English Queensware and its impact on the French pottery industry 1774-1814.

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PhD Thesis

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Abstract of the thesis.

Creamware in the 1760s was a marketing success in English domestic markets. It rapidly crossed class barriers as mass production lowered prices and widened consumer markets. In the late 1760s Queensware dominated markets and was copied cheaply in factories all over England. This would later be known as Wedgwood ware in France even if the provenance was not from Wedgwood's factory.

Soon manufacturers sought new outlets for their surplus goods. American markets were shrinking as Anglo-American relationships deteriorated. Home markets were sated. France was targeted among other European marketing drives. The French Government responded by banning English manufactured goods in France in 1770. English Queensware technology was transferred to France. French Queensware was supposed to supplant English Queensware in France. English smuggled goods continued to be a serious and chronic issue for the French.

English entrepreneurs began manufacturing English Queensware in France in the 1770s. Problems were encountered with the wood-fired kiln technology that prevailed in France at this time. Coal-fired Queensware manufactories were established but with little success. Wood supplies were steadily dwindling.

The American War of Independence intervened as did the Treaty of Commerce of 1786-7. The French Revolution also brought many changes but

the manufacture of Queensware continued to survive and even prosper under English entrepreneurs who developed it to a high standard.

The process of transfer printing brought improvements in production to the Queensware industry in France as it had done in England. English manufacturers in France gained government acclaim and national accolades for their efforts. Patents were taken out for English processes including the technique of mocha decoration. French Queensware moved the French pottery industry from a cottage-industry configuration into the early stages of mass production to meet the demands of a growing consumer market.

296 words.

The main body of the thesis contains 92 256 words.
The main body with endnotes contains 115 207 words.

Contents

List of maps:

List of Illustrations:

Abbreviations:

A. A. D. – Archives départementales.

B. A. N. – Archives Nationales.

C. Beinecke – Beinecke Library of Rare Books and Manuscripts, Yale University.

D. Eleutherian – Eleutherian Mills Historical Library, Wilmington, Delaware.

E. Keele Manuscripts – Keele University, The Wedgwood Manuscripts, Etruria and Liverpool.

F. Mazarine – Bibliothèque Mazarine.

G. SHAT – Archives du Ministère de la Guerre, Service Historique de l'Armée de la Terre, Vincennes.

H. Wedgwood Transcripts – The Wedgwood Museum, The Transcripts of the Letters of Josiah Wedgwood 1, in 15 volumes.

Chapters.

Chapter 1

Introduction.

1.1 Introduction.

The starting point of this thesis was a discovery in the reserves at The Potteries Museum and Art Gallery in Stoke-on-Trent. A creamware[1] coffee pot with a dendritic[2] decoration was identified as being French and not English as expected. The pot consisted of a fine Queensware body, was cream-coloured and was also light in weight. The mocha decoration on the pot indicated that it had been made after 1790 when this kind of technique had been used to decorate English wares. It was pointed out, however, that the shape was not English but French.[3] This meant that an English body and an English mode of decoration had been found in a French pot. On the under side of the coffee pot was the impressed mark 'Creil', a French factory within the Paris region.

The Creil factory[4] led enquiries to Francis Celoria who had specific French interests.[5] Research then took place in France and contacts were made with various museums.[6] Further investigations led from Creil to Montereau and the name Holker cropped up.[7]

In conversation with Neil Cossons,[8] it was suggested that John Harris in Birmingham was the man to contact with regard to Holker and the eighteenth century in France.[9] John Harris recommended the invaluable text on Holker by André Rémond.[10] From this starting point came some of the fundamental archival references that were followed up and expanded in France. The patient, exacting

research had begun. Over the years a small collection of early French creamware has been acquired in Paris, London, Belfast and Stafford. This has proved useful when writing this thesis.

From the starting point of a French creamware pot in the reserves of an English museum evolved a thesis about English pottery and English potters in France and about the transfer of English technology to France. The research includes the responses of Government and manufacturers in England and in France to the ceramic phenomenon known as creamware, later known as Queensware.[11] The evidence of this technology transfer can be viewed in the Victoria and Albert Museum where French creamware is sometimes on display.[12] Fine examples of this ware are also available at English antique fairs at prices that are far below their Leeds or Staffordshire counterparts manufactured at about the same time.

The idea persists that the English items are superior. English historians have referred to creamware factories abroad as 'foreign fakers' set up to rival Wedgwood.[13] One of the subsidiary strands in the thematic development of this thesis is to show that terms like this do scant justice to English ingenuity and technological skill in the development of the French pottery industry in the eighteenth and early nineteenth centuries. The ceramic product that was eventually manufactured in quantity in France was of high quality. By concentrating on the production of a particular product a more general understanding of complex questions in the transfer of English technology is gained.

The second half of the eighteenth century witnessed a period of great growth in both countries. The relative performance of each economy was unusually

complex. England and France were in the early throes of an industrial revolution. As countries, they were involved in a prolonged period of international diplomacy which continued during the revolutionary and Napoleonic wars.

This thesis deals with the impact that Queensware had in France in the late eighteenth and early nineteenth centuries. Its influence was felt in diverse areas of human interest. Its presence affected political, economic and social aspects of French history as well as those appertaining to manufacturing and industry. The enduring quality of this product persists till the present day. The Wedgwood group continues to manufacture Queensware and consumers all over the world purchase fine examples of reproduction eighteenth-century creamware.

1.2 **Sources.**

English ceramic historians have known for some time that English potters were in France before the Revolution. The evidence that has been presented is problematic, however. What is known about English potters and English pottery in France in the eighteenth century has been passed on by a few writers who have based their findings on verbal accounts recorded by earlier historians.[14] Actual sources remain undisclosed. Subsequent generations of historians have not questioned these accounts.

For the first time, therefore, research on the incidence of English potters and entrepreneurs in France in the eighteenth and early nineteenth centuries centres itself in French manuscript sources in archives in France. This research has revealed both the limitation in scope and accuracy of the English published material.

The main sources of material in France were located in Paris. In the various sites of the Archives Nationales, manuscript files from the eighteenth century and the first Empire dealing with industry, commerce and pottery were located. Government reports and correspondence were interspersed among these files. Letters patent for various factories were also studied in these archives.

The Bibliothèque Mazarine held manuscripts written by government inspectors, ministers and controllers general on the subject of improving French industry or developing the exploitation of coal. The Bibliothèque Nationale afforded access to rare manuscripts and texts. The Bibliothèque Forney provided technical texts on industry and ceramics. The Institut national de la propriété industrielle gave access to the patents of English potters as well as French exponents of English patents in France. Jean Favier, the Director General of the Archives of France, recommended that research be done through the Institut.

The Service Historique de l'Armée de la Terre, Archives, Vincennes, provided material on English workers who arrived in France during the Peace of Amiens. It also gave access to the Ministry of War files that applied to Englishmen in France after 1803. These files complement the Archives communales, Chantilly, which afforded information on English pottery workers.

Other establishments in and around Paris also offered useful background sources. These included the Conservatoire national des Arts et Métiers and the Musée des Arts décoratifs. The Musée de Chantilly provided invaluable information on English workers. The Musée de Creil possessed details about English entrepreneurs as well as examples of the factory's production. At the Musée de Sceaux and the Musée National de Céramique in Sèvres meetings with French

ceramics experts led to contact with other researchers. In addition, certain Archives départementales also provided pertinent information.

French manuscript sources in America included Yale University, in the Benjamin Franklin Library. Thanks to the generous scholarship of the editorial staff there, access was granted to The American Philosophical Society's documents on Benjamin Franklin's period of office in Paris. The Beinecke Library of Rare Books and Manuscripts at Yale contained the Holker Papers.[15] The Eleutherian Mills Historical Library, Wilmington, Delaware, provided manuscript material relating to Du Pont de Nemours.[16]

In England, Birmingham University afforded access to unpublished theses. Keele University offered the Wedgwood Manuscripts. The Wedgwood Museum at Barlaston allowed access to the unpublished, collected letters of Josiah Wedgwood 1. Among other English establishments that provided reference material were Birmingham City Library and Birmingham Public Libraries/Archives where papers relating to French interest in English coal and kiln technologies were located.

Stoke-on-Trent Public Library and The Potteries Museum and Art Gallery afforded access to eighteenth century English pottery indentures and references to French pottery establishments. Sussex Public Records Office indicated that French workmen wanted to work in England. The Victoria and Albert Museum Library yielded up an account of an English gentleman's trip to Paris during the Peace of Amiens. The Salt Library in Stafford was also consulted but with little outcome.

Several historians and scholars also corresponded or conversed with the author, gave interviews or answered endless questions about ceramic history in France

and England, French history or the history of technology. The names of these experts are to be found in the Acknowledgements.

1.3 **Research Programme.**

The writing of this thesis has required a working knowledge of eighteenth-century ceramics. This includes an understanding of the complexities of contemporary processes of manufacture and firing as well as the techniques and methods of decoration. Familiarity with the ceramic literature in English and in French has also been essential. Linguistic expertise in deciphering French eighteenth-century manuscripts has been crucial in analysing research material. Any translations given are my own. In short, this project has been demanding and difficult. It has broached complex issues well beyond the confines of ceramic history. This thesis is about the transfer of English technology to France.

There are, however, problems inherent in the archival sources, although the strengths of the material outweigh the limitations. There are gaps in the information gleaned from the French industrial archives. These files are fragmentary in nature especially after the French Revolution. Unlike the Wedgwood letters and manuscripts, there are few if any comprehensive and accessible company files on the French factories that constitute part of this research. Information remains disjointed in collections of papers. Wars and fires have destroyed the factory files that did exist in part till the 1940s.[17]

The Archives Nationales have provided most of the data on the pottery industry during this period. Setting up any kind of manufacturing concern in the Ancien Régime involved correspondence with various government departments. This covered many aspects of industrial protocol: manufacturing and factory

regulations, permits, letters patent, privileges, grants among others. Manufacturing concerns were, therefore, often 'registered' with various bureaux and officials. By looking at different departments and their correspondence it was possible to gain a broader awareness of eighteenth-century pottery manufacture.

Essential information was collated and filed in these archives by French bureaucrats. The information about the factories had to be elicited by careful sifting and cross-referring from various sources. The disadvantage of this is that there are no detailed and continuous schematics on the production and sales of the individual factories. There is, however, one big advantage in basing research on centralised government files. Different aspects of the public mind of France in the eighteenth and early nineteenth centuries can be discerned. Government attitudes within the context of a bureaucratic framework are seen to motivate policies and decision-making. An awareness of this is a useful tool in understanding how bureaucracy worked in a context that went beyond pottery.

An evaluation of this public mind has been attempted by working back into the political and administrative practices and procedures of the period. It can be deduced that who the administrators were and what their job was determined what they were going to say. The data is consistent.

On the English side there is a lack of evidence not only in the ceramic literature but in the extant archives of English manufacturers. This is why a great deal of information relating to eighteenth century ceramics has traditionally come from the Wedgwood papers. As has been mentioned, the archives of the Wedgwood manufactory have been consulted in manuscript and transcript form.[18] They constitute the only extensive ceramic archive for the period. By analogy, what

applied to Wedgwood also had pertinence for other contemporary English manufacturers.

There are therefore things that remain inconclusive or unknown. This lends itself to a lack of quantitative detail, both French and English. There are no charts or graphs. It has not been possible to generate a time series of production or consumption in pottery in general or in Queensware in particular. There are no accounts of size, production or sales. The fragmentary nature of the archives has precluded this. There is, however, sufficient commentary in a wide variety of sources to support the view that Queensware was a significant and growing presence in France. It gave rise to aberrations in economic diplomacy in the Ancien Régime and after the Revolution. The strengths of the source material lie in the government reports. These afford valuable insights into the official mind. While remaining aware of these problems and facing the issue of fragmentary sources, a picture has none the less been built up from the partial evidence.

1.4 **Secondary debates.**

Within the secondary debates the overarching question remains the transfer of technology. There were, in fact, two starting points for this thesis. The first was the crucial piece of French Queensware in the Stoke-on-Trent museum. This triggered all sorts of technocratic and pragmatic questions as to how a late-eighteenth century English method of decoration had reached France and been applied to the production of mocha.

The other starting point was the seminal influence of the late John Harris who identified an immediate correlation in the transfer of English ceramic technology to France with his own work on technology transfer in the eighteenth century. An

important set of questions were focused on extending the work of Harris. This involved the logical structure of how English pottery technology was transferred to France. It followed the pattern already outlined by Rémond[19] in the 1940s, Robinson[20] in the 1950s and developed by Harris from the 1970s onwards. Issues which Harris dealt with like industrial espionage, enticement and coal technology also apply to the implantation of English pottery methods in the French pottery industry. These are the backbone of any transfer of technology from England to France in the eighteenth and early nineteenth centuries. In this thesis emphasis has been placed on representative examples of the transfer of English Queensware technology and how the English input effected change to transform the French industry.

There are, however, limitations inherent in this kind of specialized commentary. What has emerged is the overwhelming need to go to the French archives to reconstruct knowledge of this area. Linguistic expertise in handling eighteenth-century manuscripts is a vital prerequisite. This thesis has constituted a vital exercise in mapping the primary sources and in opening up an area of technological history that has remained unexplored. The mapping must continue as there are many areas that encourage further research. The work of John Harris has been continued and enhanced. The study of technology transfer moves on.

In order to understand the significance of the activity and the dynamics of the transfer a number of separate issues can be identified. Questions that cover a range of related themes present themselves. For reasons which arise from the narrative problem of the organization of the material, the questions will be addressed in a thematic way. There are a number of separate questions which

concern the development of the French economy and the pottery industry in particular.

The first involves the State, consumers and consumption. What effect did consumer preference have on the French economy and what changes did it bring? Did consumption shape demand and create economic and diplomatic interaction between the two nations? How different was the nature of French consumer demand? Did it replicate that of England? Did consumption and demand drive the French economy?

Further questions involve the French Revolution. How did it affect the development of French industry in general and pottery in particular? Was its role retardative or liberating? Did the State play as powerful a role in the development of industry as the Revolution?

Another debate involves the interaction of the English State and the English economy. How did this affect the pottery industry in England? How did this industry respond to the various charges levied against it by the French? Did the English manufacturers deny responsibility for the steady flow of smuggled goods that penetrated French markets? Did they accept that they exercised 'sharp practice' and were less than honest with French officialdom? Were they backed by the English Government?

What was the role of the State in the transfer of technology? Was the French State influenced in the formulation of its manufacturing policies by consumer trends? Did these policies affect the interaction of the French and English economies? What insights were gained into how French industry operated? How different was French industry from its English counterpart? Was a flow of

information between the two economies co-extensive with the flow of people? What was the interaction between the State and the economy?

There is also a secondary debate that arises from the specialist material that refers to ceramic history. Details of potters from Staffordshire were given by accepted ceramic authorities. Assumptions were made about the reasons for the presence in France in the eighteenth century. The following questions present themselves. What was the motivation for these craftsmen to come to France? Through what agency did these English workers manage to find employment? How did they reach France and their new workplaces without hindrance from both Governments?

Thus the secondary questions that arise from other scholarship cover a range of related themes. These questions apply to the whole period of study and embody a combination of chronology and theme. This thesis is opening up the debate from the French side.

1.5 **Review of the secondary literature.**

According to John Harris the theory of technological change had 'entered a period of fundamental reappraisal'.[21] Recent scholarship has begun to evaluate the importance of skills and tools. They are deemed to constitute 'an important differential' in the general theory of technological change. George Basalla is one of the school that posits an evolutionary theory of technological development within the Industrial Revolution.[22] He does not deny that there were 'truly revolutionary' changes which had economic and social consequences in the late eighteenth and early nineteenth centuries in Britain.[23] The machines and

techniques that effected these were, in themselves, the product of gradual and spontaneous adaptation to prevailing circumstances.

