | 2 | 7 | 12 | 3 | 31 |
| Staffordshire | 0 | 1 | 1 | 0 | 4 | 0 | 6 |
| Suffolk | 1 | 0 | 0 | 0 | 14 | 6 | 21 |
| Sussex | 0 | 0 | 0 | 0 | 0 | 5 | 5 |
| Surrey | 0 | 1 | 8 | 5 | 20 | 42 | 76 |
| Warwickshire | 1 | 1 | 2 | 5 | 2 | 0 | 11 |
| Wiltshire | 16 | 37 | 18 | 12 | 36 | 16 | 135 |
| Worcestershire | 0 | 2 | 0 | 3 | 4 | 10 | 19 |
| Total: | 73 | 68 | 50 | 61 | 182 | 242 | 676 |

Appendix 9: Parchment-Maker Records by Location

| Location | No. | Location | No. |
|-----------------------------------|-----|--------------------------------|-----|
| Abingdon, England | 5 | Lambeth, England | 20 |
| Andover, England | 1 | Leicester, England | 7 |
| Ayleburton, England | 1 | Leicestershire, England | 1 |
| Aylesbury, England | 3 | Lenton, England | 5 |
| Barrowden, England | 5 | Lichfield, England | 1 |
| Barton St David, England | 1 | Lingfield, England | 4 |
| Basingstoke, England | 2 | Little Weldon, England | 7 |
| Bassingbourn, England | 1 | Liverpool, England | 5 |
| Bath, England | 4 | Longparish, Hampshire, England | 1 |
| Bedford, England | 2 | Lyncombe, England | 1 |
| Bedminster, England | 3 | Malmesbury, England | 10 |
| Bengeworth, England | 5 | Marlborough, England | 29 |
| Bere Regis, England | 1 | Marylebone, England | 1 |
| Bermondsey, England | 48 | Middlesex, England | 4 |
| Beverley, England | 3 | Milton Abbas, England | 1 |
| Bexley, Kent, England | 1 | Motcombe, England | 0 |
| Bottisham, England | 1 | Newington, England | 2 |
| Bristol, England | 7 | Newport Pagnell, England | 1 |
| Brokenborough, England | 2 | North Cerney, England | 1 |
| Buckingham, England | 5 | North Petherton, England | 6 |
| Buriton, England | 1 | Northampton, England | 6 |
| Burnham, England | 1 | Northleach, England | 2 |
| Bury St Edmunds, England | 21 | Norwich, England | 1 |
| Butleigh, England | 1 | Nottingham, England | 1 |
| Camberwell, England | 14 | Osborne, England | 2 |
| Canterbury, England | 13 | Olney, England | 1 |
| Castle Cary, England | 2 | Oswestry, England | 1 |
| Caversham, England | 6 | Oundle, England | 1 |
| Charlton, Wiltshire, England | 6 | Powick, England | 1 |
| Cheltenham, England | 2 | Preshute, England | 1 |
| Chepping Wycombe, England | 1 | Princes Risborough, England | 5 |
| Chichester, England | 1 | Ravenstone, England | 1 |
| Chippenham, England | 3 | Reading, England | 8 |
| Clifton, Gloucestershire, England | 1 | Rotherhithe, England | 2 |

| | | | |
|-------------------------------|----|---|------------|
| Compton Dando, England | 1 | Saint Margaret, Leicestershire, England | 2 |
| Corfe Mullen, England | 1 | Salisbury, England | 56 |
| Coventry, England | 10 | Sawston, England | 51 |
| Crowle, England | 1 | Shepton Beauchamp, England | 0 |
| Darlaston, England | 1 | Sherborne, England | 14 |
| Deptford, England | 1 | Sherston, England | 6 |
| Devon, England | 0 | Southwark, England | 12 |
| Dorchester, England | 1 | St Margarets, Wiltshire, England | 1 |
| Dorset, England | 4 | Steyning, England | 3 |
| Ealing, England | 1 | Stockbridge, England | 9 |
| Earls Barton, England | 8 | Stourbridge, England | 2 |
| Eastham, England | 1 | Tewkesbury, England | 1 |
| Ely, England | 1 | Thame, England | 1 |
| Emneth, England | 1 | Tring, England | 5 |
| Emsworth, England | 1 | Trowbridge, England | 1 |
| Evesham, England | 11 | Walcot, England | 1 |
| Exeter, England | 1 | Walworth, England | 1 |
| Finsbury, England | 1 | Wantage, England | 3 |
| Fugglestone, England | 1 | Warminster, England | 4 |
| Gloucester, England | 8 | Weldon, England | 1 |
| Great Doddington, England | 2 | Wells, England | 1 |
| Gretton, England | 10 | West Wycombe, England | 1 |
| Harrold, England | 1 | Westbourne, England | 1 |
| Havant, England | 11 | Westport St Mary, England | 4 |
| Heston, England | 1 | Wheatley, England | 0 |
| High Wycombe, England | 4 | Whittington, England | 1 |
| Highworth, Wiltshire, England | 1 | Wilby, England | 2 |
| Hillingdon, England | 2 | Winchester, England | 6 |
| Hitchin, England | 7 | Wisbech, England | 1 |
| Holloway, England | 1 | Witney, England | 5 |
| Ipswich, England | 0 | Wooburn, England | 1 |
| Irthlingborough, England | 6 | Wycombe, England | 3 |
| Kennington, England | 3 | Yeovil, England | 3 |
| Kingswinford, England | 4 | York, England | 37 |
| Kintbury, England | 2 | London | 11 |
| Knowle, England | 1 | Total: | 676 |

Appendix 10: Parchment Taxation Laws

The first major relevant actor pertaining to the parchment industry occurred in 1603 (1. Jam. c.22), regulating the manufacturing process and the organisation of the industry. The first significant act between 1650 and 1850 however occurred in the aftermath of the Great Fire of London, after which Charles II introduced a variety of taxes in order to raise funds for the rebuilding of London. One of these laws enforced the taxation of 'any charter or grant' with the rate of 40s for one skin of parchment, and 20s for every additional skin (22 & 23 Cha. II c.9). The act covered a number of other uses including, *inter alia* grants of lands or leases, conveyances, surrender or release documents, writs of covenant, original writs or bills and pleas. The vast number of documents taxed were those typically used in court. This came into force in 1671 and was instituted for the period of 9 years, and although only applied to a relatively small number of uses, all parchment that was to be used for any of these purposes had to be transported to the head tax office at Lincoln's Inn, London to be stamped (see Glasse, 1794, 452).

These laws surrounding the taxation of parchment were more firmly established in 1711 (9 Ann.I c.11). The new act ensured the extension of many of the previous duties while also setting higher rates on a number of other specific parchment-based documents. Most significantly however, this act stated that *all* parchment would now be taxed and therefore all parchment must be transported to London for stamping, this included any parchment or vellum imported into Great Britain. For every dozen parchment sold there was a duty of 6d, while the fee stood at 1s for vellum. The act went further however, stating that all parchment works were now to be inspected regularly by appointed officers, who were permitted to enter the place of work of any parchment-maker, while refusal to allow entry would result in a fine of £10. Finally, these acts set out that, at least once a year, the Lord High Treasurer, or the commissioners of the Treasury would set the prices at which stamped vellum, parchment and paper would be sold (an issue discussed further in section 7.2 and section 8.2), with officers instated to weigh skins and hides, determine the duty that was to be paid and mark the products that been charged appropriately.

A 1712 act (10 Ann. I c.19) enacted further duties on parchment and vellum as well as applying a number of duties to Scotland. In 1712 (11 Ann. I c.26) and 1713 (12 Ann. I c.9)

further duties were set on parchment (with varying prices depending on the intended use of the parchment), with indentures, pardons, appeals to high court or documents granting any office or employment in Great Britain above the value of £50 a few of the major documents now taxed. The extension and increasing of duties would be a common feature of the market over the next century.

In 1716 George I made the tax of 6*d* on every dozen parchment a perpetual tax rather than a temporary one (3 Geo.I c.7). Two years later another act was passed that set out clear regulations to ensure the more efficient collection of the duties set on parchment (5 Geo.I c.2). In 1725 additional stamp duties were put in place for the period of 16 years (12. Geo. I c.30), though these too were continued by a later act (9 Geo. II c.32). Finally, these duties were also made perpetual, though not until 1749 (24 Geo. II c.12). By 1755 the standard duty for a dozen pieces of parchment was 1*s* 6*s*, as taken from a table given to officers of the period (see (Leadbetter 1755, 134). Under George II and later under George III, there was a seemingly ever-growing number of parchment stamp duties (see appendix 5).