J. Mokyr argues that evolution and technological change embody 'a new metaphor for economic history'.[24] This stresses the impact of technology. Another argument that alters the way that scholars look at technology and the power of its effect has been formulated by Margaret. C. Jacob. She talks of a 'scientific culture' whereby science played a vital role in the development of society. She stresses the 'cultural meaning of science'.[25]

In the historiography of economic history, there are many theories and schools of thought regarding the industrial development of France in the eighteenth and early nineteenth centuries. The retardation stereotype formulated by Shepherd Clough explains why certain economies were slower or later than others in becoming industrialised.[26] Whereas France, according to Clough, was 'lagging' or 'retarded' and had come late to industrialising, Richard Roehl argues that France had started to industrialise early. The progress had been slower and steadier, in a more appropriate response to its social and cultural heritage.[27]

The state of industrial penetration in France is also the focus of the theory put forward by R. R. Locke that there was a proto-industrial economy at work in France in the eighteenth century. If a country was not technologically progressive this provided evidence of a retarded economy. Further indications of this was a proliferation of cottage industries which accommodated the seasonal participation of the peasantry in industrial pursuits. Locke also specified the availability of a pliant and cheap workforce as an additional corroborative factor.[28]

There have also been economic theorists and historians who have blamed France's lack of industrialisation on the French entrepreneur who lacked dynamic business acumen or drive. David Landes is an exponent of this school of thought.[29]

Another theory about the state of French industry and its effect on the French economy is made by Patrick O'Brien and Caglar Keyder. They admit that France developed later but this was because it had a different way of industrialising. France and Britain were competing in two different races and were therefore not to be compared. They argue that Britain 'exemplified the classic Marxist paradigm of urban factory industry and property-less proletarians'.[30] A further argument is that in France more workers were themselves employers of labour.[31]

O'Brien and Keyder also state that France was gradually moving towards a more modern structural configuration. This was only possible because the Revolution had taken place and had swept away the property relations of the Ancien Régime. They claim that the Revolution had been vital. It had been a 'necessary pre-requisite for industrialization'. France could only then realise its potential for growth.[32]

There are economic historians, however, who argue that the French Revolution was a disaster for French industry and economic growth. N. R. Crafts,[33] F. Crouzet [34] and M. Lévy-Leboyer[35] are of this opinion. Colin Heywood agrees to some extent but adds that war and continental blockade did little more than intensify what had already happened before 1789. Heywood believes that the Revolution was the 'first period of deceleration' as industry ground to a halt.[36] François Crouzet stresses that war and blockade had a retardative effect on the

economic growth of France and Britain although France seemed to be hit harder in the long term.[37]

Another view of French industrial development is the diffusionist theory put forward by Sydney Pollard. The questions whether France was a late developer in the industrialization stakes or whether the French economy was 'lagging' or 'retarded' are irrelevant according to this theory. Britain was the first to industrialize and the first to 'diffuse' or disseminate its technology to Europe. Waiting for, transferring and assimilating English industrial technology took time so France had little choice but to enter the industrial arena later than Britain.[38]

The revisionist argument as propounded by J. V. Nye and others does not offer a lone explanation for the retarded state of French industry in the eighteenth century and after the Revolution.[39] It argues that many reasons have compounded the issue such as lacklustre entrepreneurial input, poor local demand and lack of development in transportation. To these should be added further revisionist arguments about the roles played by French government intervention. Colbertism and protectionism apparently retarded the development of French industry in the Ancien Régime.[40]

Other arguments have suggested that the labour issue had been a retardative factor.[41] In its large peasant population, France had an abundant, cheap, available and seasonal workforce.[42] This meant that the French industrialist, unlike his equivalent in England, did not have to devise labour-saving devices or short-cuts to greater efficiency. Not only was the workforce too large, it was also less efficient and adaptable.[43]

This was why the French entrepreneur paid for English workers to come from England. He was happy to buy efficient expertise, unless the individual concerned proved to be what the French call a 'mauvais sujet'.[44] Some historians also debate the theory that French industry lacked technical progress because of the size and influence of its peasantry. This was in line with the low level of consumerism in a mainly rural population. France had a backward agrarian economy. This was dominated by undemanding peasants.[45]

Historians like Rondo Cameron regard the lack of coal as one of the reasons why France had a retarded economy.[46] Had coal been an essential commodity in France as it was in England then the road and canal systems would have been developed far earlier. Poor transportation was thus another reason why France was retarded in the eighteenth and early nineteenth centuries.[47] The lack of investment and the deficit in banking facilities were co-extensive with the lack of coal and constituted retardative factors that France had to overcome before industrialization could be implemented more fully.[48]

Within the historiography of ceramics, G. W. and F. A. Rhead documented the lack of factual material available to the English ceramic historian in the following way:

> On the other hand, the records of Staffordshire workmen who have done service in foreign lands, as also of those who have established businesses for themselves, are necessarily scant.[49]

They offered no reasons why this should have been the case. The paucity of information did not prevent Marc-Louis Solon in 1885[50] and 1903,[51] the Rheads in 1906 or even Donald Towner in 1978[52] from publishing information on English workers abroad in the eighteenth century.

Solon in 'The Art of the Old English Potter' discussed the career of an English potter named Ralph Shaw who left England in 1736 after a famous and unsuccessful court case at the Stafford Assizes. Solon stated that historians 'lose all trace of him till he reappears at Montereau in 1775' where he 'settled to manufacture English earthenware' with his partner, William Clark. He added that:

> A branch of the same factory was subsequently established at Creil, and both branches have continued to prosper and increase up to the present day.[53]

In a later work, 'A History and Description of French Faïence', Solon added further details about the English workers at Montereau and claimed that 'they were supposed to (have) come on their own account'. He states that:

> In all probability they were subsidised by some French capitalists whose names have never transpired.[54]

Solon also stated that they had 'obtained from the town an annual grant of 1200 livres'. In addition, he pointed out that:

> No particulars have come to hand as to the progress of the manufacture during the first twenty years. One Merlin Hall was the last English director.[55]

The Rheads, in their work 'Staffordshire Pots and Potters', follow the line already taken by Solon with regard to the Montereau factory.

> In 1775 we find Ralph Shaw, of Burslem, ...migrating to France, and there, in the company of William Clarke (sic), of Newcastle-under-Lyme, obtaining ordinances granting them several privileges, together with a subsidy of twelve hundred francs.[56]

They then add that 'a branch establishment was opened at Criel (sic) which had endured till the present day'.[57]

Donald Towner in his work, 'Creamware', treats the Montereau factory from an earlier viewpoint and states that the owner of the Montereau factory in the 1740s and 1750s had English partners who returned to England 'to discover the process of English saltglaze manufacture'.[58]

As regards the Montereau establishment, Towner states that:

> The factory was let to an English company directed by William Clark and George or Ralph Shaw. A few years later this firm opened another factory at Creil. The ware produced by the Montereau and Creil factories from this time was a whiteware which was transfer-printed in black in Paris by Stone, Coquerel and Le Gros, who added their printed mark.[59]

Leaving the instance of English workers at the Montereau factory , Solon also wrote about the Douai factory and James and Charles Leigh.

> Two brothers, Charles and Jack Leigh, coming from Staffordshire, and describing themselves as pottery managers arrived in the town in 1780. They were anxious to find sufficient capital to set up an earthenware factory on the principles adopted in their own country. At that moment the duties charged upon the ware imported from England were so high as to be virtually prohibitive; much of it, however, seems to have found its way into France, where it was highly appreciated. The scheme presented by the Englishmen was well calculated to please a bold

investor, and a merchant of the town, named J. Bris, undertook to find the necessary funds.[60]

The Rheads in their version of the Douai establishment stress different aspects. They state that:

> Charles and James Leigh ...with many others, fled to France to escape the religious persecutions directed against the Roman Catholics in England.[61]

According to their interpretation, the pottery thrived and the Leighs took Bris as a partner. Later another Douai resident, Howze de Alnoit (sic), was taken on as a partner.[62]

Towner's version is brief and follows the Rheads:

> In 1780 two English potters, Charles and Jacob (sic) Leigh who were Roman Catholics, fled to France in order to avoid the violence of the Puritans. [63]

This is what English ceramic history has to say about English pottery workers in France in the eighteenth century.

1.6 **Structuring the thesis into chapters.**

The dates for the start and the finish of this study should be explained. The first significant event of this thesis took place in 1774 when English pottery entrepreneurs petitioned the French Government for validation of their factory in Montereau.[64] This was a new level of engagement in the attempt to transfer English pottery technology to France. The study ends in 1814 at the end of the Napoleonic regime.

There are many themes that keep moving back and forth throughout the time span. Some of these themes involved the movement of people and the knowledge that they carried in their heads and hands. This was one kind of technology transfer. Another kind of technological input involved the study on the part of the French of English pottery techniques together with coal-fired kiln technology. Yet another aspect of the transfer of English technology was the relentless penetration of French markets by English wares. This is a recurring theme that permeates the study. As a corollary to this, French consumer demand also plays a part in the debate. The chapters that constitute this thesis contain these and many other elements.

The first chapter deals with the nature of the trade in pottery. The second examines the basic penetration of Queensware in France. The third concentrates on the French Government's interest in English coal-fired kiln technology with application to the pottery industry. The fourth surveys the influences of the French State on the transfer of English pottery technology before and after the Revolution. The fifth looks at potters in France and the transfer of English technology. The sixth chapter deals with technology transfer in a war economy.

The complexity of English and French technocratic interplay is abundant in French archival sources. Pottery is an area that the late John Harris did not attempt to research. This thesis on the transfer of English pottery technology to France is continuing the work on technology transfer pursued by Harris. Another aspect of eighteenth century skilled craftsmanship has been opened up for research. The transfer of pottery technology, however, was successful. This is more than can be

said for many of the other attempts to translate English skills and processes to France.[65]

Chapter 1 Endnotes.

[1] Creamware was a fine cream-coloured earthenware developed in the 1750s and perfected in the 1760s in England.
[2] Mocha decoration was a technique used first in the 1790s in England. Creamware was an ideal vehicle for this surface decoration which comprised a tree-like pattern, similar to moss agate.
[3] Christopher John Smith, ceramic historian, mocha specialist.
[4] Creil is situated within the Paris region, on the Oise.
[5] He was interested at this time in the eighteenth-century French technologist, Gabriel Jars.
[6] Museums at Creil, Chantilly, Sceaux and Sèvres.
[7] Montereau is situated in faut-Yonne on the way to Auxerre. John Holker (fils) was involved in setting up a pottery in Montereau in 1774.
[8] Neil Cossons was director of the Ironbridge Institute for industrial history at the Ironbridge Museum.
[9] John Harris was co-founder of the Ironbridge Institute. He had a special and enduring interest in the Holker family.
[10] André Rémond, John Holker, Manufacturier et Grand Fonctionnaire en France au XVIIIe siècle, 1719-1786 (Paris, 1946).
[11] Queensware was an evolved, refined form of creamware developed by Josiah Wedgwood in the 1760s. This body was copied rapidly by manufacturers all over England. It was named after Queen Charlotte. Wedgwood had become Potter to the Queen in 1762. Eliza Meteyard, The Life of Josiah Wedgwood (London, 1865), vol. 1, pp. 369-370.
[12] Examples from the Creil and Montereau factories dominate the collection.
[13] Neil McKendrick, John Brewer, J.H. Plumb, The Birth of a Consumer Society. The Commercialization of Eighteenth-Century England (Bloomington, 1985), p. 136.
[14] G. W & F. A. Rhead, Staffordshire Pots and Potters (London, 1906), Preface, p. vii, referring to Simeon Shaw, History of the Staffordshire Potters and the Rise and Progress of the Manufacture of Pottery and Porcelain (Hanley, 1829). The Rheads claim that Shaw based his history on the testimony of 'very aged persons' of 'unimpaired memory' whose 'parents lived near the spot' or 'were present', p.vii.
[15] The Holkers, father and son, were Inspectors General of French Foreign Manufactures. They were also English.
[16] Du Pont de Nemours was instrumental in formulating the early drafts of the Treaty of Commerce of 1786-7 between France and England.
[17] Information kindly passed on by Monsieur Leemans, Curator at Creil Museum.
[18] Keele University, The Wedgwood Manuscripts, Etruria and Liverpool. Also the Transcripts of the Letters of Josiah Wedgwood 1, in 15 vols., unpublished, the Wedgwood Museum. These documents are quoted by courtesy of the Trustees of the Wedgwood Museum, Barlaston, Stoke-on-Trent, Staffordshire, England.
[19] Rémond, John Holker, passim.
[20] E. Robinson, 'International Exchange of Men and Machines, 1756-1780', in Business History, 1 (December 1958).

[21] John R. Harris, Industrial Espionage and Technology Transfer. Britain and France in the Eighteenth Century (Aldershot, 1998), p. 554.
[22] George Basalla, The Evolution of Technology (Cambridge, 1988), Chapter vii Evolution and Progress, pp. 207-218. Also Preface, pp. 7, 8.
[23] Idem.
[24] J. Mokyr, 'Evolution and technological change: a new metaphor for economic history', in R. F. Fox (ed.) Technological Change, Methods and Themes in the History of Technology (Amsterdam, 1996), pp. 66 seq.
[25] M. C. Jacob, The Cultural Meaning of the Scientific Revolution (New York, 1988), p. 8.
[26] Shepherd Clough, 'Retardative Factors in French Economic Development in the Nineteenth and Twentieth Centuries', in Journal of Economic History (1946), Supp., 91-210; 'Retardative Factors in French Economic Growth at the end of the Ancien Régime and during the French Revolutionary and Napoleonic periods', in M. Kooey (ed.) Studies in Economics and Economic History: Essays in Honour of Harold F. Williamson (Durham, N. C., 1972), passim.
[27] Richard Roehl, 'French Industrialization: A Reconsideration', in Explorations in Economic History, 13 (1976).
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Chapter 2

English pottery production in the 1770s.

2.1 Introduction.

The theme of this chapter is to show why the French began to produce English Queensware in the 1770s. English pottery production had saturated domestic markets by the mid 1760s and lucrative outlets had been exploited in the American colonies and in Europe.[1] French consumer markets absorbed English wares especially Queensware.[2] When exports to America diminished during the colonial tensions a greater English marketing push was made. This time the target was France.[3]

The French first of all retaliated with the protectionist[4] measure of imposing an import ban on all English manufactured goods. This did not work as large quantities of Queensware still reached French markets by clandestine means. The French Government then took matters in hand and organised the establishment of a Queensware factory with English workers and managers in France. This was just one of the steps in a Government policy to curb the English threat to French economic stability, at least as far as the pottery industry was concerned. Trudaine de Montigny, member of both the King's Council and the Academy of Sciences, outlined a general espionage policy for industry as a whole in which the French were to entice and recruit English workers to France.[5]

French government reports in the 1780s pointed out that England was a small country with a modest population. It as, however, highly successful in trade and

commerce.[6] There were few workers and they were expensive to employ. Yet there appeared in France English goods that were cheap, handsome and everywhere available. They outsold French wares. French government observers wondered how the English manufacturer had achieved this.[7] England was also mercantilist and protectionist.[8] Its workers and managers were praised by French visitors and diplomats.[9] They also believed that derogation did not keep the English aristocracy from being involved in commerce.[10] These views persisted throughout the eighteenth century.[11]

English historians would argue that how the French perceived the English business and merchant class was false. This class was not more socially mobile or productive than its French counterpart.[12] It has been argued that accepted ideas about a dynamic and upwardly mobile entrepreneurial middle class are 'a misperception of what an open elite means'.[13] The 'degree of upward mobility in England was surprisingly small and not of great social significance'.[14] In France it was easier for the business or merchant class to be upwardly mobile. This was effected by the 'institutionalised sale of offices carrying noble privileges' to an elite.[15] Contrary to what the French believed, derogation was also applicable to England.[16]

Mercantilist theories pervaded French government economic thinking.[17] French exports had risen by the late 1780s but imports had also escalated.[18] Redress was crucial if the economy was to remain balanced. This is where the concept of consumerism came into play.[19] Some English historians argue that consumerism dominated markets in the eighteenth century in England.[20] Rich and poor bought

the cheap manufactured goods that were readily available.[21] One of the aims of this thesis is to show that something very similar happened in France as a spin-off from the penetration of French markets by English goods. The argument from the French side is that English manufacturers were backed by the English Government.[22] The technological aspect of the equation was later appreciated[23] as quality cheap goods were made using new techniques.[24] These were soon being exported to France.

From the 1770s onwards French Queensware was being made to cater for French markets. Eventually in the 1790s and 1800s French manufactured Queensware would address this English competition more effectively. An influential factor in how this was achieved lies is the calibre of the main protagonists involved in this history of the development of English Queensware in France.

Josiah Wedgwood represents the English viewpoint and Trudaine de Montigny, together with the two John Holkers, the French stance.[25] The position of Wedgwood on the English pottery scene is undisputed but his role in this study should be seen as a paradigm for many English potters of equal innovative skill and entrepreneurship.[26] He is to be regarded as the archetypal English potter who gives credence to the English point of view. There were committees of master potters and Wedgwood was only one voice among many although he spoke for the pottery industry as a whole. Wedgwood argued the case of the North Staffordshire potters against the Government's support of a monopoly in kaolin. This raw material is used in the production of fine earthenware.[27] He and

the other masters opposed the report of the Committee of the House of Commons on Champion's Petition in May 1775. Wedgwood presented the opposition as a 'Memorial relative to the Petition from Mr. Champion for the extension of a Patent'. It is worded as follows:

> Josiah Wedgwood on behalf of himself, and the manufacturers of earthenware in Staffordshire begs leave to represent.[28]

He was influential, however, as a spokesman with access to political lobbies within the English Government.[29]

In France creamware was known at first as 'Queensware'[30] but then the French adopted the term 'Wedgwood' ware. Much later this same pot type would be known under the generic name of 'fine earthenware in the English style'.[31] The French always remained aware that the end product was a copy. This presents an insight into the way the French manufacturer and the French Government viewed this pottery. It would appear that creamware was inextricably bound up with the idea of being English even when the evolved French version was a respectable imitation with identifiable French influences. The English aspect encompassed much more than simply an appropriate name for the ware.

The French protagonists in this industrial battle require some background explanation. Jean Charles-Philibert Trudaine de Montigny was the son of the man whom Pierre Boissonade called 'one of the prime movers in the industrial reawakening in the second half of the eighteenth century'.[32] Another French

source also stresses the importance of the Trudaines in industrial matters. Morellet says that Trudaine (père)[33] 'for twenty years revealed himself to be a persistent protector of any undertaking that was meant to revitalise our industry'.[34] Besides being a prestigious and politically powerful government figure in his own right, Charles Daniel Trudaine had friends like Turgot,[35] Machault[36] and Vincent de Gournay.[37] Trudaine de Montigny had been trained by his father to inherit all his administrative and government posts. At twenty two he was appointed a Master of Requests and at twenty four he was made Intendant of Finance and Counsellor of State in the King's Council.

His next promotion was to the powerful Bureau du Commerce which controlled various aspects of trade, industry, commerce and manufacturing. On the death of his father in 1769 he assumed all his father's posts including that of General Controller of Finance. Trudaine de Montigny was no political, economic or administrative lightweight. His career was that of a highly successful member of the French government. In 1774 he supported Turgot as Minister of Finance and remained loyal to him when Turgot was dismissed from office.[38]

The Holkers were Englishmen in France with a long history of servicing the French administrative machine on an industrial and technological level. Originally from Manchester, John Holker had been a manufacturer in the cloth industry but had fled the country in the aftermath of the Jacobite defeat in 1745.[39] He had ended up in France and had made himself generally useful to certain government officials working in French industrial areas. John Holker, the father, was Inspector General of Foreign Manufactures in France, a post which he had held

since 1755.[40] He has been called by a French historian, André Rémond, 'an agent of the Trudaines'.[41] He was credited with having been behind 'new industrial creations or undertakings competing with those from abroad'.[42]

The Holkers, father and son, enjoyed the protection of the Trudaines. Pierre Boissonnade claims that 'the two Holkers incontestably contributed to the industrial regeneration of France for thirty-five years'.[43] He also states that the Holkers brought to France 'English entrepreneurs and workers at the same time stimulating the spirit of free enterprise in French factory owners'.[44] John Holker (fils) comes like his mentor, Trudaine de Montigny, with an excellent administrative, industrial and political pedigree. Andre Rémond states that he had been trained from childhood by his father. On the advice of the Trudaines he had also enjoyed a first class theoretical education studying with various outstanding scholars and scientists.[45]

Both Holkers were, therefore, top government officials, heads of the influential division of the Factory Inspectorate that dealt with foreign manufactures. Each was experienced in dealing with foreign technologies and workers. Any study of their correspondence affords insights into the infrastructure of French government control of industry.[46]

2.2 Background to Queensware.

Before any attempt is made to assess why the English pottery industry was so successful at this time it is pertinent to examine what Queensware was and how it

came to have such an important influence on the development of pottery in the eighteenth century.

In the eighteenth century in England there were various types of pottery that competed for a place in the consumer market. This was before white earthenware and later creamware were developed. In the early part of the century white salt-glazed stoneware had joined coarse redware, tin-glazed and brown salt-glazed stoneware as an English pottery product.[47] Tin-glazed earthenware depended for its appeal on its white glaze and painted decoration. Its soft body, however, chipped readily in use.[48] White salt-glazed stoneware was decorated by moulding, painting or printing. It had the added advantages of durability and toughness. Its whiteness rivalled that of porcelain.[49] Lead-glazed earthenware was fired at a much lower temperature and underwent a series of refinements in order to survive in a highly competitive market.

The development of creamware began early in the reign of George I. A potter in Shelton called Thomas Astbury made a ceramic discovery which was destined to bring about considerable changes in the pottery of Staffordshire.[50] He mixed ball clay with marls and added calcined flints. This produced a hard white stoneware suitable for salt-glazing. This same body fired at a lower temperature produced a whitish earthenware, the early forerunner of cream-coloured earthenware.[51] A colourless glaze of high gloss was produced from finely ground calcined lead. This glaze penetrated the body more effectively. Enoch Booth of Tunstall improved Astbury's evolved recipe to produce a deep-coloured earthenware. He

also popularised Thomas Frye's new liquid glaze. This gave the surface a lustre and patina of uniform thickness and colour.[52] For the first time every piece in a matching service could be glazed exactly alike.

White salt-glazed stoneware was a better product than previous wares such as tin-glaze. It was reasonably white but much stronger than tin-glaze so it did not chip or break easily . It was cheap to produce and in moulds gave good results with clear definition. The ware proved popular and as production increased distribution widened. What is noteworthy is that this same stoneware body with a lead glaze made creamware although it required two firings.

The combination of a flint-based glaze together with double firing revolutionised the English pottery industry. Later a lead glaze would dominate production. Cream coloured earthenware was readily produced by Staffordshire potters and the basic recipe developed and improved. It effectively 'ousted the old tin-glazed delft and faïence-type earthenwares' and 'also replaced the salt-glazed wares with their uneven and hard orange-skin-like glaze'.[53]

Creamware production increased to meet the demand from lower social levels of society. This led to economies of scale in production and costs went down. Increased competition then made the price go down. Creamware became available even more widely and the English pottery industry became even more successful.[54] This is where mass consumerism began.

Great developments were made in creamware manufacture around 1750 and by 1760 it had a rapidly increasing market which soon extended to the continent. Enoch Booth had many imitators among Staffordshire potters. In 1751 an improved creamware had been developed by the Warburtons. A Fenton Low potter, Thomas Whieldon was also interested in creamware and Josiah Wedgwood formed a partnership with him in 1754.[55] Creamware was not confined solely to Staffordshire. Evidence suggests that wherever salt-glaze potters were working, in Derbyshire, Liverpool, Yorkshire and elsewhere the manufacture of creamware was developed to the eventual exclusion of the salt-glazed stoneware.[56]

Many potters experimented with the creamware body, refined and lightened it. Josiah Wedgwood was not alone in his technical expertise and manipulation of this body. The aim was to produce a ware as pale as possible, combined with lightness and strength. This was achieved around 1762 when Wedgwood conceived the 'Queen's Pattern' for Queen Charlotte and became Potter to the Queen.[57] By the end of the 1760s the New Hall Company of Shelton was also producing creamware which was likewise known as 'Queen's Ware' or 'Queensware'.[58] This was the name that Wedgwood gave it after Queen Charlotte had bestowed her patronage. Queensware was soon imitated by potters all over England.[59]

About this time a great change was noticeable in the creamware produced by many factories and in particular in the creamware produced by the Leeds Pottery.[60] The aim of potters was to produce as white a body as possible. In

1775 Richard Champion's patent restricting the use of Cornish stone and clay was released by Act of Parliament for the use of earthenware potters.[61] These materials were then incorporated into the body and glaze of the creamware. This transformed it into virtually a new substance that was both paler in colour and more brittle in appearance than the deep cream or buff-coloured creamware which preceded it.[62] With the addition of kaolin, creamware now approximated more closely the pale cream-coloured ware that Wedgwood had been manufacturing for the last decade and had called Queensware. Donald Towner also suggests that 'it was the ambition of all creamware manufacturers at about this time to produce as pale a ware as possible'.[63] Josiah Wedgwood, when writing to his London showrooms in 1768 said:

> With respect to the colour of my ware, I endeavour to make it as pale as possible to continue its cream colour, and find my customers in general, though not every individual of them, think the alteration I have made in that respect a great improvement, but it is impossible that any one colour even though it were to come down its climax from Heaven, should please every taste, and I cannot regularly make two cream colours, a deep and a light shade, without having two works for that purpose.[64]

Not only was there a distinct trend to manufacture a lighter creamware body, there were also new ideas in the area of design and ornament. These had been introduced into England by the Adam brothers. The neo-classical style was fast ousting the old rococo forms although many designs were derived from the work

of the silversmith. There are instructions in the early Leeds Drawing Books directing the potter 'to fashion his work as done in silver'.[65]

Creamware, therefore, was the direct descendant of the lead-glazed wares of the Middle Ages.[66] It had become even more refined, more technically perfect until it reached its peak in the mid-1760s with its fine form, thin body and clean, brilliant glaze which formed a perfect background for the skilful technical innovations of transfer printing.[67] The lightness and smoothness of this cream-coloured earthenware gave it practical advantages when the rococo style in the decorative arts was superseded by the neo-classical mode, popularised, above all, by the Adam brothers in architecture and interior design.

It should also be noted that the technological breakthrough of transfer printing modernised pottery decoration. Factory assembly-line production methods had major and enduring effects on the craft of pottery and turned it into an industry.[68]

2.3 The success of the English pottery industry.

The English pottery industry was thriving in the 1760s. The economy was expanding. Historians have offered diverse reasons for this positive surge. Demographic surveys of the Potteries during this period show that there were increases in the population at large which in turn increased the potential workforce. Advances in agriculture had supported any upward move in population. Transport in England had also moved apace at this time with canals being cut and water networks being established between rivers and ports.

Roads, bridges and turnpikes were important in enabling goods to be carried all over the kingdom and to the major entrepôts with relative ease and cheapness.[69]

England had a major economic advantage in the size of her Navy as well as the number of her merchant vessels which traded all over the world, to India, Africa, America and Europe. Josiah Tucker[70] and Malachy Postlethwayt[71] had long stressed the necessity for England to be strong in trade and commerce. This was where the wealth of a nation lay, they argued. At this point Adam Smith[72] transmuted these arguments into a more liberal form of economic theory. Indeed, he was echoing and developing the theories of various French economic theorists like Quesnay[73] and Gournay as well as Turgot[74] who argued in favour of free trade instead of protectionism. It is debatable, however, whether the basic infrastructure of protectionism ever really disappeared in England or in France.

Historians have acknowledged that there was a rapid advance in Staffordshire manufactories from the middle of the eighteenth century. They attribute this to the increase in population, to improvements in transport and to developments in trade. In 1769 Arthur Young toured the Potteries and wrote that there were 300 houses engaged as potworks. He estimated an average of 20 employees per 'house', meaning per workroom, giving in all about 6000 employees.[75] Later Josiah Wedgwood admitted to a Committee of the House of Commons that there were between 15 000 and 20 000 employed in the pottery industry in England.[76] This included potteries in London, Liverpool, Bristol, Derby and Worcester as well as Staffordshire. Statistics for the potters in the trade unions of the Pottery

Workers show that about seventy five per cent of the pottery employees were in Staffordshire.[77]

Many potters were successful because they had been helped in the development of their businesses by making good marriages. They were often financially backed in the form of dowries or family fortunes which were 'of incalculable use to a rising energetic and judicious manufacturer'.[78] In addition, families often worked together in the different aspects of the business and this knowledge and body of skills was something to be cherished and passed on to the next generation of craftsmen or managers.

This aspect of English pottery history may well have been overlooked because it was so much a part of accepted practice. Often this technical know-how was passed down in an oral tradition without ever having been drafted or codified. This was an ace in the English manufacturing hand which was probably only properly evaluated when English workers were enticed and recruited to work in foreign manufactories. English patents and plans were fine up to a point and could be obtained openly or clandestinely.

The crunch came in the actual manufacturing process. This is probably why Wedgwood was so vehement about English workmen going to foreign manufactories. By employing English craftsmen a foreign entrepreneur had access to these little secrets of the trade which he could not obtain in any other way.[79] This was a quicker and more pragmatic course of action than financing a lengthy period of trial and error to get certain procedures right. 'Tours de main',

as Chaptal later called them, have always existed in some shape or form in most industrial procedures.[80] With the English this amounted to a kind of secret code of acceptable practice. It was only when highlighted by eighteenth-century industrial espionage that English manufacturers better understood its value.

English workers constituted much more than brawn. They also brought with them brains. This technological 'savoir faire' was what the foreigners were buying 'off the shelf' without paying for any development costs incurred during the long years of apprenticeship and training. This smart worker class was part of what made English manufacturing great.

There were also other reasons why the English pottery industry was doing so well in the 1760s and 1770s. This had to do with the very nature of the material itself. As has been seen in the section on the development of Queensware, this pot type, as a body and as a vehicle for decoration, was a great step forward in ceramic terms. What is perhaps more important, it was also a resounding commercial success both in domestic and foreign markets.

Queensware manufacturers all over England sated the market with basic, ordinary wares for everyday use. Nowadays the term 'Queensware' has connotations of elegant expense and exclusivity. In the eighteenth century there were costly breakfast and dinner services that only the wealthy and elite could afford. This was the upper end of the market. The mainstay of the Queensware industry was the simple, cheap items that were in regular domestic use. Potters all over the country were producing basic creamware pots. Their warehouses

stored surplus stock. On different occasions Wedgwood, whose correspondence is the only one extant in any detail, described the properties of Queensware and commented on how popular it was.[81] Arthur Young also pointed out that there was creamware/ Queensware in every packman's load. As it was cheaply available in fairs and markets it was often to be found in workers' homes all over England.[82]

Thus business was booming for the pottery industry on the home front. Markets abroad were equally healthy. The export business often absorbed the main proportion of manufacturers' output. It has been claimed that by 1785 the whole of the Staffordshire potteries were exporting 84 per cent. of their output abroad.[83] The total annual production was worth 300 000 pounds which would be thirty million today.[84]

Wedgwood claimed that business was healthy and exports good.[85] Thriving foreign markets had become another of the underlying sub-structures of English economic prosperity in the mid-eighteenth century. Pottery manufacturers had substantial commercial links with European countries, among them Russia and Prussia in particular.[86] They also had a long-standing if ambivalent trading relationship with France.

The French bought English goods to such an extent that a term for this obsession was coined. They called it 'anglomanie' and it did little to improve Anglo-French trade relations in the years to come. The French market had become more consumer-driven from the 1760s onwards. The French customer wanted English

manufactured goods and persistently refused to accept what the domestic market provided. English potters profited from this French dependence on English goods and the English pottery industry thrived.

As regards the colonies, the markets in America had existed for some time and the trading connections and spin-offs were lucrative and apparently secure. Economic pundits believed that England's vast colonies in America were a considerable advantage to the country's economic well-being.[87] Everyone made money out of the American trade. English shippers exploited the virtual monopoly in English shipping to the colonies that the Navigation Acts afforded. Old habits of extended credit died hard and the Americans maintained their English contacts and contracts.[88] It has been argued that French commerce was unable to 'struggle successfully against English competition'.[89] Recent studies by English historians concur with the French evaluation of the war.[90]

Twice a year vast loads of English merchandise were piled high in English ports, were loaded onto English ships and enjoyed special customs privileges once they reached America.[91] The Navigation Acts were viewed by French and foreign commentators as 'injurious to French shipping and trade'.[92] Some believed that 'the English owe the great progress of their shipping and their trade to the famous Navigation Acts'.[93]

English merchants did well out of this system and kept the factories of England at full throttle for many years by ordering successive shipments of manufactured goods for the colonies. The pottery industry certainly thrived on its trading links

with America. When Anglo-American relations became less easy, and this was already occurring in the late 1760s and early 1770s, fluctuations in sales were felt by the manufacturers including potters.[94]

The American War of Independence forced England to reassess diplomatic relations with France. At first France kept its involvement with the rebels a secret and shipped money, arms and ammunition through a dummy company.[95] War with Britain followed soon after the Treaty of amity and commerce with the United States.[96] Vergennes was happy to see England in difficulties[97] and wanted it to 'be humbled' after the defeats that it had inflicted on France in the Seven Years' War.[98] It was also part of the French government policy to 'supplant the English as America's main trading partner'.[99] Turgot warned against further French of peace.[100] involvement and suggested retrenchment to allow a necessary period

French support for the colonial rebels underpinned England's fear of France.[101] It was argued that the threat from France was great and that England should relinquish the American colonies and 'concentrate on the French' who were the real enemies, bent on retribution after the Seven Years' War.[102] The English feared that the French would dominate markets and wrest lucrative outlets from English manufacturers.[103] French infiltration in Ireland was a particular source of anxiety for the English and drove English policy there.[104]

The economic difficulties that the English experienced in the American markets were short-lived[105] and 'exports were back at their pre-war value by the last year of the conflict'.[106] The French had not always enjoyed harmonious cooperation

with their allies[107] whom they found to be ungrateful and unwilling to pay cash for French commodities or conduct commercial matters on French terms.[108] It has been stated that:

> No lasting political or economic entente had been created between America and France and commercial links between Britain and America revived strongly after the conflict.[109]

English trading relations with America between 1784 and 1786 absorbed around one fifth of all English exports.[110] The French continued to export goods to America and attempted a transfer of technology by setting up French industries. Holker (fils) in his role as a French commercial consul was less successful here than he had been in France.[111] The English, however, had learnt valuable lessons from the French scare in America. The penetration of French markets became more resolute despite the bans on English manufactured goods. Manufacturers recovered and thrived. This contributed to the continued success of the pottery industry.

The calibre of the men running the English industry from the inside was also important. The potter-craftsmen, the owners and managers themselves, together with their connections in the world of trade and commerce, shaped the industry. Many successful pottery manufacturers like Wedgwood, Spode and Minton had close business links with equally successful merchants.[112]

Some historians have made much of the entrepreneurial dynamism among pottery manufacturers during this period. It is argued that there were hundreds of 'potmakers' in England during the first 'blossoming of the consumer sector'.[113] The level of skill required to 'excel' was higher than has been imagined.[114] The outstanding example of talent and drive that has been studied is Josiah Wedgwood with his polymath attributes and interests, his political lobbying and his connections in high places.[115] Government figures, the aristocracy and the law-makers listened to him both as an individual and as a spokesman for the pottery industry as a whole.

Patriotic, intensely interested in retaining English technical skills within England, highly effective as a manufacturer, Wedgwood was many things to many people. Other manufacturers, however, traded in America and forged useful markets in France. They also printed catalogues in foreign languages and went abroad on business missions.[116] They simply did not have the public acclaim or the high public profile that Wedgwood had. They also did not leave behind a large and detailed body of correspondence for posterity to study. It has little relevance whether Wedgwood was or was not any more thrusting or dynamic than his fellow potters.

As a manufacturing caucus, the potters of England in the 1760s and 1770s were effectively keeping the English pottery industry healthy and successful. Wedgwood was undoubtedly one of several good organisers and planners with reliable operatives and connections to put their marketing strategies into practice. These skills and advantages also helped to effect the penetration of French

markets. One of the major reasons, however, was the nature of this pottery as a successful consumer product.

2.4 The penetration of English wares in France.

English earthenware had won markets in England, America and other parts of Europe. It had done so in the face of competition from foreign imports or other indigenous pottery products. There was no reason why the same success should not be gained in French markets. This English domination was effective. How the actual penetration was effected combines a variety of complex elements.