In 1757 a 1*s* duty was set on leases, bonds and deeds (30 Geo. II c.19). In 1759 further parchment documents used in court would have a duty of at least 6*s*, while laws, copies of laws, writs and their copies, depositions and pleas were just some of the documents covered by new stamp duties (32 Geo. II c.35). In 1765, a number of other duties were passed that now pertained to parchment used in the British colonies (5 Geo. III c.12). In fact new duties were being continually introduced and many others were changed in price over the following years. For example in 1776 (16. Geo. III c.34) a new duty of 1*s* and 6*d* was set on *all* parchment manufactured in Great Britain. This act follows an plethora of a number of new duties and fines, with acts passed in 1777 (17 Geo. III c.50), 1779 (19 Geo. III c.66), 1780 (20 Geo. III c.28), 1782 (22 Geo. III c.33), 1783 (23 Geo. III c.7), 1791 (31 Geo. c.21, c.25), 1794 (34 Geo. III c.14, c.32), 1795 (35 Geo. III c.30), 1796 (36 Geo. III c.136), 1800 (39 & 40 G. III c.67), 1801 (40 Geo. III c.86) and 1803 (41 Geo. III c.86).

Over time, the duties increased to cover a increasing variety of parchment products, while various new attempts were made to improve the efficiency of the tax collection methods. In 1804, for example, the greatest number of new acts were passed to

improve the efficiency of the various stamp duties. This law made numerous attempts to consolidate and simplify the process.

Over the next few years however, many of the laws surrounding parchment were repealed. The stamp duties set out in the 1804 (44 Geo. III c.98), 1805 (45 Geo. III FINISH) and 1806 (46 Geo. III c.43) laws were mostly all repealed in 1808 (48 Geo. III c.149). There were still many exceptions however with newspapers, almanacks, pamphlets, and medicine forms and licences for those selling alcohol just some still in effect. However, the majority of the documents that remained heavily taxed appear to be documents more likely to have been made from paper, with many of the parchment documents (mostly documents used in courts) were no longer subject to stamp duty. Finally, in 1815, all the duties set out in 1808 (48 Geo. c.149) as well as the those that remained from the the 1804 act (44 Geo. III c.98) and those instated in the 1810 act (50 Geo. III c.35), were repealed These laws marked the end of over a century of widespread government intervention in the parchment industry.

Appendix 11: List of Parchment Taxation Laws

| Year | Law Title | Law Reference |
|------|--|---------------------|
| 1671 | <i>An act for laying impositions on proceedings at law</i> | 22 & 23 Cha.II c.9 |
| 1694 | <i>An act for granting to their Majesties several duties upon vellum, parchment, and paper, for four years, towards carrying on the war against France</i> | 5 & 6 W&M c.21 |
| 1696 | <i>An Act for granting to His Majesty several Duties upon Paper, Vellum and Parchment, to encourage the bringing of Plate and hammered Money into the Mints to be coined.</i> | 8 & 9 W&M c. 7 |
| 1697 | <i>An act for making good the deficiencies of several funds there-in mentioned; and for enlarging the capital stock of the bank of England; and for raising the publick credit</i> | 8 & 9 Wil. III c.20 |
| 1698 | <i>An act for granting to his Majesty, his heirs and successors, further duties upon stamp vellum, parchment, and paper.</i> | 9 & 10 Wil.III .25 |
| 1702 | <i>An act for making good deficiencies, and for preserving the publick credit</i> | 1 Ann I c.13 |
| 1702 | <i>An Act for preventing Frauds in her Majesty's Duties upon stamped Vellum, Parchment and Paper</i> | 1 Ann. I c.22 |
| 1705 | <i>An act for laying further duties on low wine, and for preventing the damage to her Majesty's revenue by importation of foreign cut wholebone, and for making some provisions as to the stamp duties, and the duties on births, burials and marriages, and the salt duties...</i> | 4 Ann. I c.12 |
| 1706 | <i>An act for continuing the duties on low wines and spirits of the first extraction, and the duties payable by harkwers, pedlars, and petty chapmen, and part of the duties on stamp vellum, parchment, and paper, and the late duties on sweets...for the service of the year one thousand seven hundred and seven, and other uses therein expressed</i> | 5 Ann. c19 |
| 1711 | <i>An Act for laying certain duties upon hides and skins, tanned, tawed, or dressed, and upon vellum and parchment, for the term of thirty two years, for prosecuting the war, and other her Majesty's most necessary occasions.</i> | 9 Ann. I c.11 |
| 1711 | <i>An Act for licencing and regulating hackney coaches and chairs, and for charging certain new duties on stamp vellum, parchment and paper, and on cards and dice, and on the exportation of rock salt for Ireland</i> | 9. Ann. I c.23 |
| 1712 | <i>An act for laying several duties upon sope and paper made in Great Britain, or imported into the same; and upon chequered and striped linens imported; and upon certain silks, callicoes, linens, and stuffs, printed, painted, or stained; and upon several kinds of stamp vellum, parchment, and paper....; and for better securing her Majesty's duties to arise in the office for the stamp duties by licences for marriages and otherwise, and for relief of persons who have not claimed their lottery tickets in due time...</i> | 10 Ann. I c.19 |
| 1712 | <i>An act for laying additional duties on hides and skins, vellum and parchment, and new duties on starch, coffee, tea, drugs, gilt and silver wire, and policies of insurance, to secure a yearly fund for satisfaction of orders to the contributors of a further sum of one million eight hundred thousand pounds towards her Majesty's supply....</i> | 10 Ann. I c.26 |

| | | |
|------|---|------------------|
| 1713 | <i>An act for laying additional duties on soap and paper, and upon certain linens, silks, callicoes and stuffs, and upon starch, exported coals and upon stamp vellum, parchment and paper...</i> | 11 Ann. I c.9 |
| 1716 | <i>An act for redeeming the yearly fund of the South-Sea company...and for making the said new yearly fund and annuities to be hereafter redeemable in the time and manner thereby prescribed (National Debt Act)</i> | 3 Geo. I c.7 |
| 1718 | <i>For continuing the duties on malt, mum, cyder, and perry, for the service of the year 1719, and for enlarging the time for entering at the exchequer such assignments of reversionary annuities as are therein mentioned; and for better securing the duties on hides and skins, vellum, and parchment</i> | 5 Geo. I c.2 |
| 1725 | <i>For the relief of th suitors of the high court of chancery</i> | 12. Geo. I c.33 |
| 1735 | <i>For continuing for the purposes therein mentioned, the additional duties uon stamped vellum, parchment, and paper, laid an act passed in the twelfth year of the reign of his late majesty King George the First</i> | 9 Geo. II c.32 |
| 1750 | <i>An act for making good a deficiency upon the revenue of the office of keeper or clerk of the Hanaper, and for preventing any future deficiency therein, to answer the publick services provided for out of the same; and for augmenting the income of the office of master or keeper of the rolls</i> | 24 Geo. II c.25 |
| 1756 | <i>An act for granting to his majesty a duty upon licences for retailing beer, ale, and other excisaable liquors for establishing a method for granting such licences in Scotland; and for allowing such licences to be granted at a petty session in England, in a certain cafe therein mentioned</i> | 29 Geo. II c.12 |
| 1757 | <i>For granting to his Majesty several rates and duties upon indentures, leases, bonds and other deeds; and upon news papers, advertisements and almanaks; and upon licences for retailing wine....</i> | 30 Geo. II c.19 |
| 1759 | <i>An act for augmenting the salaries of the puisne judges in the court of King's Bench, the judges in the court of Common Pleas, the barons of the cois in the court of Exchequer at Westminster, the judges in the courts of session and Exchequer in Scotland, and justices of Chester, and the great sessions for the counties in Wales</i> | 32 Geo. II c.35 |
| 1776 | <i>An act for granting to his Majesty several duties on coaches, and other carriages therein mentioned: and several rates and duties upon indentures, leases, bods, and other deeds; and upon cards, dice, and news papers; and for raising the sum of two millions by annuities and a lottery to be attended with annuities</i> | 16 Geo. III c.34 |
| 1777 | <i>An act for granting to his Majesty certain duties on licences, to be taken out by all persons acting as auctioneers; and certain rates and duties on all lands, houses, goods, and other things, sold by auction; and upon industries, leases, bonds, deeds, and other instruments</i> | 17 Geo. III c.50 |
| 1779 | <i>An act for granting to his Majesty several additional duties on stamped vellum, parchment, and paper; and for better securing the stamp-duties upon indentures, leases, deeds, and other instruments</i> | 19 Geo. III c.66 |
| 1780 | <i>An act for granting to his Majesty several additional duties on advertisements, and certain duties on receipts for legacies, or for any share of a personal estate divided by force of the statute of distributions, or the custom of any province or place</i> | 20 Geo. III c.28 |
| 1782 | <i>An act for charging a stamp-duty upon inland bills of exchange, promissory notes, or other notes payable otherwise than upon demand</i> | 22 Geo. III c.33 |

| | | |
|------|--|-----------------------|
| 1783 | <i>An act for repealing an act made in the twenty-second year of his present majesty intituled, An act for charging a stamp-duty upon inland bills of exchange, promissory notes, or other notes payable otherwise than upon demand; and for granting new stamp-duties on bills of exchange, promissory notes; and also stamp-duties on receipts</i> | 23 Geo. III c.49 |
| 1783 | <i>An act to explain and amend an act, made in the last session of parliament, intituled, An act for repealing an act, made in the twenty-second year of his present majesty intituled, An act for charging a stamp-duty upon inland bills of exchange, promissory notes, or other notes payable otherwise than upon demand; and for granting new stamp-duties on bills of exchange, promissory notes; and also stamp-duties on receipts; and for indemnifying all persons who have written or signed any bill of exchange, promissory or other note, or any receipt, not stamped according to law</i> | 23 Geo. III c.7 |
| 1783 | <i>An Act for granting to his Majesty several additional new Duties upon stamped Vellum, Parchment and Paper, and also for repealing certain Exemption from Stamp Duties</i> | 23 Geo. III c.58 |
| 1789 | <i>An act for granting to his Majesty several additional stamp duties on probates of wills, letters of administration, and on receipts for legacies, or for any share of a personal estate divided by force of the statute of distributions</i> | 29 Geo. III c.51 |
| 1790 | <i>An act for repealing the duties upon licences for retailing wine and sweets, and upon licences for retailing distilled spirituous liquors, and for granting other duties in lieu thereof.</i> | 30 Geo. III c.38 |
| 1791 | <i>An act for granting to his Majesty an additional duty on certificates issued with respect to the killing of game</i> | 31 Geo. III c.21 |
| 1794 | <i>An act for granting to his Majesty certain stamp duties on indentures of clerkships to solicitors and attornies in any of the courts in England therein mentioned</i> | 34 Geo. III c.14 |
| 1794 | <i>An act for enabling the commissioners of the stamp duties to stamp bills of exchange and notes in certain cases</i> | 34 Geo. III c.32 |
| 1795 | <i>An act for granting to his majesty several additional duties on stamped vellum, parchment, and paper; and for repealing a certain exception as far as relates to bonds given as security for the payment of one hundred pounds or under, contained in an act of the twenty-third year of hsi present Majesty's reign</i> | 35 Geo. III c.30 |
| 1795 | <i>An act for granting to his Majesty certain stamp duties on sea insurances</i> | 35 Geo. III c.63 |
| 1796 | <i>An Act for the more effectually securing Duties on Indentures, Leases, Bonds and other Deeds</i> | 37 Geo. III c.19 |
| 1797 | <i>An act for granting to his Majesty an additional stamp duty on deeds</i> | 37 Geo. III c.111 |
| 1796 | <i>An Act to enable the Commissioners of Stamp Duties to Stamp Duties to stamp Deeds and other Instruments, Bills of Exchange, Promissory and other Notes in Cases therein mentioned</i> | 37 Geo. III c.136 |
| 1798 | <i>An act for granting to his Majesty certain stamp duties on bills of exchange and promissory notes for small sums of money</i> | c. 107 |
| 1799 | <i>An act for altering the period of making up the annual account of the duties on stamped vellum, parchment, and paper</i> | 39 Geo. III c.92 |
| 1800 | <i>An act for the Union of Great Britain and Ireland</i> | 39 & 40 Geo. III c.67 |

| | | |
|------|---|-------------------|
| 1801 | <i>An act for granting to his Majesty additional Stamp Duties on cards and dice; on Probates and Wills; on certain Indentures, Leases, Bonds; or other deeds</i> | 41 Geo. III c.86 |
| 1803 | <i>An act for granting to his majesty several duties therein mentioned to be levied by the commissioners for managing stamp-duties in Ireland</i> | 43 Geo. III c.127 |
| 1804 | <i>An Act to repeal the several Duties under the Commissioners for managing the Duties upon stamped Vellum, Parchment, and Paper in Great Britain, and to grant new and additional Duties in lieu thereof</i> | 44 Geo. III c.98 |
| 1805 | <i>An Act for granting to His Majesty additional Stamp Duties in Great Britain on certain Legacies ; and also the several Duties granted by the Act passed in the Forty-sixth Year of His Majesty's Reign, intituled An Act for granting to His Majesty certain Stamp Duties on Appraisements and on Licences to Appraisers in Great Britain</i> | 45 Geo. III c.28 |
| 1806 | <i>An Act for granting to His Majesty certain Stamp Duties on Appraisements and on Licences to appraisers in Great Britain</i> | 46 Geo. III c.43 |
| 1806 | <i>An act to repeal the several duties under the care of the commissioners for managing the duties pon stamped vellum, parchment, and paper in Ireland, and to grant new and additional duties in lieu thereof; and to amend the laws relating to the stamp-duties in ireland</i> | 46 Geo. III c.64 |
| 1808 | <i>An Act for repealing the Stamp Duties on Deeds, Law Proceedings, and other written or printed Instruments, andthe Duties on Legacies, and Successions to Personal Estate upon Intestacies now payable in great Britain; and for granting new Duties in lieu thereof</i> | 48 Geo. III c.149 |
| 1810 | <i>Act act for altering the Mode of collecting the Duty on Insurances against Loss by Fire, upon property in His majesty's Islands and Possessions in the West Indies, and elsewhere beyond the Seas; and for exempting certain Bonds and Receipts from Stamp Duty, for giving Relief in certain cases of Stamps spoiled or misused, and for explaining Part of an Act passed in the Forty eighth Year of His Majesty's Reign, for granting Stamp Duties in Great Britain</i> | 50 Geo. III c.35 |
| 1815 | <i>An Act for repealing the Stamp Duties on Deeds; Laws Proceedings, and other written or printed Instruments, and the Duties on Fire Insurances, and on Legacies and Successions to Personal Estate upon Intestacies, now payable in Great Britain, and for granting other Duties in lieu thereof</i> | 55 Geo. III c.184 |

Appendix 12: Flaying Laws

The first act passed during the seventeenth century (Jac. 1 c.22). stated that earlier statutes had been passed on the topic of the flaying of animal skins, but that 'the laws and statutes formerly established and made for the true and just tanning, currying and working of leather, have not taken that good effect which was expected', and had failed to address the 'deceits and abuses' that were 'commonly practised by the tanners, carriers and workers of leather' (see Britain and Pickering 1763, 106). The act then reiterated that no butcher, or any other person, could damage the skin of any ox, bull, steer, or cow, though interestingly it does not state that the same laws apply to skins, more specifically, to the skins of sheep.⁵ Strangely however, the law later defines leather as any tanned skin of ox, steer, bull, cow, calf, deer and fallow, goats and sheep, so presumably the law did cover tanned sheep-skins. It also states that anyone selling sheep skins that did not adhere to this law should be fined 3s 4d. This particular Act is quite difficult to interpret, so much so that a later act (14 Cha. II c.7) offers clarification as to what animal skins were actually covered, as well as clarifying that the law pertained to all of Great Britain and not just England. It certainly brings into question the efficiency of this tax system provided that there were clear misinterpretations (or explorations) of the law by some for nearly sixty years.

The law also began to create legally protected professions. For example, only a trained tanner with a tan-house could tan any hide after the passing of this law, while no tanner could cut the leather. The law also set out clear instructions on how leather should be manufactured, stored and dried. It was no longer permitted that any individual could be both a butcher and a tanner, and tanners were also not allowed to occupy any other trade that involved the cutting or working of leather. It was now illegal to work the jobs of other professions simultaneously, and furthermore, to work any of the professions pertaining to the working of skins. Also, the law reiterated the 1563 law, stating individuals must either gain an apprenticeship or must be hired as a servant of an individual in that profession. There were clear attempts by the government to create separate, legally protected professions, in the hope of improving specialisation and

⁵ Interestingly, it is also stated that no butcher shall kill to sell any calf under five weeks old, or they will be fined six shillings and eight pence. This then prohibits the use of very young calves in the production of vellum and brings into question the early use of the skins of very young calves were used for the production of vellum. However this law was repealed in 1685 in another act (22 & 23 Car. II c.19)

consequently, the efficiency of a number of industries. The law does not however list parchment-makers.... ADD

This law also extended to the manufacturing process of all goods in the various skin-based industries, while extensive fines were also implemented. For example, there was a fine of 3s 4d for any putrefied or rotten skin put up for sale (1819, 1040). The law also extended to ensuring high-quality wears and to reduce wastage. Any attempt to transport leather that was cut or unwrought for sale was now illegal. Carriers would also be fined if they attempted to sell leather that had not been sufficiently tanned. No leather could be sold that had not been 'searched and sealed', in other words, inspected and taxed (further clarification in section 6.3). No tan fats before liming and skins must not be left in lime pits for too long. Skins must not be left to dry in frost, nor in direct sunlight. Finally, the fine for the sale of a dozen sheep skins that did not meet these high standards was six shillings and eight pence. This appears a particularly troubling issue as many of the standards set were subject to the opinions of inspectors, inspectors with a monetary incentive to find as many damaged skins as possible. The consequential finding of a high volume of 'damaged' skins would then be likely to further support the need for further regulation.