French sources have suggested that there was a free trade agreement between England and France after 1763. This was when England started to export considerable quantities of creamware to France. These stocks were the result of over-production on the part of the pottery industry, particularly in Staffordshire.[117]

The main body of evidence for the presence of English pottery in French markets does not come from the complaints and reports drafted by French potters to the French Government. This will be the case at a later date. The main sources of information are often documents drafted by government Ministers or high-ranking bureaucrats. In them they assessed particular industrial situations which had implications for the French pottery industry as a whole or for a community in particular. These government overviews were often retrospective because the same problems kept cropping up. The ways of dealing with them were reassessed and new methods devised to address them.[118]

The perennial problem for the French was the large amount of smuggled English pottery wares that arrived in France despite the prohibitions placed on their entry in 1770. The general opinion was that the English goods, even with transport costs, were still cheaper than French wares and were to be found all over France in large and small markets. 'Mémoires' to the Minister for Finance and the Minister of the Interior would later accuse the Government of being negligent in not protecting the rights of the French manufacturers by allowing foreign goods to enter the country.

They argued that trade bans were not working in the 1770s.[119] They asked that more customs officials be appointed and more customs offices established at key points. The clandestine arrival of English goods in French markets was a sore point with potters and other manufacturers alike. Most smuggled goods came to France, through Belgium, Holland, Artois, Picardy and Normandy. Some vessels from England got rid of their English cargoes at various points along the French coastline which was too long to patrol effectively.[120]

Besides the complaints from the French manufacturers about the amount of smuggled English goods coming into France, there were other issues to be considered. These included why they were being forced out of the market place and why they could not compete. The term 'anglomanie' was used frequently to explain the consumer trend in France for all kinds of English manufactured goods. The Government identified it as a major disadvantage and no incentive to the struggling French pottery producer. It also realised that a great deal of French cash was going to foreign manufacturers. There was an imbalance in

trade with a heavy emphasis on imports.[121] French imports stood at 611 million livres in 1787 while exports reached 542 million livres.[122]

The English goods were better made and did not scratch as easily as French earthenwares. Consequently they remained cleaner and more serviceable for longer because they did not harbour unpleasant stains, smells or cooking odours to the same extent. They were also readily available at modest prices.[123] The French potter clamoured for help in the form of subsidies and loans. What the French manufacturer wanted was protection from the state. What he did not want was competition of this calibre.

This marketing problem prompted questions from government officials like the Factory Inspectorate about the industrial and commercial aspects of the French pottery industry in the late 1760s and the early 1770s. The issue in question was why the English goods could do such a good job in outselling the current domestic wares. Like every other European country during this period, the French had countless village potters who catered for the general domestic trade. There were also more specialised areas of manufacture where well-known wares were made in old pottery centres like Rouen, Arles, Nevers and Strasbourg among others.[124] In addition, there were other famous ceramic products such as Paris and Limoges porcelain[125], Rouen tin-glazed ware[126] and Saint Porchaire ware which was part of the antique trade[127]. These specialist items remained in current trade as domestic or export goods.

English pottery eroded French markets. French ceramic historians like Maddy Ariès[128] and Henry-Pierre Fourest[129] substantiate this. English pottery was available for sale all over France according to Arthur Young.[130] Faujas de Saint-Fond recorded that English pottery was to be found in every inn from Russia to Spain.[131] He refers to the penetration of the French market by English pottery:

> In travelling from Dunkirk to the southern extremity of France one is served at every inn from English earthenware.[132]

Since the 1740s English pottery had been subject to intermittent bans on the part of the French. In the 1760s English wares had reached France by legal means. Wedgwood indicated that his first orders in France dated from 1768.[133] His plans to win the French market were made in 1769.[134] Other English pottery manufacturers doubtless soon had contacts with merchants who handled their business in France. In 1770, however, there were two prohibitive measures taken against the import of English pottery. This must surely have been because so much was coming into the country and the indigenous industry could not cope or compete.

Documents written some time afterwards indicate that the accuracy of English lading manifests was often unreliable. The result was that in the 1760s much larger quantities of English goods were coming into the country than was apparent. Not only were the potters being hit hard. The Government was also losing revenue because of these fraudulent manoeuvres. The French were aware that the English were out-smarting and out-selling them at this time.[135]

After the trade bans on English manufactured goods, many English potters were extremely critical of this measure on the part of the French Government. Josiah Wedgwood was one of the severest critics of the ban and tried to have it modified by political means in a pottery lobby.[136]

The main demands of the French market with a taste for this current new English pottery were met as follows. Loads of English pottery, described as something other than pottery on the ships' manifests were shipped into French ports. Another ruse was for English vessels with their English cargo 'to sail under a foreign flag'. In this way 'they were allowed into France with deplorable ease'.[137] Another way used to bring English goods into France was to send them to other European ports first and then ship them on as foreign wares with no mention of their provenance.[138]

The taste for English goods continued to push consumer trends in France to unacceptable limits. English Queensware became increasingly popular.[139] The French Government had no alternative but to intervene and encourage the manufacture of English Queensware on French soil. This is why the French began to produce English pottery in the 1770s. Before doing so, however, the Government was to respond in a predictable protectionist way. This entailed the application of commercial and industrial policies which had moulded the French economy since the time of Colbert.

2.5 Protectionism.

Mercantilist and protectionist theories have been identified with Colbertism but they have a wider application beyond France.[140] Mercantilism implied a state economic policy where regulations restricted imports, encouraged the immigration of foreign artisans and prohibited the emigration of indigenous craftsmen. Colonies were fostered to cater for domestic needs like raw materials. Navigation acts ensured that native shipping and trade was kept exclusive of foreign input. All goods that were shipped circulated via the native land. Foreign imports were restricted by tariff controls. Monopolies protected the manufacturer.[141] Mercantilist theories applied not only to France but to England as well. As has been mentioned, some French critics of English mercantile policy argued that England was successfully protectionist.[142]

The manufacturing industries as well as trade were essential in any balance of trade. Industries abroad were to be emulated. French Huguenot refugees had helped found many branches of foreign industry.[143] In France protectionism was exemplified in factory regulations and a factory inspectorate to ensure quality. It moved, however, towards control on a grander scale. This involved legislation and international policies. This was seen in customs duties, tariffs and trading deterrents. Statutes and decrees imposed fiscal penalties or trade embargoes.[144] Monopolies and privileges were granted to special establishments. The Government employed prohibitive measures. These did not work effectively so another policy was revived.

Instead of shutting out the competition the State embraced what was threatening it in industrial terms. The intention was to replace foreign goods with French goods of the same type. The trend was now to gather information about particular manufactures and industries, together with their raw materials and kind of tools used.

Primary to the issue was the kind of furnace technology used.[145] Concerted efforts were then made to imitate specific branches of industry in similar establishments in France. Protectionism was evolving within changing industrial variables. In the 1760s and 1770s it encompassed the transfer of technology and industrial espionage.[146] The Government still maintained control by controlling the financial issues. Secondly, it stipulated what aspects of foreign industry were brought to France. Thirdly, it monitored the progress of this national investment. This Government policy underpinned the transfer of English technology.

2.6 French interest in the transfer of English technology.

The policy of transferring technology from other countries had been in practice for some time.[147] It was not the first time that there had been a transfer of pottery technology from England to France.[148] The English influence was strong. There had been definite changes made in the weaving, spinning and cloth industries, with 'jennies', 'mules' and other English inventions and improvements being brought to France since the 1740s.[149] These were often accompanied by the English designer-craftsmen themselves.

Skilled English technical staff were recruited to set up the machines or adapt them. This was often part of the contract made with any skilled artisan.[150] Once this was negotiated the financial arrangements could be settled and a time clause added to the agreement. The requirement to include equipment often applied not only to heavy machinery but to hand tools and much smaller pieces of manufacturing hardware.[151] Josiah Wedgwood claimed that this was the case in some instances involving English entrepreneur-craftsmen. He feared this insidious type of espionage because it was so difficult to detect.[152]

Transferring pottery technology was another stage in the French industrial policy of the1760s and 1770s. The Government deemed it quicker to copy or imitate than to develop a totally new product. The ground rules had been formulated some time before.[153] In French markets everywhere, foreign goods, for the most part English, were outselling domestic wares. The need to supplant these English goods drove French government industrial policy.

As has been mentioned, the defeat of France by England in the Seven Years' War had left the French angry and resentful of the English.[154] This attitude influenced not only Anglo-French international diplomacy but also French commercial and economic policies. Government ministers like Vergennes welcomed the fluctuations in Anglo-American commercial and political relations.[155] These were already apparent in the 1760s well before the outbreak of hostilities between the two countries. The French Government was ready to seize the opportunity to exploit and develop the trade with American markets. The aim was to supplant English products and influence in America.[156]

French manufacturers had to learn to compete on the open market and still stay viable. At the same time the threat of English domination on an industrial[157] and commercial level had to be moderated. English industrial expertise was to be emulated. De Montigny wanted French penetration of markets at an international level. This involved other industries as well as pottery. France had long exported luxury goods like porcelain, specialist pottery wares, tapestry, mirrors and silk. Markets in America required everyday commodities which had traditionally been imported from England. Thus, American tastes were English. To win American markets the French had to sell appropriate products. Emulation of English goods was the answer.

At the same time within Government circles there were other considerations which occupied Inspectors General and academicians alike. They were germane to the whole question of technological progress. One such issue was that of fuel. As industry developed and more establishments applied for permission to set up kilns or furnaces it soon became apparent that the supplies of wood in France were not going to be adequate. Coal deposits were not as generously apportioned to France as to England and had not yet been fully exploited. Although there were domestic supplies of coal, the French relied on expensive imports of this commodity. Wood was, therefore, the main fuel source with some sea coal in coastal areas. Porcelain which remains outside this study continued to be fired with wood for decades after the turn of the century.

Wood had been in short supply for some time by the 1760s.[158] This was an anomalous situation because France had vast tracts of forest. These forests,

however, belonged to the King or to the nobility and strict laws, the forestry laws, controlled just how much wood could be cut and for what purpose.[159] There were restrictions on the number of establishments and manufactories that used wood as fuel, whether in the technical processes or in the firing procedures. The royal buildings had unlimited access to any amount of timber that was required. The Navy also had unrestricted use of this national asset.[160] Wood was imported but the freight costs were high because transport was underdeveloped. Roads were poor, canals few and waterway networks limited. Internal customs and tolls were numerous and expensive. Transport and communications only improved slowly.

Coal was not as yet a common commodity. There were indicators, however, that the French Government was interested in advancing the use of coal in a variety of furnace or kiln technologies. French industry required advancement in these areas. To this end, Gabriel Jars was sent to England on a fact-finding mission. Jars was a member of the government department closely aligned to the Bureau du Commerce, the Factory Inspectorate. He reported to Hellot who indicated what he was supposed to visit and what information to collect.[161] He was also an associate member of the French Academy of Sciences.[162] It was John Holker (père) who arranged that an itinerary be made available for Jars in England.[163]

During 1764 and 1765 he toured the industrial towns of England and wrote reports[164] which were later edited and incorporated by Duhamel Du Monceau into a posthumous work entitled 'Voyages Métallurgiques'.[165] There was a section devoted to pottery.[166] This indicates that the French Government wanted as much first-hand information as possible about the English pottery situation. This

could be exploited at a later date. Jars' report on pottery is divided into two sections: Newcastle-under-Lyme and Newcastle-upon-Tyne. In it Jars gives extensive detail about raw materials, the preparation of the clay, working methods, glazing and firing.[167] It reads like a manufacturing manual.

The Government was also keen to enhance its knowledge of general furnace technology using coal. It realised that the way forward demanded the use of coal. Hellot was instrumental in collecting information on English pottery techniques and firing procedures. Jars also described the progress of the metal industry in considerable detail. These findings were added to by other members of the Factory Inspectorate at a later date.[168] The main point, however, is that the French Government master-minded and financed a detailed survey of English potteries in the peak years of creamware development. This was in the 1760s just before the first mention is made in the government files of a new pottery company being set up in Montereau to produce English Queensware.

The French Government was thus constantly on the alert for possible ways to improve the industrial strength of France. New branches of established industry and more advanced foreign technologies were embraced. Additional markets were also sought for French manufactures. The American hostilities with England gave them the opportunity to supplant their English rivals in America.[169] They hoped to retain these markets when the war ended.

The French used Ireland as a means of entering American markets.[170] This was why Josiah Wedgwood was so worried about the Irish question as debated in the

House of Lords at a later date. His anxieties about Ireland and the background French threat were of long standing. In strict manufacturing and industrial terms England had little to fear from Irish competition. What Wedgwood and his Committee of Master Potters did fear was infiltration of the French into their colonial markets. They also feared the emigration of their workmen through Ireland to France and, to a lesser degree, to America

The French needed to find ways of circumventing the full application of English duties placed on imports into the American colonies. The war gave France the opportunity that it wanted. There was a long history of trade with Ireland. Exports from France included grain, wine, brandy, animal skins and clay. France, in turn, imported wood and coal as well as livestock from Ireland. Manufactured goods from France came to Ireland and were then re-exported to America. In this way valuable English markets were already being undermined.[171]

With the commencement of hostilities in the 1770s English manufacturers lost lucrative markets. The French realised that the break in English market domination gave them the chance to establish a much firmer hold on the tastes of the colonial consumer. Shrewdly they assessed that the rupture in Anglo-American trade might not be of long duration.[172] This meant that no time should be lost in winning the American market by entrenching French products there. First of all, however, the products had to be made.

2.7 English pottery in France before 1770.

There had been many developments in the English pottery industry in the preceding decades. The French knew of these improvements and wanted to incorporate and embody them as quickly as possible into their own production. Industrial espionage was the swiftest and surest way of acquiring what they wanted. This was the method they employed.

A document written in the mid 1770s reviewed the kind of industrial espionage network that was already in place in England.[173] There were French government go-betweens and English or English-speaking agents in French pay in England. The latter were on a commission basis depending on the number of operatives eventually brought safely to French soil and effectively employed by French entrepreneurs.[174] John Holker (père) had outlined many aspects of the complex procedure twenty years earlier in his 'Report on how to Improve French Manufacturing'.[175] What he had said then also held true for the 1770s. His son was familiar with this blueprint on industrial espionage as was Trudaine de Montigny whose 'mémoire' also suggested technology transfer from England.[176]

There had been various attempts made in France in the decades before 1770 to produce English pottery. Factories produced English earthenware even before creamware came onto the scene.[177] A factory that had caught the eye of the Government twenty years earlier featured in the development of Queensware in France. This was the factory in Montereau under the owner-manager, Le Mazois de Grancourt. In his 'Report on how to improve French Manufactories' Holker

(père) states that a new factory had recently been set up in Montereau under Le Mazois to manufacture English white pottery. This was in 1752.

In May 1748, Le Mazois had applied for a monopoly to produce 'earthenware in imitation of English wares'. His request had been denied.[178] He had apparently continued to produce this pottery and in January 1749 was accused of imitating the wares of the Pont aux Choux factory in Paris which had specialized in English pottery for some years.[179] Le Mazois denied the charges and appealed in vain against the seizure of his stock, moulds and saggars. His kilns were also disabled.[180]

In September 1749 he successfully applied for an exclusive privilege to manufacture English pottery made by the process of salt-glazing.[181] In addition, Le Mazois registered the construction of a kiln to English specifications. An Englishman called Hill had supervised this undertaking.[182]

Le Mazois, his English factory and English kiln had come to the notice of the Government. More significantly, for the development of Queensware in France, he had caught the eye of an emerging industrial guru, the Englishman, John Holker (père). For the next twenty years this future and incumbent Inspector General of Foreign Manufactures in France would watch and wait. When Le Mazois died his widow was prepared to lease the manufacturing premises. The next stage in the history of this factory was the production of English Queensware.[183]

The documents on the Manufacture de la Reine at Montereau offer some insight into the world of industrial espionage and the transfer of technology. Documents referring to specific industrial happenings in the eighteenth century are more numerous in French archives than in their English equivalents. It is true to say, however, that any overview of the industrial climate at this time in France comes from a compilation of various sources. From these we understand how industrial espionage and the transfer of technology took place. The correspondence that was conducted during this period between an English manufacturer in France and various government departments throws further light on this issue[184].

This entrepreneur-manager was Francis Alcock. He wrote at length to Trudaine and to John Holker (père). He had a close working relationship with Holker in France and cooperated with him on several occasions on industrial espionage missions to England.[185] This Englishman was later involved in setting up a pottery to produce English wares.[186] His main industrial interest was in a different branch of manufacturing but the information found in his letters is crucial to the general understanding of French industry at this time.

His correspondence reveals much about the French bureaucratic hierarchy of the 1760s and also about government policy with regard to industry. His pottery establishment slipped into obscurity but his connections with the Trudaines and the Holkers link him firmly to government interest in the transfer of English technology to France.

This man's comments as an English entrepreneur working in France have a compelling universality and pertinence to the situation that English managers must have found themselves in. The problems and drawbacks that he faced in setting up and running a factory in a foreign country can be viewed as a useful example of English industrial penetration in the eighteenth century. The wealth of documentary detail on Michael Alcock should be regarded in very much the same way as historians regard the rich, extant correspondence of Josiah Wedgwood. Just as Wedgwood is viewed in this study as a paradigm for the English potters of the period, then Alcock is the model and template for English entrepreneurs who went to France in the 1760s and 1770s. The kind of difficulties he experienced were common to the situation.