The 1662 Act (14 Cha. 2 c.7) was the next major law, bringing about stricter laws surrounding the exportation of skins and leather. From 1662, no tanned hide, or untanned hide of any ox, steer, bull, cow or calf was allowed to be exported out of the country, as well as a number of limitations regarding to the transport of hides within Great Britain. The law does however state that sheep-skins not dressed with wool may be transported, this was in keeping with the law stating that the exportation of wool was also illegal at this time (see: 14 Cha. 1 c. 18). The law also further details the punishment of tanners who cut and raked the hides, impairing them, shall have their hides seized.

The 1688 law(1 W&M c.33) more clearly states what the previous statutes cover every hide, skin, or piece of tanned leather, shaved or liquored, of whatever colour, with any liquoring or dressing. Clearly then, even if poorly enforced for some time, the laws pertaining to the flaying of skins, the strict manufacturing processes and the requirement of searches and seals all applied to the parchment manufacturing process, at least after 1689. Interestingly, this law also states that individuals may now sell

leather, hides or skins by weight. This would allow for individuals to sell more homogenised products with less emphasis on quality.

The 1710 act (9 Ann. I c.11) was extensive although pertaining primarily to the taxation of hides and skins, it enacted even further laws and punishment surrounding the manufacture and sale of skins and parchment. Setting out clear punishments for those 'defrauding the crown' and, most importantly, further punishments were created for the damaging of skins. It is also the first law to specifically refer to the manufacture of parchment.. The law also creates and clarifies a significant number of limitations and instructions on the manufacturing process for a number of skin-goods. For example, who may cut the skins, how they were cut, how the skins were dried, when and if skins could be transported and who shall inspect these skins. It states that officers would now inspect skins and various tanned products to review their quality. This law seems to highlight the failure of the previous laws, as the laws of 1603 (1 Jac. I c.22) and 1689 (1 W&M c.33) were also extensive and yet it was deemed necessary to enact further laws and punishments, as well as offering further clarification of the previous laws. For example, it was considered necessary to clarify that previous laws had also extended to Scotland in the 1784 act (24 Geo. II c.19).

As late as 1800, attempts were still being made by the crown to limit the number of damaged skins (39-40 Geo III c.66). This is a clear indicator of the failures of previous laws, as well as indicating the still widespread problem of damaged materials, at least in the opinion of government. new 'proper and convenient places' were set up for the examination and inspection of all raw hides for each city (Chitty 1824, 348). This perhaps indicates the lack of appropriate inspections outside of the city of London. The act also sets out new fines for the improper flaying of skins even greater than those preceding them (Britain 1811, 390-391). These fines were so high that only a year later, a new law was passed (41 Geo. III, c.53) reducing the amount perpetrators were fined (Minard 2011, 154). In 1803 (43 Geo. III, c. 106) it was also deemed necessary to apply these more thorough inspections to London, a troubling sign considering the issues clearly still pertained to London despite the significant size of the tanning industry and the high-quality works expected to accompany an industry of that size.

The 1808 law, pertaining to London exclusively, saw the reduction of these fines (Minard

2011, 154), with the fine now being no more than 3s., though no less than 2½d. (Chitty 1824, 353). This law also saw the reorganisation of the inspectors in London and the requirement that all sheep and lamb skins be inspected either at the Woodsclose Market, the Borough Market or Whitechapel Market (Britain 1824, 353). The timing of these changes, again, shows the failure of the laws that preceded them and marks the beginning of the end for the intensive regulation of this market by the government.

That same year a petition was put forward titled *A Petition of Several Tanners of London and its vicinity was presented* (House of Commons 1808, 120) attempting to repeal a number of the regulations enforced on the various skin-working professions. A few weeks later, on the 17th March, the committee created to consider the petition decided the acts ought to be repealed (1808, 183) and on the 28th of March a bill was presented (1808, 218). In the same year a similar petition was put forward by Scottish tanners (1808, 271) and yet another by 'curriers and other dealers in tanned leather' (1808, 286). The previous laws had clearly been a failure and caused major issues across Great Britain. On the 20th of May 1808, a bill was passed to repeal some of the acts that implemented strict requirements for those working with animals skins.

The inspections remained however, with inspections on the flaying of skins still undertaken by the government, though in 1824 this too was abolished. The 1824 act (5 Geo. IV c.57) repealed the 1800 (39 & 40 Geo III c.66), the 1801 act (41 Geo III c.53), the 1803 local act (43 Geo III c.cvi) and the 1808 act (43 Geo III c.lxxi) (Williams 1824, 90-91). This 1824 act marks the end of two centuries of intensive government regulation.

Appendix 13: List of Flaying Laws

| Year | Act Name | Legal Abbreviation |
|------|--|--------------------------------|
| 1485 | <i>An act shewing the duties of a corwainer, tanner or currier</i> | 1 Hen. VII c.5 |
| 1563 | <i>Statute of Artificiers (An act containing divers orders for artificiers, labours, servants of husbandry and apprentices)</i> | 5 Eliz. I c. 4 |
| 1603 | <i>An Act concerning tanners, curriers, shoe-makers, and other artificiers occupying the cutting of Leather</i> | 1 Jac. I c.22 |
| 1662 | <i>An act to restrain the exportation of leather and raw hides out of the realm of England</i> | 14 Cha. 2 c.7 |
| 1689 | <i>An act for explaining part of an act made in the first year of King James the First, concerning tanned leather</i> | 1 W&M c.33 |
| 1711 | An Act for laying certain duties upon hides and skins, tanned, tawed, or dressed, and upon vellum and parchment, for the term of thirty two years, for prosecuting the war, and other her Majesty's most necessary occasions. | 9 Anne c.11 |
| 1784 | <i>An act for encouraging the manufacture of leather, by lowering the duty payable upon the importation of oak bark, when the price of such bark shall exceed a certain rate, for a limited time; and for extending several acts of parliament relative to the manufacture of leather, to that of Great Britain called Scotland</i> | 24 Geo. III c.19 |
| 1800 | <i>Use of Horse Hides etc. Act.</i> | 39-40 Geo III c.66 |
| 1801 | <i>An act to explain and amend an act, passed in the thirty-ninth and fortieth years of the reign of his present Majesty, intituled, An act to repeal so much of an act, passed in the second year of King James the First, as prohibits the use of horse hides in making boots and shoes, and for better preventing the damaging of raw hides and skins in the flaying thereof</i> | 41 Geo. III, c.53 |
| 1803 | <i>To extend the provisions of two acts, passed in the thirty-ninth and fortieth, and in the forty-first years of the reign of his present Majesty, relating to the use of horse-hides in making boots and shoes, and preventing the damaging of raw-hides and skins in the flaying thereof, to, and to alter and amend as to, the cities of London and Westminster, and borough of Southwark, and liberties thereof, and all places within fifteen miles of the Royal Exchange of the said city of London</i> | 43 Geo. III c.cvi (local act) |
| 1808 | <i>For repealing an act made in the 43rd year of his present majesty, for extending the provisions of two formers acts relating to the use of horse hides in making boots and shoes, and preventing the damaging of raw hides and skins in the flaying thereof</i> | 48 Geo. III c.lxxi (local act) |
| 1808 | <i>An Act for repealing an Act passed in the First Year of king james the First, intituled, An Act concerning Tanners, Curriers, Shoemakers, and other Artificiers occupying the cutting of Leather; and also for repealing and amending certain Parts of several other Acts of Parliament relating thereto</i> | 48 Geo. III c.60 |
| 1824 | <i>An Act to repeal Four Acts of his late Majesty, relating to the Use of Horse Hides in making Boots and Shoes, and for better preventing the damaging of Raw Hides and Skins in the flaying thereof</i> | 5 Geo. IV c.57 |

Appendix 14: List of Stationers Offices 1694

Source: Shaw 1935, 671-672 (Originally sourced from Calendar of Treasury Books, 1694)

| |
|---|
| <i>The like of persons to be distributors of the [stamped] parchment and paper in all the counties of England and Wales and to be collectors of the duty thereby arising, as follows:</i> |
| <i>Berkshire: John Paise of Reading.</i> |
| <i>Beds: Francis Brace.</i> |
| <i>Bucks: Charles Herle.</i> |
| <i>Cambridgeshire: William Percivall.</i> |
| <i>Cheshire: Richard Backwell and Robert Foulks.</i> |
| <i>Cornwall: Thomas Horwell.</i> |
| <i>Cumberland: Robert Jackson.</i> |
| <i>Derbyshire: Peter Gery.</i> |
| <i>Devonshire: Benj. Robins.</i> |
| <i>Dorsetshire: Jos. Watson and Peter Clinton.</i> |
| <i>Durham: William Roper.</i> |
| <i>Essex: William Wright and Francis Blythe.</i> |
| <i>Gloucestershire: Walter Marshall, Edward Bulstrode and Thomas Wale.</i> |
| <i>Hampshire: Thomas Shory and Paul Burwood.</i> |
| <i>Herts: Francis Isaacson of Barnet.</i> |
| <i>Herefordshire: Thomas Mathews.</i> |
| <i>Hunts: John Mason.</i> |
| <i>Kent: Thomas Raworth of Dover and Thomas Cason of Maidstone.</i> |
| <i>Lancs: William Townsen of Lancaster and — Dodd of Preston</i> |
| <i>Leicestershire and Rutland: John Cradock.</i> |
| <i>Lincolnshire: Edward Cowly.</i> |
| <i>Monmouthshire: Walter Marshall.</i> |
| <i>Norfolk: Edward Barnes and Henry Marriott.</i> |
| <i>Northants: Edward Butler.</i> |
| <i>Northumberland: Cha. Sanderson and Samuell Wilson.</i> |
| <i>Notts: John Bury.</i> |
| <i>Oxfordshire: William Busby and John Langston.</i> |
| <i>Shropshire: William Leake.</i> |
| <i>Somerset: Humphry Burton of Tiverton and — Babb of Taunton.</i> |
| <i>Stafford: Geo. Nevell and John Dunster.</i> |
| <i>Suffolk: Robert Warren.</i> |
| <i>Surrey: John Balchen.</i> |
| <i>Sussex: John Dee, Richard Holmes, John Newton of Lewes and Samuel Bruer of Battle.</i> |

| |
|--|
| <i>Warwickshire: Jer. Withers.</i> |
| <i>Westmorland: John Procter.</i> |
| <i>Wilts: Robert Cutler of Sarum.</i> |
| <i>Worcestershire: William Collins.</i> |
| <i>Yorks: Geo. Maynard for the West Riding; John Hall for the North Riding; William Lyster for the East Riding</i> |
| <i>Town of Hull: Jos. Claver.</i> |
| <i>Denbighshire: John Lloyd.</i> |
| <i>Anglesey, Montgomery, Merioneth and Carnarvon: Samuel Howson and Richard Wright.</i> |
| <i>Flintshire: Robert Foulks.</i> |
| <i>Carmarthenshire, Cardiganshire and Pembrokeshire: John Evans.</i> |
| <i>Glamorganshire: Edward Thomas.</i> |
| <i>Radnorshire: Cha. Jones.</i> |
| <i>Brecknockshire:— Davys.</i> |

Bibliography

- Aikin, J., 1795. *England delineated, or, a geographical description of every county in England and Wales: with a concise account of its most important products, natural and artificial: for the use of young persons; with outline maps of all the counties* Third Edition., London: Printed for J. Johnson.
- Anderson, J., 1797. *Essays Relating to Agriculture and Rural Affairs*, Dublin: Messrs. P. Wogan, P. Byrne, and J. Moore.
- An Impartial Observer, 1806. XXXIX. and XL. *Geo. III. c. 66. The Flaying Act considered; as, without benefiting the Public, most severely oppressing the Butchers of London. By an Impartial Observer. 30 June, 1800*, London: E. Thomas.
- Anon, 1787. *The Book of Rates*, Dundee: Printed for George Milln.
- Aubrey, J., Britton, J., 1847. *The natural history of Wiltshire*, Wiltshire Topographical Society Salisbury.
- A Vision of Britain 2018, 1841 A Census of Britain, Occupations. *Vision of Britain*. Available at: [http://www.visionofbritain.org.uk/census/table/GB1841OCC_M\[1\]](http://www.visionofbritain.org.uk/census/table/GB1841OCC_M[1]) [Accessed June 29, 2018].
- Apostolides, A. et al., 2008. English Agricultural Output and Labor Productivity, 1250-1850: Some Preliminary Estimates. University of Warwick. *Unpublished Working paper. Available online: www2.warwick.ac.uk/fac/soc/economics/staff/faculty/broadberry/wp/agriclongrun4.pdf*. Available at: <http://www.basvanleeuwen.net/bestanden/agriclongrun1250to1850.pdf>. [Accessed August 27, 2017].
- Ashworth, W.J., 2003. *Customs and Excise: Trade, Production, and Consumption in England, 1640-1845*, Oxford: Oxford University Press.
- Bailey, J., 1810. *General View of the Agriculture of the County of Durham: With Observations on the Means of Its Improvement*, London: R. Phillips.
- Bailey, J. & Culley, G., 1797. *General View of the Agriculture of the County of Northumberland: With Observations on the Means of Its Improvement; Drawn Up for the Consideration of the Board of Agriculture and Internal Improvement, by J. Bailey and G. Culley*, London: Sol. Printed by S. Hodgson; and sold by M. Robinson, and G. Nicol.
- Bailey, W., 1784. *Bailey's British Directory*, First Edition., London: Printed by J. Andrews.
- Ballard, E., 1882. *Report in Respect of the Inquiry as to Effluvia Nuisances Arising in Connexion with Various Manufacturing and Other Branches of Industry*, London: HM Stationery Office.
- Bath and West of England Agricultural Society, 1792. *Letters and papers on agriculture, planting, &c. [electronic resource] : Selected from the correspondence of the Bath and west of England Society for the encouragement of agriculture, arts, manufactures, and commerce. Vol. IV* The second edition., Bath: Printed, by order of the Society, by R. Cruttwell; and sold by C. Dilly, Poultry, London, and by the booksellers of Bath, Bristol, Salisbury, Gloucester, Exeter, &c, &c.
- Beckett, J.V., 1985. Land Tax or Excise: the levying of taxation in seventeenth- and eighteenth-century England. *The English historical review*, C(CCCXCV), pp.285-308.
- Bicchieri, M. et al., 2008. Inside the parchment. *Proceedings of Art*, pp.25-30.
- Billing, M., 1855. *Directory & Gazetteer of Worcestershire, 1855*, Birmingham: M. Billing, Steam-Press Offices.

- Billingsley, J., 1798. *General View of the Agriculture of the County of Somerset: With Observations on the Means of Its Improvement*, Bath: R. Cruttwell.
- Brownlee, J. (1915). The history of the birth and death rates in England and Wales taken as a whole, from 1570 to the present time. *Public Health*, 29, pp.211-222.
- Blanch, J., 1774. *The art of tanning and currying leather: with an account of all the different processes made use of in Europe and Asia for dying leather red and yellow*, London: Printed for J. Nourse.
- Blom, P., 2005. *Enlightening the world: Encyclopédie, the book that changed the course of history*, London: Macmillan Publishers.
- Boys, J., 1805. *General View of the Agriculture of the County of Kent: With Observations on the Means of Its Improvement*, London: B. McMillan.
- Bower, M.A. et al., 2010. The potential for extraction and exploitation of DNA from parchment: a review of the opportunities and hurdles. *Journal of the American Institute for Conservation*, 33(1), pp.1-11.
- Burger, J., Hummel, S. & Herrmann, B., 2000. Palaeogenetics and cultural heritage. Species determination and STR-genotyping from ancient DNA in art and artefacts. *Thermochimica acta*, 365(1), pp.141-146.
- Campana, M.G. et al., 2010. A flock of sheep, goats and cattle: ancient DNA analysis reveals complexities of historical parchment manufacture. *Journal of archaeological science*, 37(6), pp.1317-1325.
- Campbell, R., 1747. *The London Tradesman: Being a Compendious View of All the Trades, Professions, Arts, Both Liberal and Mechanic, Now Practised in the Cities of London and Westminster*, London: T. Gardner.
- Chambers, E., 1728. *Cyclopaedia - Volume 1*, London: Printed for James and John Knapton, John Darby, Daniel Midwinter, Arthur Bettersworth. John Senex, Robert Gosling, John Pemberton, William and John Innys, John Osborn and Tho Longman, Charles Rivington, John Hooke, Ranew Robinson, Francis Clay, Aaron Ward, Edward Symon, Daniel Browne, Andrew Johnston, and Thomas Osborn.
- Chitty, J., 1824. *A Treatise on the Laws of Commerce and Manufactures and the Contracts Relating Thereto, with an Appendix of Treaties, Statutes, and Precedents*, London: A. Strahan.
- Churchill, J.E., 1983. *The Complete Book of Tanning Skins and Furs*, London: Stackpole Books.
- Clark, G., 2004. Lifestyles of the Rich and Famous: Living Costs of the Rich versus the Poor in England, 1209--1869. In *Conference paper, "Towards a Global History of Prices and Wages."* Utrecht. Available at: https://www.researchgate.net/profile/Gregory_Clark/publication/246687497_Lifestyles_of_the_Rich_and_Famous_Living_Costs_of_the_Rich_versus_the_Poor_in_England_1209-1869/links/546e62200cf2b5fc176075b5.pdf.
- Clark, G., 2007. The long march of history: Farm wages, population, and economic growth, England 1209-1869. *The Economic History Review*, 60(1), pp.97-135.
- Clark, G. & Lindert, P., 2006. England_1209-1914_Clark.xlsx. *Global Price and Income History Group*. Available at: [http://gpih.ucdavis.edu/files/England_1209-1914_\(Clark\).xls](http://gpih.ucdavis.edu/files/England_1209-1914_(Clark).xls) [Accessed September 9, 2018].
- Clarke, M., 2001. The analysis of medieval European manuscripts. *Studies in Conservation*, 46(2), pp.3-17.
- Clarkson, C., 1992. REDISCOVERING PARCHMENT: THE NATURE OF THE BEAST. *Paper Conservator*, 16(1), pp.5-26
- Cobbett, W., 1912. *Rural Rides in Surrey, Kent. and Other Counties*, London: A. Cobbett.