It is no easy task to set up a manufacturing enterprise at any time. It must have been infinitely harder to do so in a foreign country beset by endless problems. The fact that these Englishmen ever succeeded at all is certainly testimony to their persistence and ability. They had to succeed. The contracts that they had made with the French expected and demanded it. The English worker had little freedom of movement. His every employment move was orchestrated and supervised by French officials.

The manufacturing files of the 1760s reveal insights into this industrial scene. They show how industrial espionage was conducted and what kind of operatives were used.[187] Often the recruiting agents in England were women who, ostensibly, had returned home to visit their families. Several instances are mentioned in which skilled workmen or soldiers were enticed and enlisted to go to

France by these females. There were dangers inherent in this procedure even for women. A good example of this is when an English manufacture's wife had returned on various occasions to England. She recruited specialist workers for her husband and other manufacturers in France. Factory owners in Birmingham had informed the English Government and she had been detained and imprisoned. The English workers that were needed so badly were also detained.[188]

What followed in France was that a 'lettre de cachet' was obtained and an English servant in the employ of this Englishman was taken into custody on charges of counter-espionage. Thus a foreign national could be imprisoned on the request of another foreigner. It is documented that French workers in Manufactures Royales could be arrested and detained on a variety of charges. Usually the arrest was to restrict the dissemination of their specialist knowledge and to keep them where their employer could supervise their movements.[189]

That the same kind of detention was possible at the behest of a foreign manufacturer has certain implications. This suggests a great deal of government backing for the industrial concern in question. The entrepreneur did not become a ' manufacturier royal' till some time later. There was another instance when this same entrepreneur tried to keep a valued worker in France.[190] The intervention of Trudaine and Holker (père) was solicited and further requests were passed on to the highest government levels.[191] The reason given for retaining this man was that his adverse reports on French industrial conditions would prevent other English workers from coming to France. According to Holker, this man was

dangerous and should be detained.[192] Perhaps this kind of situation happened more often than was previously thought.

Josiah Wedgwood mentioned that 'lettres de cachet' were used as a means of retaining reluctant workers in France.[193] The practice must have been a common one to control recalcitrant workers in specialist, government-backed industrial endeavours. It applied to native as well as foreign operatives. Wedgwood listed such a measure as a deterrent to the potential emigration of pottery craftsmen.

Another aspect of the English industrial scene in France at this time was the establishment of reception centres for the English workers when they first arrived in France. There was one outside St. Omer run by an English woman, 'la Dame Willoughby'.[194] This centre received the newcomers and gave them time to recover after their stressful journey. Its function was to prepare the English workers for insertion into the French factory network. The French Government paid the salary of the English agent who liaised with members of the Factory Inspectorate.[195] They told her where to take the English workers and she accompanied them to the premises of their new employers.[196]

This accompaniment was on precise government instructions to prevent new workers from absconding or accepting better offers from other French manufacturers.[197] The financial agreement and their work contract had been drawn up in England before their engagement by the recruiting agent. This contract was binding on them when they reached France.[198] As has been seen, employers in France did not hesitate to demand punitive measures from the

Government to control their workers. This presumes close government involvement and protection for certain manufacturing areas.

Another aspect of these files on French industry in the 1760s is that a further source of English workmen was exploited. Documents show that workers were enlisted from among the prisoners-of-war present in France at the time.[199] John Holker (père) had said earlier that there was a valuable and ready workforce to be recruited from the ranks of the English, Scottish or Irish Regiments operating in France in the 1750s.[200] Now an English manufacturer in France also indicated that there was a potential supply of English workers on French soil.

The English entrepreneur petitioned the Government at the highest levels with varying degrees of success to obtain permission to take English prisoners-of-war for his industrial concerns. Government Ministers did not, however, take kindly to being badgered by an English factory owner. The preferences of the English prisoners were rarely considered. Not all were involved in military or naval endeavours. They were some ordinary individuals who were in France as travellers, scholars or as businessmen. They were detained and kept under house arrest during the hostilities with England. Sometimes they were passengers on board an English vessel which had been impounded or captured by the French in the Channel.[201]

English employers in France looked for English workers. One particular factory owner explained to the Minister of the Interior that he would prefer to recruit workers who had been brought up in his particular trade. Failing this, he was

prepared to take any Englishmen he could find. He wrote in a letter to the Minister of the Interior that an English worker, even from an unrelated discipline, was better than any trained French operative.[202] He reiterated that he required men who could understand instantly the complicated verbal instructions involved in making the range of manufactured goods in which he specialized. He argued that English workers would make his task of setting up a new English factory in France much less complicated. Sometimes his requests for English prisoners-of-war were granted.[203]

It emerges from the industrial files that the English manufacturers in France were often highly critical of the French workforce at their disposal. One manager wrote the following to Trudaine:

> But My Lord, All my Labours will inevitably prove ineffectual, if the Manufacture is Continued at this place. As to the Gilt or plated buttons that may be done here very well, as the Workmanship of Those Articles is very lazy; but for all the Other Articles which require to have Turners, Filers, And Pollishers (sic), they never will be done here to Advantage. They must be carryed (sic) on in a place Where the Inhabitants have been brought up to such kinds of Work, and Who can Work hard; not like those of this place who are frighted (sic) to death at the Appearance of Labour.[204]

There were, however, advantages at the disposal of the foreign industrialist in France. These included government protection and grants, French partners to

share the costs, 'lettres de cachet' to keep their workers under control, and access to high-ranking government officials who could grant requests or intercede further on their behalf. [206] These advantages could not, however, enable the manufacturer to produce his goods with any degree of competence. To achieve this skilled workers were required.

As a general rule, most of the Englishmen had brought some of their English workforce with them as well as their wives and families.[207] Individual workers were not so common unless as part of a group. The kind of workman that the French recruiter in England was told to look out for was the experienced craftsman who could be persuaded with financial inducements and other promises to bring his skills and experience to France. The English master craftsmen and the factory managers were involved in training French workers and apprentices. This was a stipulated part of the contract agreed with the French partners.[208] Another prescription of the contract was the revelation of any industrial or trade 'secrets' that had been brought from England.

These clauses were an integral part of the recruitment package for foremen or managers. The French Factory Inspectorate stressed the importance and quality of English training.[209] From all accounts, however, this training process was a slow one. According to documentary evidence, English managers claimed that French workmen and apprentices were slow to learn, unskilled and not nearly as dexterous as their English counterparts. In addition, it was stated that their general standard of education was much lower than had been expected.[210]

There were also hazards awaiting the English entrepreneur in France. French partners could dissolve partnerships and set up rival establishments in the vicinity. These new competitors could then attempt to poach the best of the English manufacturers' workmen.[211] This could also have happened in England. The situation always seemed to be more desperate in a foreign country. The French industrial scene included falling foul of the regulations of the guilds and trade corporations. There were manufacturing associations in every town and district.[212] Foreign manufacturers were not members of these groups so had to pay fines and compensation to French competitors. This was particularly true when their government protection ran out and was not renewed.[213]

The English factory owner also had to meet the requirements of the Factory Inspectorate.[214] In most cases the English factories were established and funded with the backing of the Government. This meant that the Inspectorate acted more in an advisory role than in a regulatory one. These hard-headed English craftsmen must have known that the situation in France would not be easy. Often it proved to be very demanding indeed. The manufacture of English Queensware was a success story, however.

2.8 French interest in producing English pottery.

A factory at Montereau was manufacturing English wares. It had already figured in the files on French industry. It had associations with English workers and English products. It was known to have an English kiln. The owner/manager, Le Mazois, had not been chosen in the 1760s by Holker to develop any special

pottery projects that the latter had in mind. Perhaps his earlier brushes with the inspectorate had made the Frenchman chary of further government intervention. Possibly Le Mazois was too strong a character for Holker to be able to control. At any rate, the Inspector General of Foreign Manufactures in France made his preparations and waited.

Holker had recent information on English pottery and kiln technology from Gabriel Jars.[215] Queensware penetrated French markets in considerable quantities from 1768 onwards. The French consumer liked and bought this English product among many other English manufactured goods of the period. Queensware, therefore, was the choice for the Holkers' next initiative in pottery production. This, of course, was under the aegis of the Factory Inspectorate with the backing of the State. By 1770 the Government had placed an import ban on English pottery twice in the same year. This was when the Factory Inspectorate and thereby the Government made a concerted effort to see that Queensware was manufactured.

In addition, the time was also right on a variety of other fronts. Le Mazois was out of the way and his widow was keen to lease the pottery premises in its entirety.[216] This was both expeditious and cost-effective for any experiment in English wares. There was, however, an even more pressing reason why the French authorities had to move quickly.

This was based on information that had come through the international network of industrial espionage that the French, like most other nations of the period, had set

up in foreign countries. From their English agents they had heard that the American markets were not quite as lucrative as they had been previously. Manufacturers in England were thinking of cutting back staff or laying men off if they did not find new markets to absorb their surplus production. This was because of the increasing tension between England and her colonies which existed long before the actual outbreak of hostilities.[217] Josiah Wedgwood bears testimony to this drop in exports to America in a letter to his partner, Bentley.[218] It was also at this time that Wedgwood made the decision 'To conquer France in Burslem'.[219] The time was right on different counts.

The Holkers were representative of the government stance and policy. There are times, however, when they appeared to be playing a dual role as government officials and as private entrepreneurs.[220] This had happened earlier in other industrial establishments in other places. This did not in any way diminish their official responsibilities. It did usually give the factory in question distinct advantages. This was the case with the Montereau establishment.

The Holkers had an important part to play in this industrial enterprise which was just one of many successful operations that they had carried out over the years. French historians have praised this father and son team for their enterprising attitude towards the transfer of English technology. As regards their background, the Holkers were experts in cloth, thread and dyeing technologies in silk, cotton and wool.[221] They did, however, venture into other specialist areas such as tanning, hardware and chemical products.[222] They had selected 'other specialist industrial areas that they tried to transfer to France in direct competition with

England'.[222] In other words the Holkers were influential in the development of new industrial techniques in France.

In the years just prior to the opening of the new English factory at Montereau Holker (fils) went several times to England to recruit skilled workers for specific French industries. He went on the direct instructions of Trudaine de Montigny who had taken advice from Holker's father.[223] Young Holker made enquiries in England about pottery workers for the Montereau Queensware concern. John Holker praised his son's skills as a possible spy, agent and recruiter of English craftsmen in England. As early as 1762 Holker (père) had stated:

> I shall try to train my son in such a way that he will be able to carry out all our missions with no difficulty whatsoever. As he will have free access into England and as he speaks like the natives there he will be able to work in the workshops and penetrate their secrets. When it is not like this the situation is suspect.[224]

In 1774 the factory of Le Mazois de Grancourt was officially rented by John Holker. Later that year, in September, Trudaine de Montigny, as Intendant for Finance, received a petition from Clark, Shaw and Company, natives of England, who were involved in the manufacture of English earthenware called Queensware.[225] These Englishmen told de Montigny that they were working under the direction of John Holker (fils), the Inspector General of Manufactures. They were asking for financial aid to offset a variety of expenses that they as a

company had incurred.[227] Thereafter followed an involved correspondence between Clark and Shaw, Holker and Trudaine de Montigny.

These documents reveal what the English managers wanted from the Government. The Government, in turn, granted or denied certain requests from Clark and Shaw. Holker, who was masterminding everything behind the scenes, argued their case with de Montigny.[228]

Holker made sure that the Government, in the person of the Controller of Finance, understood his involvement in the establishment of the new pottery company. Clark and Shaw had followed the correct protocol in applying to the King's Council for a decree. This would legitimise their factory and their contractual agreements with local French workers who were engaged for nine years. They also undertook to train French apprentices for seven years. Their sole rights over this French personnel were backed by the State to prevent French employers in the pottery business from poaching workers that the English managers had taken time and money to train.[229] The English company had already incurred substantial costs in setting up the manufacture of Queensware. As yet, the amount of pottery produced was negligible although the colour was very good and of a whiteness that promised a quality product.[230]

Clark and Shaw had obvious advantages in working in a factory that had already been used in the production of English wares. They were also renting the premises which saved a considerable amount of capital outlay. They were not starting from scratch but the normal process of trial and error that occurs in any

pottery set-up was costly and time-consuming. A major stumbling block for the Englishmen was that the firing was done with wood and they were accustomed to using coal.[231] In addition, the difference in raw materials had to be taken into account as well as the aptitude and willingness of the local workforce to learn new methods.

Clark and Shaw were the technical partners of the Montereau company. They handled all aspects of the daily running of the business and sent regular reports on its progress to John Holker.[232] The letters patent were in their names.[233] Holker worked closely with them as an Inspector General of Foreign Manufactures in France. He was their mentor, supervisor and translator. He also had a personal vested interest in the success of the Queensware factory. He was a partner with his father and two other foreign businessmen from Rouen.[234] He had provided half of the initial capital outlay which had been spent on bringing the skilled English workmen and foremen from England.

Seventeen English nationals, including wives and children had travelled to France.[235] As was the practice of the day in the Potteries, entire families often worked as a production unit. These women and children may have been workers. Holker and his partners wanted reimbursement from the Government.[236] This was standard procedure. The employers paid travel and enticement expenses initially and the Government repaid them after the foreign workers were in France.[237]

Holker made it clear to de Montigny that he was behind the requests in the petitions that Clark and Shaw had sent on various occasions to him. He had drafted the articles that they had presented.[238] Holker wrote persuasively and at length on the merits of the Montereau establishment. He hoped to convince Trudaine de Montigny of the importance of this new manufactory in the development of the French pottery industry. He was successful.

2.9 Conclusion.

In the late 1760s and 1770s France was targeted by English pottery manufacturers as an outlet for surplus production after markets elsewhere in the world had experienced a decline. This involved many potters besides Wedgwood. It was his term 'Queensware' that was accepted as one of the generic terms for English ware in France at this time. Queensware would embrace both the select and the mundane aspects of pottery production and usage. In its penetration of French markets, the everyday aspects predominated to win the French consumer as it had the ordinary citizen in England.

A preference for English wares was already in place and would remain so for decades to come. The French consumer's liking for everything English was not just a matter of aesthetic taste, if that ever came into the equation. English goods were of a better quality, were harder wearing and were cheaper. The added bonus was that they were available all over France much to the general dismay of French potters. They complained to the Government in reports that criticised the state of the French pottery industry.

Sometimes they even accused the French Government of condoning the English infiltration to the detriment of the indigenous French producer. The Government felt compelled to address the problems presented by English competition. Its intention was to set up its own English factories. The Queensware venture at Montereau was a successful undertaking because France had administrators who were interested in the transfer of English technology. Among these were the Holkers and Trudaine de Montigny. Thanks to these high-ranking government officials there was already an espionage network in place in England. Technology transfer was about to take place to create a new type of French pottery.

What conclusions can be drawn from this chapter? The Industrial Revolution had brought many changes to England. These benefits in agriculture, transport and trade had encouraged the increase in population and the surge in technological innovation and invention. These are what had made England great. This prosperity spilled over into new markets and new endeavours. The birth of consumerism altered the patterns of general consumption in English markets. Demand and consumption began a complex interrelationship.

The pottery industry had also seen many changes. The quality of the products had moved up a notch, with cleaner, safer wares like creamware retaining its market domination for years to come. Many of these new ideas and techniques would be assimilated and adapted throughout Europe in the following decades, mainly in the nineteenth century. There is nothing new in this exposition. What is germane to this thesis is that aspects of English industrial progress were adopted

and entrenched in France in the eighteenth century. This was achieved by means of a government policy of industrial espionage on the part of the French.

Politicians and administrators in France watched industry in England with vigilance and patience. Industrial spies, agents in French pay and even the French Ambassador in London reported back to Paris or Versailles on the minutiae of English parliamentary debate on commercial matters. The French were waiting for any opportunity to exploit an English slump or aberration in trade. Sometimes, when general contemporary views of the English situation seemed to be quite sanguine, the French Government knew from its inside sources in England or in America that business was not quite as healthy as was thought. Accordingly, these windows of opportunity were exploited. New markets were also sought and developed in areas where the English had previously held sway, such as in America. The success of these was temporary.

There have also been insights into how the French organised their clandestine networks in England and paid their operatives on a commission basis depending on results. The contracts drawn up with the English workers were made in England before they set foot in France and were precise and comprehensive. There were reception centres near the French coast set up for the English workers when they first arrived to familiarise them with French ways. It still comes as a surprise to learn that the freedom of action of the English worker in France could be restricted by 'lettres de cachet'. Probably these were no worse than the acts of Parliament which restrained workers from emigrating in England. Another surprise is that women figured frequently in the hazardous role of

recruiters and industrial spies, only to be arrested on occasion when in England on espionage missions.

Government officials of some rank were sometimes personally involved in active industrial espionage. They undertook missions to England, surveyed the pottery industry in England and even recruited skilled workers for France. They often played a dual role in the development of French industry, with financial and managerial interests in certain factories. As long as they declared their interest there seemed to have been no problem with their Ministers. This was probably an exceptional case of bureaucratic favouritism which permitted the Holkers special licence.

English manufacturers in France were not impressed with the standard of education that they found among their French workers. They were also critical of their manipulative skills as well as their aptitude for learning. The comparisons with their English counterparts were usually unflattering. In fraught factory-floor situations inter-personal skills may have been lacking on both sides and the pressures of time and cost-effectiveness probably were not conducive to maximum cooperation in two languages.