- Collins, M J; Fiddymont, S; Webb, C; O'Connor, T P; Bradley, D; Teasdale, M; Doherty, S; Curtis, A; Vnoucek, J; Hall., 2015. Reading the leaves: sheep parchment as a 1,000 year genetic resource. *Advances in Animal Biosciences*, p.63.
- Cook, H.F. & Williamson, T., 1999. *Water Management in the English Landscape: Field, Marsh and Meadow*, Edinburgh: Edinburgh University Press.
- Copus, A.K., 1989. Changing Markets and the Development of Sheep Breeds in Southern England 1750–1900. *The Agricultural history review*, 37(1), pp.36–51.
- Craig, H., 1960. *English religious drama of the Middle Ages*, Oxford: Oxford Clarendon Press.
- Crittall, E., 1959. Wiltshire Volume 4: Other Industries. In *A History of the County of Wiltshire: Volume 4*. London: British History Online, pp. 43–64. Available at: <https://www.british-history.ac.uk/vch/wilts/vol4> [Accessed July 29, 2018].
- Crouse, J., 1768. *The History of the City and County of Norwich: From the Earliest Accounts to the Present Time*, London: Printed John Crouse, and sold by M. Booth.
- D'Agata, R. et al., 2007. The use of atmospheric pressure laser desorption mass spectrometry for the study of iron-gall ink. *Applied Physics A: Materials Science & Processing*, 89(1), pp.91–95.
- Davis, J.M. & Beckett, J.V., 1999. Animal husbandry and agricultural improvement: the archaeological evidence from animal bones and teeth. *Rural history: economy, society, culture*, 10(1), pp.1–17.
- Davis, T., 1813. *General View of the Agriculture of Wiltshire*, London: Sherwood, Neely, and Jones.
- Dickson, P.G.M., 1960. *The Sun Insurance Office 1710-1960*, Oxford: Oxford University Press.
- Doherty, Sean., 2018. *The proteomic and isotopic analysis of parchment and their application to post-medieval sheep husbandry in Britain*. PhD Thesis, University of York
- Duncumb, J., 1805. *General View of the Agriculture of the County of Hereford: Drawn Up for the Consideration of the Board of Agriculture and Internal Improvement*, London: Sherwood, Neely, and Jones.
- Fitzsimmons, M.P., 2010. *From Artisan to Worker: Guilds, the French State, and the Organization of Labor, 1776–1821*, New York: Cambridge University Press.
- Freemen of Chester, 1992. *Chester Freemen and Guilds Information and History Booklet*, Chester: Chester City Record Office.
- Fussell, G.E., 1966. *The English Dairy Farmer, 1500-1900*, London: Frank Cass & Co.
- Fussell, G.E., 1964. THE GRASSES AND GRASSLAND CULTIVATION OF BRITAIN. I. Before 1700. *Grass and Forage Science*, 19(1), pp.49–54.
- Fussell, G.E. & Goodman, C., 1930. Eighteenth Century Estimates of British Sheep and Wool Production. *Agricultural history*, 4(4), pp.131–151.
- Gerhold, D., 2005. *Carriers and coachmasters: trade and travel before the turnpikes*, Oxford: Phillimore.
- Glasse, S., 1794. *The Magistrate's Assistant; Or, A Summary of Those Laws which Immediately Respect the Conduct of a Justice of the Peace: Continued to the End of the Session--1793*, Gloucester: Printed by R. Raikes.
- Gooch, W., 1811. *General View of the Agriculture of the County of Cambridge*, London: Sherwood, Neely, and Jones.

- Great Britain.Commissioners of Excise, 1778. *Instructions for officers of the duties on hides in the country*, London.
- Gullick, M., 1991. From parchmener to scribe : some observations on the manufacture and preparation of medieval parchment based upon a review of the literary evidence. In von P. Ruck, ed. *Pergament: Geschichte, Struktur, Restaurierung und Herstellung*. J. Thornbecke, pp. 145–157.
- Hagadorn, A., 2012. Parchment making in eighteenth-century France: historical practices and the written record. *Journal of the American Institute for Conservation*, 35(2), pp.165–188.
- Haskins, C.H., 1912. *The ancient trade guilds and companies of Salisbury* Kindle., Salisbury: Bennett Brothers.
- Havinden, M.A., 1961. The Rural Economy of Oxfordshire, 1580-1730. *B. Litt. thesis, Oxford University*.
- Henderson, S., 2016. *A Revolution in Sheep's Clothing*. BA. University of York.
- Henrickson, R.L., Ranganayaki, M.D. & Asghar, A., 1984. Age, species, breed, sex, and nutrition effect on hide collagen. *Critical reviews in food science and nutrition*, 20(3), pp.159–172.
- Her Majesty's Stationery Office, 1844. *Reports from Commissioners: Seventeen Volumes*, 13, London: English Government. Available at: <https://market.android.com/details?id=book-jmoSAAAAYAAJ>.
- Hoffman, T., 2011. *Guilds and Related Organisations in Great Britain and Ireland: a bibliography - Part 1*. Unpublished. Available at: <http://www.bbk.ac.uk/library/downloads/guilds-part-1.pdf> [Accessed 28/10/2018]
- Holland, H., 1813. *General view of the agriculture of Cheshire*, London: Sherwood, Neely and Jones.
- Houghton, J., 1728. *Husbandry and trade improv'd: being a collection of many valuable materials relating to corn, cattle, coals, hops, wool, &c. With a complete catalogue of the several sorts of earths,... With many other useful particulars, communicated by several eminent members of the Royal Society, to the collector, John Houghton*, The second edition., London: Printed for Woodman and Lyon.
- Hughes, E, 1941. The English Stamp Duties, 1664-1764. *The English Historical Review*, 56 (222), pp.234–264.
- Hunt & Co., 1849. *Hunt & Co's Directory of Gloucester & Bristol*, London: B.W. Gardiner.
- Ibbetson, J., 1845. *Ibbetson's Directory of the Borough of Bradford, etc*, Bradford: Printed and Published by J. Ibbetson.
- Kent, H., 1798. *Kent's directory, for the year 1798; containing an alphabetical list of the names and places of abode of the directors of companies, persons in public business, merchants... of London and Westminster... and Southwark, etc* 66th edn., London: Richard & Henry Causton.
- Kelly's Directories Ltd., 1936. *Kelly's directory of stationers, printers, publishers, booksellers, papermakers, & c., of England, Scotland and Wales* 18th edn, 1936., London: Kelly's Directories.
- Kerridge, E., 2013. *The Agricultural Revolution*, London: Routledge.
- Kite, M. & Thomson, R., 2006. *The Manufacture of Leather, Conservation of Leather and Related Materials*, London: Elsevier Science & Technology Ltd.
- Knight, C., 1842. *London*, London: Published by Charles Knight.
- Lawrence, T., Fowler, V. & Novakofski, J., 2012. *Growth of Farm Animals: 3rd edition*, London: CABI.
- Leadbetter, C., 1755. *The royal gauger; or, Gauging made perfectly easy, as it is actually practised by the officers of His Majesty's revenue of excise*, London: Printed for E. Wicksteed.