Language problems did play a role. There is documentary evidence in papers relating to an English go-between whose poor spoken French and inability to understand written communications caused delays for French officials. This operative was essential, however, for the supervisory care of the English workers in her care. Linguistic competence was, in this case, of secondary importance. What comes across most strongly is that the English worker was valued in

France, by English and French employers alike, for his intelligent adaptability to the variable demands of any workplace process. He could think on the job to innovate when needed. He also brought with him the unwritten manoeuvres that were integral to industrial processes. It helped at the beginning that these English workers could communicate directly with their English bosses. Later they had to learn French as they moved on to other factories to train French workers and apprentices. English Queensware manufacture, however, had come to France in the 1770s.

Chapter 2 Endnotes.

[1] An exposition of the state of English pottery follows in this chapter.
[2] This was the name given to Wedgwood's perfected creamware. A section on this also follows.
[3] The actual colonial rebellion took place from 1775-1783 but problems had been evident since the1760s in the trading relationship.
[4] Most nations in the eighteenth century remained protectionist. This implied prohibitive tariffs and embargoes on foreign goods.
[5] Trudaine de Montigny came from an artisan background of tanners in Amiens. Later some members of his family worked in Paris as goldsmiths. Jean-Charles-Philibert de Montigny was born on 19 January 1733 and died in 1776. There is an avenue Trudaine named after the family in Paris.
Suzanne Delorme, 'Une famille de grand commis de l'Etat des Sciences, au xviiiè siècle. Les Trudaine', in Revue d'Histoire des Sciences, Vol 3 (1950), pp. 101-109.
[6] François Crouzet, 'The sources of England's wealth: some French views in the eighteenth century', Shipping, Trade and Commerce. Essays in memory of Ralph Davis (Leicester, 1981), p. 61.
[7] Idem.
[8] Ibid., p. 64.
[9] Ibid., p. 69, referring to the marquis de Biencourt.
[10] Ibid., p. 71, quoting from A. N. A M B 7, 499, 1699, 'Observations sur l'inégalité'.
[11] Idem. Referring to A E C P A, 368, 'Remarques sur le commerce d'Angleterre', ca. late 1770s.
[12] Lawrence Stone, Jeanne C. Fawtier Stone, An Open Elite? England 1540-1880 (Oxford, 1984), p. 420.
[13] Ibid., p. 423.
[14] Ibid., p. 403.
[15] Ibid., p. 403.
[16] Ibid., p. 233, quoting S. Foote, The Genuine Memoirs of the Life of Sir John Dinely Goodere, Bart. (London, 1741), p. 6.
[17] Crouzet, 'The sources of England's wealth', p. 64.
[18] Tom Kemp, Economic Forces in French History (London, 1971), p. 65, note 10. Imports stood at 611 million livres in 1787 and exports at 542 livres.
[19] Neil McKendrick, John Brewer, J. H. Plumb, The Birth of a Consumer Society. The Commercialization of Eighteenth-Century England (Bloomington, 1985), passim.
[20] Ibid., p. 13.
[21] Ibid., p. 29.

[22] Crouzet, 'The sources of England's wealth' passim, p. 64.
[23] Ibid., p. 68.
[24] Ibid., p. 69. Quoting A. E. M. D. A., 74, Mémoire sur l'Angleterre, 1784, marquis de Biencourt.
[25] A detailed account of Holker is given later. They were powerful administrative figures in the Government's employ.
[26] The Wedgwood Papers at the Wedgwood Museum provide one of the most comprehensive sources of eighteenth-century material on pottery in this country.
[27] China clay added to earthenware whitened the body. William Cookworthy patented this discovery but sold his patent to Richard Champion in 1774. In 1775 Champion tried to have the patent extended for a further 14 years. Josiah Wedgwood and other manufacturing colleagues, among them Turner of Lane End, lobbied against this extension in Parliament. The result was that the patent was greatly restricted. Champion joined a company of eight potters who had bought the Cookworthy patent from him.
[28] John Thomas, The Rise of the Staffordshire Potteries (Bath, 1971), p 32.
[29] The Wedgwood Museum, The Transcripts of the Letters of Josiah Wedgwood 1, 20 February 1786, Greek St., E 18973-26, to the Revd. Mr. Arch Deacon Clive (draft). 'I have seen Mr. Eden twice & am to dine with him on Wednesday when he will ask Ld. Sheffield'. Quoted by courtesy of the Trustees of the Wedgwood Museum, Barlaston, Stoke-on-Trent, Staffordshire, England.
[30] Wedgwood presented Queen Charlotte with a creamware service which pleased her. Shortly afterwards, by royal appointment, Wedgwood became Potter to Her Majesty the Queen and his creamware became known generally as Queensware.
[31] 'faïence fine façon anglaise'.
[32] Pierre Boissonnade, 'L'Amélioration des Manufactures sous l' Administration des Trudaine', Revue d'Histoire Economique et Sociale, (1914), p. 56.
[33] Charles-Daniel Trudaine, 1703-1769.
[34] Bibliothèque Mazarine, Ms. 1,37, mémoires by Morellet.
[35] Anne Robert Jacques Turgot was Controller of Finance in 1774. He shared the views of the physiocrats. Vincent de Gournay was a key figure among the physiocrats who advocated free trade.
[36] Machault was Controller General before Turgot and Trudaine.
[37] Vincent de Gournay was the founder of the 'laissez faire' movement of free trade. He was the first physiocrat to be appointed Intendant of Trade under the aegis of Machault and Trudaine.
[38] Boissonnade, ' L'Amélioration', (1914) p. 57
[39] Archives Nationales, F 12 1497.
[40] Moreau de Séchelles, Controller General of Finance appointed the elder John Holker to this post with a remuneration of 8000 livres. Twenty five livres was the equivalent of a pound in 1787. Rabasse and Hurard (fils) of the Normandy Chamber of Commerce commented that the price of Manchester cotton 'has at

present not surpassed eight shillings or ten livres the yard', 1787. Holker was to retain this post till 1786 although he did share it with his son from January 1774.
[41] André Rémond, John Holker: Manufacturier et Grand Fonctionnaire en France au xviiième siècle (1946). The title of one of his chapters is 'Agent desTrudaine'.
[42] Boissonnade, 'L'Amélioration', p. 59.
[43] Idem.
[44] Idem.
[45] Rémond, John Holker, pp. 83-103.
[46] Franc Bacquié, 'Les Inspecteurs des Manufactures sous l'Ancien Régime,1669-1792', Mémoires et Documents pour servir à l'Histoire du Commerce et l'Industrie en France (1927), Onzième Série.
[47] In 1700 these were English pottery products. Coarse redware was for the kitchens and cottages. Rodney Hampson in correspondence with the author, 20 January 2001.
[48] Idem. Tin-glazed ware was produced in great quantity in England: in London, Bristol and Liverpool though not in Staffordshire. It was white or pale blue and superficially like Chinese porcelain but broke easily.
[49] Idem. White salt-glazed ware was a better product than tin-glaze.
[50] G. Bernard Hughes, English and Scottish Earthenware 1660-1860 (London, n.d.), p. 104.
[51] Ibid., p. 105.
[52] Idem. Thomas Frye was granted a patent (No. 64) on 11 November 1749. Booth must have been a licensee till 1763 when Frye's patent expired.
A liquid glaze also necessitated two firings of the earthenware. Plastic clay was initially fired to a porous biscuit state. It was then dipped into liquid lead glaze composed of calcined flint, clay and water. The glazed biscuit was given a second firing which converted the biscuit into earthenware and fixed the glaze to the surface.
[53] Geoffrey A. Godden, British Pottery and Porcelain 1780-1850 (London,1963) p. 140.
[54] Hampson, Correspondence with the author, January 2001.
[55] Hughes, Earthenware, pp. 105-106.
[56] Donald Towner, Creamware (London,1968), p. 21.
[57] Hughes, Earthenware, p.108.
[58] John Penderill Church, William Cookworthy, 1705-1780 (Truro,1972), pp. 7, 70-73.
The New Hall Company of Shelton involved eight potters: John Turner of Lane End, Jacob Warburton, Charles Bagnall, Samuel Hollins, Anthony Keeling, William Clowes, Joshua Heath and John Daniel. These men represented prestigious potting families. Some of these family names will turn up later in France.
[59] Towner, Creamware, p. 21.
[60] Donald Towner, The Leeds Pottery (London,1963), pp. 3, 33.

The Leeds Pottery was first established in 1760 by Humble, Green and Co., later Hartley, Green and Co. A William Warburton was involved in this venture.
[61] When china clay was added to earthenware it whitened the body. William Cookworthy had patented this discovery but sold his patent to Richard Champion in 1774. In 1775 Champion tried to have the patent extended for a further 14 years.
[62] Felix Singer, Industrial Ceramics (London,1963), pp. 103-105. Kaolin is present in Cornish stone.
[63] Towner, The Leeds Pottery, p. 33.
[64] Idem.
[65] Ibid., p. 34.
[66] Towner, Creamware, p. 19. Also Arnold Mountford, The Illustrated Guide to Staffordshire Salt-glazed (London,1971), p.11.
[67] Towner, Creamware, p. 13.
[68] Neil McKendrick, 'Josiah Wedgwood and Factory Discipline', The Historical Journal, iv,1, (1961), pp. 30-55, 33.
[69] John Ward, The Borough of Stoke-Upon-Trent, (London,1843), pp. 41-51. Also John Thomas, The Rise of the Staffordshire Potteries (Bath,1971), pp. 16-34. Further information is to be found in S. B. Clough, Economic History of Europe (Boston,1952), pp. 393-398 and Lorna Weatherill, Pottery Trade and North Staffordshire, 1660-1760 (Manchester,1971), Preface,1, xiii-xviii, pp. 1-9.
[70] Josiah Tucker, A Brief Essay on the Advantages and Disadvantages which respectively attend France and Great Britain with regards to Trade (London,1753), Articles vii, viii, xi.
Tucker was translated by Turgot in 1755 after some considerable correspondence.
Eugene Daire, Oeuvres de Turgot: Les Notes de Dupont de Nemours (Paris,1844), pp. 322-351.
[71] Malachy Postlethwayt, Britain's Commercial Interest Explained and Improved in a Series of Dissertations on Several important Branches of Her Trade and Police (London,1757), 2 vols., vol.1, Dissertations xi, xii, xiv, xvii, xix.
Postlethwayt was the author of the Universal Dictionary of Trade and Commerce.
[72] Adam Smith, Wealth of Nations (London,1776), vol. 1, Book 1, chapters i, vi, viii; vol. 2, Book iv, chapter iv. There were French editions in 1778-9 and 1788.
From 1763-65 Smith was in Toulouse and Paris as the tutor to the young Duke of Buccleuch. In Paris he met many of the prominent thinkers and writers of the day. Among these were the 'economists' or physiocrats including Quesnay, Mirabeau and Turgot.
Edwin Seligman, Introduction to Wealth of Nations (London,1960), Everyman edition, p. vi, x, xi.
[73] Francois Quesnay, 1694-1774, was the founder of the school of the Economists that later became known as the physiocrats. He was physician to Louis XV.
Henry Higgs, The Physiocrats (London,1897), Chapter 11, pp. 26-47.

[74] Eugène Daire, Oeuvres de Turgot: Les Notes de Dupont de Nemours (Paris, 1844), 'Eloge de Gournay', pp. 256-291.
[75] Thomas, The Rise of the Staffordshire Potteries, p. 12.
Arnold Mountford quotes a document of 1762 which puts the numbers closer to 7000 potters. Mountford, The Illustrated Guide , p. 11.
[76] Thomas, The Rise of the Staffordshire Potteries, p. 34.
At a later date Josiah Wedgwood said that there were more than 100 master potters in Staffordshire.
House of Lords Sessional Papers,1781-82 to 1786 (New York,1975), F. William Torrington (ed.), The Sixteenth Resolution, p. 154.
[77] Thomas, The Rise of the Staffordshire Potteries, p. 32.
[78] Ibid., p. 16.
[79] Torrington, House of Lords, pp. 147-148.
[80] J. A. C. Chaptal, De l'Industrie Françoise , (Paris,1819), 2, p. 430.
[81] Wedgwood, Transcripts, September 1767, E 18167-25 and 9 April 1772, L 18367-25.
[82] Arthur Young, Six months Tour through the North of England (London,1769), p. 84.
[83] McKendrick, The Birth of a Consumer Society, p. 135.
[84] Ibid., p. 144.
[85] Wedgwood, Transcripts, 2 March 1765, E 18067-25.
[86] Ibid., 9 April 1772, E 18367-25.
[87] Tucker, A brief Essay , Article viii.
[88] Henri Sée, 'Commerce between France and the United States, 1783-1784', The American Historical Review, XXX1, (1925), pp. 337, 732-752.
[89] Idem.
[90] Stephen Conway, The War of American Independence 1775-1783 (London, 1995), pp. 237, 238, 240. Also Jeremy Black, War for America. The Fight for Independence 1775-1783 (Bath, 1991), p. 243.
[91] A.N. F 12 657 f 91, 26 January 1776, mémoire by Monseigneur Trudaine de Montigny.
[92] François Crouzet, 'The sources of English wealth, pp. 65, 66, 75 footnote 42.
[93] Ibid., p. 66.
[94] Wedgwood, Transcripts, January 1768, L 17659-96 109 (a).
[95] Conway, The War of American Independence, p. 222. The name of the company was Rodrigue Hortalez et cie.
[96] Black, War for America, p. 146. The Treaty of amity and commerce with the United States was signed on 6 February 1778. On 16 June 1778 France was at war with England.
[97] Conway, The War of American Independence, p. 222.
[98] Ibid., p. 59.
[99] Idem.
[100] Idem.
[101] Black, War for America, p. 6.

[102] Ibid., pp. 238-240.
[103] Ibid., p. 241.
[104] Conway, The War of American Independence, p. 237.
[105] Ibid., p. 237.
[106] Ibid., p. 238.
[107] Ibid., p. 63.
[108] Black, War for America, p. 243.
[109] Idem.
[110] Conway, The War of American Independence, p. 238.
[111] Yale University, Beinecke Rare Book and Manuscript Library, Holker papers.
[112] Neil McKendrick, 'Josiah Wedgwood: An Eighteenth Century Entrepreneur in Salesmanship and Marketing Techniques', Economic History Review, vol.12, No.3 (April, 1960), p. 432.
[113] McKendrick, The Birth of a Consumer Society, pp. 32, 33.
[114] Ibid., p. 33.
[115] McKendrick, 'Josiah Wedgwood', passim.
[116] Rodney Hampson, ' Longton Potters 1700-1865' in Journal of Ceramic History, vol. 14 (1990), I-vi, 1-236. Also Bevis Hillier, Master Potters of the Industrial Revolution: The Turners of Lane End (London, 1965), pp. 47-53.
[117] Maddy Ariès, Donation Millet, (Paris, 1979), p. 7.
[118] A.N. F 12 1497 , 1315. Also Pierre Bonnassieux, Le Conseil de Commerce et le Bureau du Commerce, 1700-1791, Inventaire analytique des procès verbaux (Paris, 1900), passim.
[119] There were bans placed on English pottery as follows: 16 August 1740, 14 March 1770, 2 April 1770. The edicts stated that they had been drafted to counteract the daily smuggling of vast quantities of English goods into France. These manufactured goods were brought in illegally along the coast of Normandy and across other equally indefensible borders.
[120] A. N. F 12 1497.
[121] A. N. F 12 1559, 'mémoire' on the phenomenon of the obsession that the French had with everything that was English. French factories had much less work than they would have liked because the French consumer generally wanted to buy English products. Also Maddy Ariès, 'La Manufacture de Creil', Cahiers de la Céramique, du Verre et des Arts du Feu, No.45 (Paris, 1969), p. 46.
[122] Henri Sée, Histoire économique de la France (Paris,1927.), vol. 1, pp.333-334.
[123] A.N. F12 1497, Bosc D'Antic, mémoire de La Faïencerie, 1780. This potter is highly critical of French pottery and its quality.
[124] Henri-Pierre Fourest, L'Oeuvre des Faïenciers du xvie à la fin du xviiie siècle, (Paris, 1968), passim.
[125] Régine de Plinval de Guillebon, Paris Porcelain 1770-1850 (London, 1972), p.13, passim.
[126] Musée de Rouen.