- Lisle, E., 1757. *Observations in Husbandry*, London: J. Hughs.
- Lowe, R., 1794. *General View of the Agriculture of the County of Nottingham: With Observations on the Means of Its Improvement*, London: C. MacRae.
- Lyall, R.J., 1989. Materials: The Paper Revolution. In J. Griffiths et al., eds. *Book Production and Publishing in Britain, 1375--1475*. Cambridge: Cambridge University Press, pp. 11–29.
- Lyne, A.G., 1961. The Postnatal Development of Wool Follicles, Shedding, and Skin Thickness in Inbred Merino and Southdown-Merino Crossbred Sheep. *Australian Journal of Biological Sciences*, 14(1), pp.141–156.
- Marshall, M., 1789. *The rural economy of Gloucestershire: including its dairy: together with the dairy management of North Wiltshire; and the management of orchards and fruit liquor, in Herefordshire*, Gloucester: Printed by R. Raikes, for G. Nicol, Pall-Mall, London.
- Massey, W., 1763. *The Origin and Progress of Letters: An Essay in Two Parts*, London: J. Johnson.
- Mathias, P., 1969. *The first industrial nation: The economic history of Britain 1700-1914*, London: Methuen and Co.
- Mavor, W.F., 1813. *General view of the agriculture of Berkshire*, London: Sherwood, Neely and Jones.
- Mazoyer, M. and Roudart, L. (2006). *A History of World Agriculture: from the neolithic age to the current crisis*. London: Earthscan.
- Maxted, I., 1992. *British Book Trades, 1775-1787: An Index to Insurance Policies (Exeter Working Papers in British Book Trade History)*, London: J.Maxted.
- Minard, P., 2011. Micro-Economics of Quality and Social Construction of the Market: Disputes Among the London Leather Trades in the Eighteenth-Century. *Historische Sozialforschung = Historical social research / Zentrum fur Historische Sozialforschung, Koln in Zusammenarbeit mit dem Informationszentrum Sozialwissenschaften, Bonn*, 36(4), pp.150–168.
- Moffatt, J.M., 1805. *The History of the Town of Malmesbury, and of Its Ancient Abbey...: Together with Memoirs of Eminent Natives... to which is Added, an Appendix*, Tetbury: J.G. Goodwyn.
- Murray, A., 1815. *General View of the Agriculture of the County of Warwick: with Observations on the Means of Its Improvement: Drawn Up for the Consideration of the Board of Agriculture and Internal Improvement*, London: B. McMillan.
- Narayan, S. & Rathore, A., 1964. Skin follicles and wool characteristics of seven breeds of Rajasthan sheep. *Research Studies-University of Udaipur*, 2.
- Neate, S; Howell, D; Ovenden, R; Pollard., A.M., 2011. *The Technological Study of Books and Manuscripts as Artefacts: Research Questions and Analytical Solutions*, Oxford: Archaeopress.
- Overton, M., 1996. Re-Establishing the English Agricultural Revolution. *The Agricultural history review*, 44(1), pp.1–20.
- Page, W., 1930. A History of the County of Northampton. In *The borough of Northampton: Trades*. London: British History Online,, pp. 26–30. Available at: <https://www.british-history.ac.uk/vch/northants/vol3/pp26-30> [Accessed 30/10/2018]
- Page, W., 1907. Agriculture. In *A History of the County of Oxfordshire*. London: British History Online, pp. 279–292. Available at: <https://www.british-history.ac.uk/vch/oxon/vol2/pp279-292> [Accessed 30/10/2018]
- Palop, R., 2016. *Sheepskin and Cattle Hide Degreasing*. PhD. University of Barcelona. Available at:

http://www.cromogenia.com/images/noticias/AF_LIBRO_DESENGRASE_english_baja.pdf.

- Palliser, D.M. & Selwyn, D.G., 1972. The Stock of a York Stationer, 1538. *The Library*, s5-XXVII(3), pp.207–219.
- Parliament.House of Lords, 1742. *The history and proceedings of the House of Lords, from the Restoration in 1660, to the present time*, London: Ebenezer Tumberland.
- Parson, W.M., & White, W.M 1830. *Directory of Leeds, York and the Clothing District of Yorkshire: Northowram, Ovenden: From Weaver to Web*, Northowram: Calderdale Libraries, Northgate, Halifax, West Yorkshire, England.
- Pendred, J., 1785. *The London and Country Printers: Booksellers and Stationers Vade Mecum*, Moorfields: J. Pendred.
- Pigot, 1995. *National commercial directory*., Norwich,,: Michael Winton
- Pigot, 1834. *National commercial directory,... of the merchants, bankers, professional gentlemen, manufacturers and traders... in the counties of Chester, Cumberland, Durham, Lancaster, Northumberland, Westmorland and York, etc*, London: Pigot.
- Pigot, J., 1825. *Pigot and Co's New Commercial Directory of Scotland for 1825-1826...Together with the most extensive Directory of London*, Manchester: J. Pigot and Co.
- Pitt, W., 1796. *General View of the Agriculture of the County of Stafford: With Observations on the Means of Its Improvement*, London: G. Nicol; and sold.
- Pitt, W., 1809. *A general view of the agriculture of the county of Leicester: with observations on the means of its improvement*, London: R. Phillips.
- Pitt, W., 1817. *A Topographical History of Staffordshire: Including Its Agriculture, Mines and Manufactures. Memoirs of Eminent Natives; Statistical Tables; and Every Species of Information Connected with the Local History of the County. With a Succinct Account of the Rise and Progress of the Staffordshire Potteries*, J. Smith.
- Plenderleith, H.J. & Werner, A., 1971. Papyrus, Parchment, and Paper. In *The Conservation of Antiquities and Works of Art: Treatment, Repair, and Restoration*. Oxford: Oxford University Press, pp. 44–73.
- Plot, R., 1686. *The Natural History of Staffordshire*, Oxford: Printed at the Theater.
- Plymley, J., 1803. *General View of the Agriculture of Shropshire; with Observations. Drawn Up for the Consideration of the Board of Agriculture, and Internal Improvement*, London: Richard Phillips.
- Poole, B., 1852. *Statistics of British commerce: Being a compendium of the productions, manufactures, imports, and exports, of the United Kingdom*, London: W.H. Smith & Son, Simpkin, Marshall, & Co.
- Poole, J.B. & Reed, R., 1962. The Preparation of Leather and Parchment by the Dead Sea Scrolls Community. *Technology and culture*, 3(1), pp.1–26.
- Priest, S.J. & Parkinson, R., 1810. *General View of the Agriculture of Buckinghamshire. Drawn Up for the Board of Agriculture and Internal Improvement*, London: Richard Phillips.
- Poole, J.B. & Reed, R., 1962. The Preparation of Leather and Parchment by the Dead Sea Scrolls Community. *Technology and culture*, 3(1), pp.1–26.
- Reed, R., 1972. *Ancient Skins Parchments and Leathers*, New York: Seminar Press.
- Reed, R., 1991. Some thoughts on Parchment for Bookbinding. In von P. Ruck, ed. *Pergament: Geschichte, Struktur, Restaurierung und Herstellung*. J. Thornbecke, pp. 217–220.

- Reed, R., 1975. *The nature and making of parchment*, Leeds: Elmete Press.
- Rennie, G., Brown, R. & Shirreff, J., 1799. *General View of the Agriculture of the West Riding of Yorkshire: Surveyed by Messrs Rennie Brown, & Shirreff, 1793. With Observations on the Means of Its Improvement, and Additional Information Since Received. Drawn Up for the Consideration of the Board of Agriculture and Internal Improvement*, Edinburgh: G. Nicol.
- Roberts, C., David Roberts, F. & Bisson, D., 2016. *A History of England, Volume 1: Prehistory to 1714*, London: Routledge.
- Rogers, J.E.T., 1887. *A History of Agriculture and Prices in England: From the Year After the Oxford Parliament (1259) to the Commencement of the Continental War (1793)*, Oxford: Clarendon Press.
- Rudge, T., 1981. *General View of the Agriculture of the County of Gloucester*, London: R. Phillips.
- Russell, N., 2007. *Like Engend'ring Like: Heredity and Animal Breeding in Early Modern England*, Cambridge: Cambridge University Press.
- Ryder, M., 1981. A survey of European primitive breeds of sheep. *Annales de genetique et de selection animale*, 13(4), pp.381–418.
- Ryder, M.L., 1963. A survey of the gross structural features of protein fibres. *Fibre Structure*, pp.534–566.
- Ryder, M.L., 1958. Follicle arrangement in skin from wild sheep, primitive domestic sheep and in parchment. *Nature*, 182(4638), pp.781–783.
- Ryder, M.L., 1960. Follicle remains in some British parchments. *Nature*, 187(4732), pp.130–132.
- Ryder, M.L., 1969. Remains derived from skin. *Science in Archaeology*, 43, pp.539–554.
- Ryder, M.L., 1983. *Sheep and man*, London: Gerald Duckworth & Co. Ltd.
- Ryder, M.L., 1991. The biology and history of parchment. In von P. Ruck, ed. *Pergament: Geschichte, Struktur, Restaurierung und Herstellung*. J. Thurbecke, pp. 25–33..
- Ryder, M.L., 1964a. The History of Sheep Breeds in Britain. *The Agricultural history review*, 12(1), pp.1–12.
- Ryder, M.L., 1964b. The History of Sheep Breeds in Britain (Continued). *The Agricultural history review*, 12(2), pp.65–82.
- Saxl, H., 1954. *An investigation of the qualities, the methods of manufacture and the preservation of historic parchment and vellum with a view to identifying the animal species used*. PhD. University of Leeds.
- Sellet, F., 1993. Chaîne opératoire; the concept and its applications. *Lithic technology*, 18(1-2), pp.106–112.
- Shaw, W., 1935. Entry Book: June 1964, 1-10. In *Calendar of Treasury Books, Volume 10, 1693-1696*. London: British History Online, pp. 636–648. Available at: <https://www.british-history.ac.uk/cal-treasury-books/vol10/pp440-449> [Accessed: 30/10/2018]
- Shaw, W. & Slingsby, F.H., 1957. Declared Accounts: Stamp Duties. In *Calendar of Treasury Books, Volume 29, 1714-1715*. British History Online. pp. 381–398. Available at: <https://www.british-history.ac.uk/cal-treasury-books/vol29> [Accessed: 30/10/2018]
- Sibly, E., 1808. *Magazine of Natural History: Comprehending the Whole Science of Animals, Plants, and Minerals; Divided Into Distinct Parts, the Characters Separately Described, and Systematically Arranged*, London: Chimpante and Withrow.
- Sims, M., 2004. *Homewell Parchment Works, Archaeological Report*. Available at:

<http://library.thehumanjourney.net/890/> [Accessed 13/082017].