[127] Henri-Pierre Fourest, 'Faïences de Saint Porchaire', Cahiers de la Céramique, du Verre et des Arts du Feu, No.45 (1969), pp.12-15.
[128] Maddy Ariès, La Manufacture de Creil (Paris, 1974), p. 7.
[129] Henry-Pierre Fourest, 'La Faïence Fine Française des Origines à 1820', in Cahiers de la Céramique, du Verre et des Arts du Feu, No. 44, 1969, introduction, unpaginated.
[130] Arthur Young, Travels in France 1787, 1788, 1789, Maxwell, C. (ed.) (Cambridge, 1929), n. p. Young toured France between 1787 and 1789 and saw creamware everywhere.
[131] Faujas de Saint-Fond, Voyage en Angleterre, en Ecosse et aux Iles Hébrides, (Paris, 1784), 1, p. 112.
[132] Idem.
[133] Wedgwood, in a letter to Bentley dated March 16 1768, makes a reference to an order for Paris. Lynn Miller, the Wedgwood Museum Information Officer, kindly pointed this out.
[134] In a letter to Bentley on 13 September 1769, E 18252-25. Wedgwood says: 'And do you really think that we may make a complete conquest of France? Conquer France in Burslem? My blood moves quicker...' The underlining is Wedgwood's.
[135] Léon Cahen, 'Une Nouvelle Interprétation du Traité Franco-Anglais de 1786-1787' in Revue Historique , CLXXXV (1939), p. 278. He is saying that smuggling was not a new problem before 1786.
[136] Terry Lockett, 'Wedgwood and the Politicians' in Proceedings of the Wedgwood Society , Vol. vi, 1969, p. 109.
[137] Cahen, 'Une Nouvelle Interprétation', p. 278.
[138] Report from the Select Committee on Artizans and Machinery, 1824.
[139] Henri-Pierre Fourest, 'La Faïence fine Française des origines à 1820' in Cahiers de la Céramique, du Verre et des Arts du Feu, No. 44, (1969), Introduction.
[140] Pierre Clément, Histoire du Système Protecteur en France, Colbert à 1848 (Paris, 1854), pp. 262-295.
[141] Edmund Whittaker, A History of Economic Ideas (London, 1940), pp. 289-293.
[142] Crouzet, 'The Sources of England's wealth', pp. 64, 65.
[143] A.N. F 12 657 f 91, Monseigneur Trudaine (de Montigny), 26 January 1776. De Montigny uses this as an argument for enticing English workmen to France. Skilled craftsmen were more than likely the descendants of Frenchmen was how he expressed it.
[144] English goods continued to enter French markets and this was especially true of pottery.
T.A. Lockett and P.A. Halfpenny (eds), Creamware and Pearlware (Stoke-on-Trent,1986), p. 14.
[145] Gabriel Jars, Voyages Métallurgiques, (Paris, 1769), Chapter 12 is on the potteries of England, pp.358-384. Jars toured England in 1764-1765, studying the metal and pottery industries with particular interest in the kiln technology.

Jars' efforts were collated posthumously in the volume Voyages Métallurgiqes. His editor, Duhamel Du Monceau inserted the section on pottery into his own article on the same subject for Diderot's Encyclopédie, Description ou Dictionnaire Raisonné des Sciences, des Arts et des Métiers, Folio B, Duhamel Du Monceau, ' L'Art du Potier deTerre', grand in folio, 1773.
Jars gave a detailed account of the technique of white salt-glaze stoneware manufacture near Newcastle. See Francis Celoria, 'Technique of white salt-glaze stoneware in North Staffordshire around 1765' in Science and Archaeology, No. 18, (1976). Also my translation.
[146]A. N. F 12 647 f 91, Monseigneur Trudaine (de Montigny), 26 January 1776. This document outlines such a policy in detail.
[147] Jacques Savary, Le Parfait Négociant (Paris, 1696), Paris, Tome 11, xlv, pp. 30-38. The first edition had been in 1675.
[148] Bonnassieux, Le Conseil de Commerce, 20 November 1748, F12 95 (773). Serrurier and Mignon were proprietors of a pottery making English pottery in the St. Antoine district of Paris. This was the Pont aux Choux concern. They had obtained a monopoly for ten years.
[149] C. Ballot, L'Introducton du Machinisme dans L'Industrie Française (Lille-Paris, 1923), passim.
[150] Rémond, John Holker, passim.
[151] A.N. F 12 657 f 91, Trudaine de Montigny, mémoire.
[152] Torrington, House of Lords, 16 June 1785, The 14th Resolution, p. 147.
[153] This was in the time of Colbert and Savary. Savary, Le Parfait Négociant, 1775pp.30-38. Also Colbert to Bellinzani, 31 October 1670, in Clément, Histoire du Système, p.275.
[154] Conway, The War of American Independence, p. 59.
[155] Ibid., p. 96.
[156] Ibid., p. 59.
[157] A.N. F 12 657 f 91, Trudaine de Montigny.
[158] A.N. F 12 1497, correspondence referring to applications by potters to build kilns. Also A.N. F 12 1315. Permission was often refused on the grounds that there was insufficient wood in a specific area. This was in 1767.
[159] The first important 'ordonnance' referring to forests was registered on 13 August 1669. Colbert had wanted a measure like this for some time to conserve French national resources. G. Geneau, 'La Législation forestière sous l'ancien régime. L'Ordonnance de 1669' in Revue des Eaux et Forêts, LXXX, (1942), p. 162.
[160] Paul Walden Bamford, Forests and French Sea Power, 1660-1789 (Toronto, 1956), passim, pp.4-22.
[161] Jean Hellot was a trusted member of the French advisory staff to the Government. He coordinated Jars' industrial visits, including the one to England. John R. Harris, Industrial Espionage and Technology Transfer. Britain and France in the Eighteenth Century (Aldershot, 1998), pp. 37, 38, 116, 570.
[162] Idem.

[163] Ibid., p. 227.
[164] A. N. F 14 1311, 1764-5, Gabriel Jars.
[165] Gabriel Jars, Voyages Métallurgiques, 1 (Lyon, 1774), 2 (Paris, 1780), 3 (Paris, 1781).
[166] Ibid., 3, Douzième Mémoire, Section Première, 2, Fabrique de Poterie au comté de Stafford, pp. 364-368.
[167] Ibid., 3.
[168] A.N. F 12 1497. Among these inspectors were the baron de Dietrich and Marchant de la Houlière.
[169] Beinecke Rare Book and Manuscript Library, Holker Papers. These attest to the presence of the former Inspector General of French Manufactures working diligently for French trade in America. At first he posed as a businessman but was actually a diplomatic secret agent. Later he was appointed consul to represent France.
Also A.C. Bining and T.C. Cochran, The Rise of American Economic Life (New York, 1964), p.138. The commerce with France grew and a commercial treaty was signed in 1778. From January 1777 to March 1778, 95 vessels went to America from the port of Bordeaux. Soon trading began with other French ports. The French set up commercial houses in America. Like the Americans the French employed privateers to prey on English shipping. Fortunes were made through such activities.
[170] Stephen Conway, The War of American Independence 1775-1783 (London, 1995), p. 237.
[171] Postlethwayt, Britain's Commercial Interest, vol. 1, p. 281-283.
[172] Bining and Cochran, The Rise of American Economic Life , pp.139-140. The French did not hold the Americans' loyalty. The Americans preferred English goods, business methods and long term credit. England was soon trading once more with its former colonies and the French were abandoned. The Holker Papers also reflect this.
[173] A.N. F 12 657 f 91, de Montigny, 26 January 1776, 'mémoire'.
[174] Idem.
[175] Bibliothèque Mazarine, Ms. 2. 840, John Holker, Report on how to multiply and improve factories in France, 1752.
[176] A.N. F 12 657 f 91, 1776, Trudaine de Montigny, 'mémoire'.
[177] F 12 95, p.773, in Bonnassieux, Le Conseil de Commerce, 20 November 1748.
The proprietors of the Pont aux Choux factory in Paris had an exclusive privilege or monopoly to manufacture English pottery. This monopoly was renewed on 20 November 1748 for another ten years.
Also A.N. F 12 172 in Rémond, John Holker, p.106. From 1755-60 in Rouen a factory had manufactured English pottery. The Holkers had been involved in this concern as private individuals. Two English workers, Hoot and Brunt, joined the venture in 1757. The factory managers were French.
[178] F 12 95, p. 773 in Bonnassieux, Le Conseil de Commerce, 15 May 1748.

[179] F 12 96, p 533 in Bonnassieux, Le Conseil de Commerce, 22 January 1749.
[180] Ariès, Donation Millet, p.11. She claims that 12 000 pieces of pottery were seized.
[181] F 12 96, p. 533, Bonnassieux, Le Conseil de Commerce, 3 September 1749.
[182] Idem.
[183] A.N. F 12 1497, 5 December 1774, correspondence from Holker (fils) to Trudaine de Montigny.
[184] A.N. F 12 1315, 1756-1767. In August 1757 details of such a trip were outlined. The wife of a manufacturer went to England but was arrested there, under the ruling of the Statute 5th. Geo. Ch. 27 which applied to the enticement of English workers. On a previous occasion this woman had been more successful and had brought four workmen back to France.
[185] A.N. F 12 1315, 1756-67.
[186] Ibid., 1767. Alcock had set up a pottery factory in Villefoy, manufacturing English wares. He had problems obtaining clay. Wood was also in short supply. To ease his costs he applied unsuccessfully to the Department of Trade for a special dispensation on all freight duties and road tolls.
[187] A. N. F 12 1315, 1762, correspondence from Alcock to the duc de Praslin. Alcock was arranging a spying mission in England. He wished to send one of his trusted workers, a man called Hide, to recruit more skilled workers that he needed urgently. He applied for a special passport which would enable Hide to leave but also re-enter the country later. Hide's contact in London was the French Ambassador, the comte de Guerchy. A special passport was needed as England and France were at war. This made travel complicated.
[188] Ibid, 1756, Alcock to de Montigny. Alcock requested a passport for his wife and for the four English workmen that she hoped to bring back with her. Also in 1756, Alcock wrote to Argenson, the Controller of Finance about an English woman called Willoughby. She had acted as an intermediary for Alcock on different occasions and had brought several groups of workers to France. On this occasion Alcock requested reimbursement for the travel expenses of just such a group. This pattern of English recruitment continued throughout the period 1756-1767.
[189] De Guillebon, Paris Porcelain, Introduction, n.p.
Also A.N. F 12 1315, 25 August 1757.
There was an official Government report written on this incident.
[190] A.N. F 12 1315, 1758.
[191] Ibid., 18 January 1760, Alcock to Trudaine. This letter was in English. A letter accompanied by a pair of candlesticks was sent at the same time to Trudaine de Montigny. On the 25 January 1760 Alcock wrote again to Trudaine outlining his troubles and problems at work. On the 4 April 1762 Alcock discussed, again in English, the exclusive privilege that his factory should soon enjoy. A particular problem arose from the behaviour of a former partner, Fresnais, who had set up a rival establishment in the vicinity. This man was poaching Alcock's best workers. Trudaine was asked to intercede.

[192] Ibid., May 1760, Holker to Trudaine.
[193] Josiah Wedgwood, An Address to the Workmen in the Pottery on the subject of Entering the Service of Foreign Manufacturers (Newcastle, Staffs.,1783), p. 13.
[194] A. N. F 12 1315, 1757, Willoughby.
[195] Idem.
[196] Idem.
[197] Idem.
[198] A.N. F 12 657 f 91, de Montigny, 'mémoire'.
[199] A.N. F 12 1315, 1757, Alcock to the Minister of the Interior, de Moras. The Seven Years' War was being waged, 1756-63.
[200] Mazarine, Ms. 2. 840, 1752, John Holker, report.
[201] A.N. F 12 1315 from 1757 onwards. Alcock wrote to the Minister of the Interior who conferred with Trudaine.
[202] Ibid., 11 May 1760.
[203] Idem.
[204] Ibid., 1762, Holker to Argenson, the Controller General of Finance. Holker is passing on the Englishman's comments.
[205] Ibid., 11 May 1760, La Charité, letter in English, Michael Alcock to Trudaine.
[206] D. Deyon and P. Guignet, 'The Royal Manufactures and Economic and Technological Progress in France before the Industrial Revolution', in Journal of European Economic History, 9 (1980), passim.
[207] Ibid. Also A.N. F 12 1497, May 1774, Holker to de Montigny.
[208] Ibid. Also Mazarine, Ms. 2. 840, Holker, 'mémoire'.
[209] A.N. F 12 1315, with reference to Alcock and A. N. F 12 1497, with reference to Clark and Shaw at Montereau.
[210] A.N. F 12 1315, 1757, Alcock to de Moras
[211] Ibid., April 1762, Alcock to Trudaine.
[212] Jacques Louis Ménétra , Journal of my Life, with an introduction and commentary by D. Roche (New York, 1982), passim. Also Michael Sonenscher, Work and Wages. Natural Law, Politics and the eighteenth-century French Trades (Cambridge, 1989), passim.
[213] Idem.
[214] Ibid., 11 May 1760 Alcock in the factory at La Charité was trying to meet the requirements of the State together with those of his partners and the overseers in the factory. Dumonceau was among the people he needed to placate.
[215] Harris, Industrial Espionage, 226-228.
[216] Ariès, Donation Millet, p. 11, and A.N. F 12 1497, 1774, Clark and Shaw to Trudaine. This is Trudaine de Montigny. His father died in 1769.
[217] A.N. F 12 657 f 91, de Montigny, 'mémoire'.
[218] Wedgwood, Transcripts, 19 January 1768, L17659-96 109(a). He is thinking of 'cuting (sic) open another channel somewhere for vending the cream colour'.
[219] Ibid ., 13 September 1769, E 18252-25.
[220] A.N. F 12 1497, 5 September 1774, Holker to Trudaine de Montigny. Holker was a partner and shareholder in the Montereau company.

[221] Rémond, John Holker, p. 53.
[222] Idem.
[223] Idem.
[224] Ibid., p. 96.
[225] Ibid., p. 10. Also A.N. F 12 1364, 1762.
[226] A. N. F 12 1497, September, 1774.
[227] Idem.
[228] Ibid., January 1775, Holker to Trudaine de Montigny.
[229] Idem.
[230] Idem.
[231] Idem.
[232] Idem.
[233] Ibid. 15 May 1775, arrêt du Conseil du Roy.
[234] Ibid., January 1775, Holker to Trudaine.
[235] Idem.
[236] Idem.
[237] An. N. F 12 1315A, 3 January 1758, Alcock to Trudaine, Intendant des Finances, requesting reimbursement for the Greens and the Tinsleys who had come from England.
[238] A. N. F 12 1497, January 1775, Holker to Trudaine.

Chapter 3

The Transfer of English Pottery Technology during the Ancien Régime.

3.1 Introduction.

The theme of this chapter is how English pottery technology was transferred to France in the Ancien Régime. In the 1770s and 1780s English pottery was manufactured in France. English factories and English workmen concentrated on the manufacture of Queensware.[1] 'Arrêts' from the Conseil du Bureau de Commerce, 'privilèges exclusifs' from the Conseil du Roy and 'gratifications' from the Contrôleur général des Finances gave the English factories the necessary support and backing from the French Government. Sometimes these factories were granted the extra accolade of prestige, the title of Manufacture Royale.[2] This was a rare occurrence and happened only where the manufacturing establishment was involved in using an unproven or foreign technology to produce goods that were 'new or unique' to France.[3]

The transfer of foreign technology remained a driving force behind much of the French Government's industrial policy at this time. 'Anglomanie' persisted in French consumer markets despite the continued bans on the import of English manufactured goods.[4] The prevalence and sale of English smuggled goods reinforced the dominance of the French 'taste for everything English'.[5]

There was a history of smuggled English goods that were openly for sale in most French ports or large towns.[6] Confiscations and fines were frequent and there

were even government departments created to handle the English goods which had been seized by the police.[7] At the same time, the French public persisted in buying English products to such an extent that the French Government had to renew bans on all English goods coming into France. French industry needed the chance to compete on equal grounds. By meeting the French consumer's demands, the authorities hoped to reduce English imports, legal or otherwise.

The manufacture of imitation English pottery was nothing new. It had been replicated for decades in at least one Paris factory, the Pont aux Choux concern[8] and in the Montereau factory under Le Mazois.[9] The Holkers had even tried to make English wares in one of their less successful projects in Rouen.[10] English pottery was all the rage. The scene was set for the manufacture of the English best seller, Queensware, in the French factory at Montereau, run this time by English craftsmen.[11]

3.2 **The Montereau factory: Clark and Shaw.**

John Holker (fils) had wasted no time in bringing in his English operatives as soon as the premises at Montereau were available for lease after 31 March 1774. Holker told Trudaine that he had leased the property in readiness for the arrival of the main English workers.[12] The premises were rented by Le Mazois' widow to William Clark, Thomas Clark and George Shaw.[13] Some historians slant the emphasis slightly differently and indicate that a company comprising Irish merchants from Rouen together with the Inspector General of Manufactures in France, Jean Holker (fils), leased the Montereau factory. This was in conjunction with William Clark and his son, Thomas, 'natifs d'Angleterre' and 'Georges Shaw,

faïencier'.[14] They manufactured 'la fameuse queen's Ware', the 'notorious Queensware'.[15]

Whatever the interpretation of these facts, the English potters with their families arrived and set to work immediately. English pottery units were frequently made up of family members. Skills were handed down from generation to generation and became bred in the bone. Even the children contributed some form of labour. Wives may also have helped in the organisation and management of any commercial venture as well as being skilled operatives or decorators in their own right. The Englishmen had brought two specialist workers with them and were awaiting the arrival of one more from England.

They made thorough tests on the local clay which was renowned throughout France for its high quality and whiteness when fired.[16] Montereau clay was used by the Pont aux Choux factory[17] and was exported to the Douai establishment in Flanders[18], a 'province réputée étrangère'[19] but still within French jurisdiction. The Clarks and Shaw researched the quality and availability of local raw materials and, according to Holker (fils), pronounced themselves satisfied. The workshops and kilns which Le Mazois had set up were also adequate although the Englishmen needed to run tests and make experimental firings.

Firing the Queensware was an issue for them as the fuel source was wood and they were accustomed in England to firing with coal.[20] This had been the case in England since the early 1600s when a statute in the reign of James 1 had restricted the use of wood for industrial purposes.[21] Coal was plentiful throughout England and was exploited at the same pace as new industries appeared. The Potteries in Staffordshire had developed adjacent to extensive coal seams and

never had any problem procuring adequate supplies of fuel. This had helped keep English pottery production costs low long before the division of labour and transfer printing had speeded production up and thereby made each production unit more cost effective. Most manufacturers in the Potteries, whether large or small, used coal. Wood-fired technology was also in evidence but instances were mainly in the porcelain industry. There were also instances in London.[22]

For the English potters in France the complexities involved in adjusting their firing techniques to wood were considerable. The basic task of stacking and unloading biscuit or glost wares in an oven was skilled work. The technique of firing involved experience and immediacy of response to prevailing situations. The responsibility of the workers in charge of these procedures was not inconsequential. With wood they had to learn a new set of variables. The technicalities of wood-fired kiln technology made life for the English potter in France all the more problematic.