Sketchley, J., 1775. *Sketchley's Bristol Directory*, Bristol: James Sketchley.

Slater, I. & Pigot, 1857. *Slater's - late Pigot & co's - Royal, national, commercial directory and topography of the counties of Lincolnshire, Nottinghamshire, Rutlandshire & Yorkshire... the towns of Hull, Leeds, Nottingham and Sheffield... embellished with beautiful maps of Lincolnshire, Nottingham & Yorkshire, etc*, Manchester: Isaac Slater.

Slater & Pigot, 1852. *Slater's . Royal National Commercial Directory and Topography of Scotland, etc. 1852 Aberdeenshire*, Isaac Slater.

Smellie, W., 1771. *Encyclopædia Britannica [electronic resource] : or, a dictionary of arts and sciences, compiled upon a new plan. ... Illustrated with one hundred and sixty copperplates. By a Society of gentlemen in Scotland. In three volumes*, Edinburgh: printed for A. Bell and C. Macfarquhar; and sold by Colin Macfarquhar.

Smith, F., 2009. *Smith's Directory of Halifax*, Bradford: Oldfield and Horsfall.

Stevenson, W., 1812. *General View of the Agriculture of the County of Dorset: With Observations on the Means of Its Improvement*, London: G. and W. Nicol.

Stevenson, W., 1809. *General View of the Agriculture of the County of Surrey*, London: J. Phillips.

Stinson, T., 2011. Counting Sheep: Potential Applications of DNA Analysis to the Study of Medieval Parchment Production. In F. Franz, C. Fritze, & G. Vogeler, eds. *Kodikologie und Paläographie im digitalen Zeitalter 2 - Codicology and Palaeography in the Digital Age 2*. Norderstedt: Books on Demand (BoD), pp. 191–207.

Stinson, T.L., 2009. Knowledge of the flesh: using DNA analysis to unlock bibliographical secrets of medieval parchment. *Papers. Bibliographical Society of America*, 103(4), pp.435–453.

Strickland, H.E., 1812. *A general view of the agriculture of the East-Riding of Yorkshire: published by order of the Board of Agriculture*, author.

Teasdale, M.D. et al., 2015. Paging through history: parchment as a reservoir of ancient DNA for next generation sequencing. *Philosophical transactions of the Royal Society of London. Series B, Biological sciences*, 370(1660), p.20130379.

The Farmer's Magazine, 1838. The Rotation of Crops. *The Farmer's Magazine*, 8, p.188.

The House of Commons, 1808. *The Journals of the House of Commons: Volume 63*, London: Printed by Order of the House of Commons.

The National Archives 2018,. *Bridging the Digital Gap: technical traineeships in archives*. Available at: <http://www.nationalarchives.gov.uk/> [Accessed October 23, 2018].

The Salt Association, 2018. Salt & the Salt Tax | Salt History. *The Salt Association*. Available at: <http://www.saltassociation.co.uk/education/salt-history/salt-the-chemical-revolution/eighteenth-century-salt-making-salt-and-the-salt-tax/> [Accessed July 5, 2018].

The Saturday Magazine, 1838. *The Saturday Magazine*, 12-13(402), pp.129–136.

Thirsk, J., 1984. *The Agrarian History of England and Wales*, Cambridge: Cambridge University Press.

Thirsk, J., 2000. *The English Rural Landscape*, USA: Oxford University Press

Thomas, S., 1983. Leathermaking in the Middle Ages. In *Leather Manufacture through the Ages, Proceedings of the 27th East Midlands Industrial Archaeology Conference (27) EMIAC 27.*, pp. 1–10.

- Trolander, P., 2014. *Literary Sociability in Early Modern England: The Epistolary Record*, London: Rowman & Littlefield.
- Trow-Smith, R., 1951. *English husbandry. From the earliest times to the present day*, London: Faber and Faber.
- Tuke, J., 1794. *General View of the Agriculture of the North Riding of Yorkshire: With Observations on the Means of Its Improvement*, London: W. Bulmer and Company.
- Vancouver, C., 1810. *General View of the Agriculture of Hampshire, Including the Isle of Wight*, London: R. Phillips.
- Walls, G.F., 1901. *Westmorland Agriculture, 1800-1900*, London: Book on Demand.
- Walton, J.R., 1983. The diffusion of improved sheep breeds in eighteenth- and nineteenth-century Oxfordshire. *Journal of historical geography*, 9(2), pp.175–195.
- Watt, A., 1906. *The Art of Leather Manufacture: Being A Practical Handbook in Which the Operations of Tanning, Currying, and Leather Dressing Are Fully Described*, London: Kessinger Publishing.
- Williams, T.W., 1824. *A Compendious Abstract of the Public General Acts passed in 6 Geo. IV*, London: Printed for G.Wightman.
- Williams, A.J. & Thornberry, K.J., 1992. THE SKIN THICKNESS OF MEDIUM WOOL MERINO SHEEP AND ITS RELATIONSHIP TO WOOL PRODUCTION. *Proceedings of the Australian Society of Animal Production*, 19, pp.138–141.
- Williams & Co., 1844. *Williams & Co. Directory of York*, Printed by Edward Baines & sons: York.
- Winters, J., 2012. *THE ENGLISH PROVINCIAL BOOK TRADE: BOOKSELLER STOCK-LISTS, C. 1520-1640*. PhD. University of St Andrews.
- Wodzicka, M., 1958. Studies on the thickness and chemical composition of the skin of sheep: I—Development techniques. *New Zealand Journal of Agricultural Research*, 1(4), pp.582–591.
- Wodzicka-Tomaszewska, M., 1960. Effect of cold on the thickness and chemical composition of the skin in sheep. In *Proc. Aust. Soc. Anim. Prod.* pp. 195–198.
- Worgan, G.B., 1811. *General View of the Agriculture of the County of Cornwall*, London: G. and W. Nicol.
- Wrigley, E. (2011). *The Early English Censuses*. Oxford: Published for the British Academy by Oxford University Press.
- Wrigley, E. and Schofield, R. (1981). *The Population History of England, 1541-1871*. Cambridge, Mass.: Harvard Univ. Press.
- Wykes, D.L., 2004. Robert Bakewell (1725-1795) of Dishley: Farmer and Livestock Improver. *The Agricultural history review*, 52(1), pp.38–55.
- Yeomans, L.M., 2006. *A zooarchaeological and historical study of the animal product based industries operating in London during the post-medieval period*. PhD. University of London. Available at: http://www.academia.edu/download/30464459/Yeomans_phd.pdf.
- Youatt, W., 1810. *A Treatise on the Choice, Buying and General Management of Live Stock: Comprising Delineations and Description of the Principal Breeds*, London: B. Crosby and Company.
- Youatt, W. & Weld, M.C., 1837. *Sheep: Their Breeds, Management, and Diseases*, London: Baldwin and Cradock.
- Young, A., 1799. Experiments on the Winter and Summer support of sheep. *Annals of Agriculture, and other*

Useful Arts, 34, pp.414–425.

Young, A., 1807. *General View of the Agriculture of the County of Essex. Drawn Up for the Consideration of the Board of Agriculture, and Internal Improvement. By the Secretary of the Board. In Two Volumes. Vol. 2*, London: R. Phillips

Young, A., 1804. *General View of the Agriculture of the County of Norfolk*, London: G. and W. Nicol.

Young, A., 1797. *General View of the Agriculture of the County of Suffolk: Drawn Up for the Consideration of the Board of Agriculture and Internal Improvement. By the Secretary to the Board*, London: B. Macmillan

Young, A., 1808. *General View of the Agriculture of the County of Sussex*, London: R. Phillips

Young, A., 1813. *General view of the agriculture of Oxfordshire*, London: Sherwood, Neely, and Jones.