Despite their best efforts, the Montereau company had manufactured only 1100 crowns worth of merchandise in the first few months of production.[23] In one of the earliest documents from Clark and Shaw they asked for a government grant to help them with the daily expenditure incurred. They also mentioned problems with the firing cycles but hoped to make much progress in this direction.[24] The overall mood was one of optimism for the future provided that the French Government gave the company its backing and protection.

This same tone remained throughout the correspondence with various government departments. John Holker (fils) wrote in French for the Englishmen and formulated the presentation of the draft documents and the main requests which

the Montereau company wished to make to the Controller of Finance, the King's Council and the Department of Trade.

There is no mention in the industrial files that the English workers had made any kind of financial investment in the Montereau company. Their contribution was in technical expertise and managerial skills. The money came from two sources, from a family named Garvey and from the Holkers themselves. The Garvey brothers were businessmen and financiers who had a longstanding relationship with the Holker family in Rouen and in one of its suburbs, Saint Sever.[25] Certain cities in France 'contained a suburb or liberty which had its own privileges and rights'.[26] This meant that the French guild system did not have any jurisdiction in these areas. Consequently, these 'lieux privilégiés' were useful places to set up new industrial ventures.[27]

The Garvey family was Irish and had been in France for at least 60 years. The two brothers had been close family friends of the Holkers for decades. The Irish shareholders provided part of the ready cash and financial backing. Holker contributed his extensive expertise as a factory inspector and successful independent entrepreneur. He also furnished part of the financial outlay of 32 000 livres tournois.[28] This business venture was made jointly with his father who maintained a low professional profile.[29] This was undoubtedly a project which should be seen to be dominated by John Holker (fils).

In a letter to Trudaine in early 1775 the latter stressed his deep involvement with the English pottery workers.[30] Holker (fils) had just been appointed Inspector General of English Manufactures in France. He had been appointed to this post after years of industrial espionage and recruitment missions in England.[31] The

planning for the Montereau Queensware project was a culmination of that aspect of his career. Young Holker was destined for a more international role.[32]

For the Montereau factory to be successful, government approval had to be sought and granted. This authorised the entrepreneurs 'to set up an establishment for the manufacture of English pottery at Montereau'. Indeed, the manufactory had already been in business before it applied for its licence. This was common practice. There followed several submissions by the Englishmen during 1774 and 1775 with innumerable variations in the terminology used to define the Queensware pottery.[33] The importance of the product, however, was never in any doubt. They explained how they intended to maintain quality of production. They also outlined what they hoped to achieve in the future. This was to manufacture pottery that was superior to that produced in England. They wanted to bring French Queensware to the French consumer because this product combined the dual qualities of 'perfection et durabilité'.

To remain effective by increasing production, they needed to expand their premises. They informed the King's Council that they wished to turn the Montereau business into a large concern.[34] This required them to recruit more French workers and apprentices.[35] This was always a healthy line of argument when dealing with the French Government. The assimilation of English work methods figured prominently on any plan to transfer English technology to France. Clark and Shaw had not been brought at considerable expense to France only to make imitation English pottery. The long-term premise was that they were the first links in a chain of re-training in English methods for French pottery workers. This

would take time but it was what the Government had anticipated. At a later date Frenchmen would train Frenchmen.

The English workers were only a temporary means to a long-term end unless they had enough foresight to safeguard their future. As English manufactories of English pottery became more common in France in the 1780s the harsh realities of transferring technology must have hit English workers with increasing frequency. Josiah Wedgwood pointed out the inevitability of the situation that English workers abroad would soon outlive or more accurately, 'outwork', their usefulness to the French authorities or employers. He had begged the question as to what would happen to them then.[36]

For Clark and Shaw, however, the training of French workers at this juncture was an important aspect of their venture in France. Their contract with their partners had stipulated that they had to train the French workforce in the new skills of Queensware production.[37] It was a costly and time-consuming business trying to make their French workers 'proficient in a new activity'.[38] There does not seem to be any criticism inherent in this statement made about training their workforce. There were, however, negative evaluations of the French worker from other English master-craftsmen in France at about the same period.[39] These were repeated and reinforced at a later date by French government officials who were conducting a review of an English manufacturer in France.[40]

These commissioners composed a report on English methods in France. They maintained that the French workman operated more slowly and was unwilling to make any extra effort to see that a job was done to the best of his ability. Quality was unimportant to him. They claimed that the average French worker was less

skilled than his English counterpart because he was less well trained.[41] Employers or masters in the 1770s were sometimes critical of their workers but this was not in connection with their ability to do the job effectively.[42]

The commissioners explained that the inferior skills of the French worker was the reason why they were conducting such a thorough survey of English methods in an English factory in France. They intended to distil what they had observed into a training package for French industry as a whole. The stereotype of the efficient English worker possessed certain attributes and qualities. These included the ability to carry out tasks swiftly and to produce quality goods. In English workers, their 'natural skills were honed to a high degree of efficiency by practice, training and discipline'. They concluded that they were the 'product of long apprenticeship and severe discipline'.[43]

Holker (fils) and his partners knew that if the pottery was to thrive as a manufacturing concern they had to obtain the backing of the Government. Consequently, Clark and Shaw had to convince the King's Council that they were manufacturing a successful product. In the petition that they had presented to the King and his Council which led to the 'arrêt' of 15 May 1775, they described it as being very white, well-made and not as easily scratched as other French products.[44] A particularly attractive feature of their ware was, they claimed, that it could be produced more cheaply than any other pottery manufactured in France at that time. This required capital and continued investment. They actually wrote 'unlimited expenditure'.[45] They explained that the running costs of the factory were high as they had not yet ironed out all the problems involved in setting up a new branch of technology.[46]

They were also particularly aware of their responsibilities as trainers in the workshop situation. This, they knew, would be an added expense for them as training involved experimentation and slower progress in production.[47] As petitioners, Clark and Shaw explained that they had brought their wives and children with them from England. This change of 'residence' had also incurred considerable expense.[48] The final item in their catalogue of expenditure was the ongoing loss that they faced while they experimented to get their firing procedure right.[49] The King's Council commented on the 'losses that they have already sustained and will continue to sustain until they learn how to control wood firing'. It added that coal was used exclusively for this purpose in England.[50]

These were the facts that Clark and Shaw and Company presented to the Conseil d'Etat du Roy when they asked it to authorize their undertaking. They also petitioned successfully for certain privileges to be granted to them.[51] Some of these were to do with making and selling their English pottery. They held the monopoly to make it in Montereau or in its environs and sell it throughout France as well as abroad.[52] This kept the local and domestic competition under control until the privilege ran out which could be after five, ten or fifteen years. Montereau was protected for ten years.[53]

One of the aspects of government protection had to do with contracts and employer-worker relationships. Clark and Shaw were expected to make and honour contracts with their workers and apprentices. The contract with apprentices was for seven years and with workers for nine years. As enticement and poaching were common in the case of any new industrial endeavour, the King forbade such measures unless Clark and Shaw had given the worker or

apprentice a 'billet de congé'.[54] This meant that the employee had fulfilled his commitment to the company and was allowed to move on. A worker or apprentice could ask for this 'billet' at any time but his employers were entitled to withhold his release from the contract no matter how legitimate his reasons. The worker or apprentice could then take his case before the Juges de Police in the nearest big town or city. They would pass judgment on the situation.[55]

The 'arrêt' to the Montereau company decreed that all disagreements, contractual or otherwise, that arose between Clark and Shaw and their employees should be heard before the Intendant and Commission in the Généralité of Paris. The judgment of the Intendant was 'subject to appeal to the King's Council'.[56] Sometimes government representatives of the King were not the only intermediaries. Disputes between masters and workers were not uncommon and often ended up in court.[57]

Other aspects of this 'arrêt' are the articles which apply to the legal standing and vestigial feudal commitment in France of Clark and Shaw and the members of their families. In the case of the 'droit d'aubaine' or escheat duty, the Englishmen, 'their widows, their children or legitimate heirs' were exempted from this ruling.[58] This meant that on their death their goods did not fall to the French King but could pass in normal inheritance to their heirs. Clark and Shaw did not have to be naturalised to benefit from this ruling. When this particular privilege expired the situation would be different.

Foreign craftsmen were, therefore, encouraged to see their work period in France in one of two ways. They could apply for French citizenship after the set period of time had elapsed. This meant that they could stay indefinitely in France as career

experts or advisers on English industrial methods. They might even remain as workers. As French nationals, they had the best overall protection for their family should they die. The second view of working within a French context was within a shorter time-frame. When one contract of service had expired they could contemplate moving on to the next industrial set-up which might or might not have the requisite privileges and protection. The element of risk was further compounded because any privileges would only apply for as long as the English commodity that they were producing remained on the Government's list of protected manufactures. Products had to be 'new or unique' to qualify for the kind of exemptions that Clark and Shaw were awarded in 1775.

The possibility of returning to England became more problematic after time had elapsed. Recent scholarship has suggested that the English Government was less severe with returning renegade workers than contemporary accounts have indicated.[59] The English worker, however, often had no choice but to apply for French nationality. 'The legal distinction between French citizen and foreigner' and the restricted freedom of movement within the country, permitted only with identification papers, added complications to his residence in France.[60] Thus, citizenship brought benefits, the not least of which was the protection of the rights of his wife and family on his death. In the case of the Montereau operatives, Clark stayed at Montereau while Shaw moved on to another manufactory.

By the 'arrêt' of 1775, Clark and Shaw and their legitimate heirs were thus able to enjoy 'all the rights and privileges that the other subjects of His Majesty enjoyed'.[61] As has been noted, this access to exemption from escheat duty moderated the difference in status between the resident foreigner in France and the resident

national. The exemptions and rights granted to Clark and Shaw also applied to some of their English workers and their families.

In some instances, the English partners alone enjoyed other special privileges.[62] Only they were excused 'guêt', 'garde', 'corvées' and other duties that were expected of residents in France by way of residual feudal dues.[63] These had often been transmuted to cash payments but certainly represented additional burdens for the English workers. In earlier drafts of the petition requesting an 'arrêt' Holker (fils) had seen to it that Clark and Shaw had included the other English workers in all the exemptions.[64] The King's Council had not seen fit to include them.[65] This would suggest that the exemptions were real and valuable concessions dispensed only at the discretion of the King.

Other articles in the 'arrêt' made sure that Clark and Shaw were also exempt from having troops billeted on them. This exemption covered both their private accommodation and their work premises.[66] This must have been a source of great relief to the English potters. The necessity to convert their firing technology from coal to wood was problematic enough without the added disruption of dragooned troops among the Queensware preparations. The final dispensation from the King's Council was that they were also relieved of militia duty as were their families and four of their principal workers.[67]

Clark and Shaw had gained most of what they had asked for. What the 'arrêt' of 15 May 1775 does not say is that the company was granted a 'privilège exclusif' for ten years with a grant of 1200 livres paid once a year for ten years.[68] This had been awarded by the Controller of Finance, Turgot, who was now the incumbent in

the post. At the start of the correspondence with the Government early in 1774 Trudaine de Montigny had been Controller.

The English aspect of the concern was promoted. Neither Holker nor the Garveys were mentioned. The factors that were stressed were newness and quality combined with cheapness. Also emphasised was the need to initiate a thorough and lengthy training programme for the French workers that this new branch of industrial expertise required.[69] This, taken in conjunction with the need to develop new firing strategies probably not using wood, may have triggered fresh government policies with regard to industry.

Holker (fils) had put time and effort into the Montereau project. Financial investment and bureaucratic manoeuvring sustained his interest in the Montereau manufactory for years to come. His commitments as an Inspector General, together with his family enterprises in Rouen and Saint Sever kept him away from Montereau and from the day-to-day running of the pottery. The English partners sent him frequent reports on the factory as well as regular updates on the financial dealings of the company. In his correspondence with Trudaine de Montigny he did not stress his lack of pro-active involvement.[70]

Clark and Shaw worked as master potters, they trained the French workforce, they managed the factory and promptly brought the venture to a level of competence that enabled the company to sell its goods in Paris. There is a first-hand English account of this Montereau Queensware as it appeared in August 1776. Josiah Wedgwood's partner, Thomas Bentley, was in Paris at this time on a reconnaissance trip for their ornamental business. On August 12 he spotted the

French Queensware and later wrote to Wedgwood about it. Here is what he said about it in his Journal for that day:

> Saw a shop of Queensware in Rue St Jaques (sic), and bought two small compotiers for 24 sous. The models and glaze in general are very indifferent, and the workmanship bad. Plates 4 livres 10 sous the douzain (sic). This ware is manufactured at Montremi (sic) sur le (sic) route d'Auxerre.[71]

Wedgwood was intrigued and gave Bentley instructions to sent back as many samples as possible.[72] The trunk from Paris containing samples of many wares including Queensware duly arrived in the following month but is not mentioned further in the Wedgwood-Bentley correspondence.[73] The Montereau pieces are not recorded in the Wedgwood Museum at Barlaston.

As a comparison in prices, a list of Wedgwood ware in September 1776 included dishes of assorted sizes that ranged in price from two shillings to twelve shillings per dozen. Plates were quoted at fifteen shillings per dozen. These were prices of undecorated ware.[74] The Montereau plates cost almost three shillings and eight pence the dozen. There is no comment from Wedgwood on this aspect of the French production. His marketing policy was that his prices were always kept higher than those of his fellow English manufacturers.

In his Journal Bentley is critical of the quality and finish but is not dismissive of the glaze or shape. Within two years of setting up a Queensware factory in France the English managers had manufactured a product that was good enough to be sold in a shop in Paris. According to Bentley this was a 'Queensware' shop that specialised in this ware so a range of goods must have been produced by the

Montereau factory. Bentley was accustomed to handling the very best examples of Queensware so his assessment of the Montereau ware was not entirely negative. Clark and Shaw had come a long way quickly. This in itself was no mean feat. Wedgwood was right to be curious and perhaps nervous about a potential rival in international markets.

French ports had remained officially closed to English pottery following the bans placed on English manufactured goods in 1770. This did not mean that English goods were not arriving in France. Besides the obvious smuggling routes along the French coastline and across neighbouring borders there was another loophole which facilitated the arrival of English goods in France. According to French contemporary testimony this involved smuggling initiatives that took place in the port of Dunkirk. This clandestine operation required the setting up of a pottery import house in Dunkirk. English manufacturers or merchants then sent English pottery to Dunkirk. The provenance of these wares was given as from the 'provinces réputées étrangères' when they were transported legally into France.[75]

This could be one of the reasons why there is so little corroborative evidence from the English side to substantiate how much English pottery was coming into France in the 1770s. What was being done was patently of dubious legality and records of these shipments, however small or irregular, may have been ambiguous. The French have maintained that English goods were coming into France at this time. The parties responsible could have been enterprising dealers and merchants in both countries. Perhaps the manufacturers wittingly off-loaded small but steady amounts of goods in this way without referring to them as export goods to France. It could be that they disguised the shipments without actually falsifying the books.

The French claimed at a later date that English probity was never particularly evident in lading manifests.[76]

At any rate, there were English goods in French shops in the 1770s and 1780s when there should not have been any. International diplomacy between France and England had broken down in 1778. France had signed a Treaty of amity and commerce with the rebel colonies, the United States, on 6 February 1778. As from 16 June 1778 France and England were at war.[77] English goods should not have been in France. Here is an additional reason why English manufacturers were less than forthcoming in their documentation about goods being sent to France.

Contemporary commentary includes English pottery among these goods.[78] The seizure of banned English goods by the French authorities was apparently quite common. To this end, a minor government department was set up to handle the frequent confiscation of seized illegal goods.[79] They were taken, stored and sold at an auction that took place once a year in the free port of Lorient. The others that were not sold were exported as 'marchandises blanches'. The proceeds from the sales were divided between the informant who located the cache of illegal goods and the government department whose official had made the seizure.[80]

The Queensware factory at Montereau operated efficiently. Holker (père) was now much more involved with the business. Holker (fils) was no longer even supervising the factory from a distance. In 1777 he had been enlisted by the French foreign service under the auspices of the comte de Vergennes. Holker was sent to America to serve French commercial ends there. At first he had

posed as a French businessman.[81] In fact he was a secret agent for the Minister of Foreign Affairs.

By 1779 Holker (fils) was functioning openly as a government representative of France.[82] He was French Consul to the United States and was involved in arranging French imports to the new states.[83] These included consignments of French Queensware from the Montereau factory.[84] He also planned to arrange the transfer of French technology to America by encouraging French entrepreneurs to set up manufacturing concerns in the United States. This came to fruition at a much later date.[85]

Entrepreneurs in America who were interested in establishing French manufactories in the United States contacted Holker or even the American Commissioners in France. An entrepreneur called Gale wrote directly to Benjamin Franklin, Commissioner to the Court of France and later, from 1779 onwards, Minister Plenipotentiary in Paris. Gale requested Franklin's help in finding French pottery craftsmen who would be prepared to move to America. His intention was to set up a factory specialising in French delph (sic) ware and he needed skilled workers urgently.[86] Josiah Wedgwood mentions an English potter called Thomas Gale who went to America with other English workers, but this was at a later date. His was not a success story as far as English earthenware was concerned.[87] In the new enthusiasm for French goods in the United States Benjamin Gale was doubtless trying to exploit a potential market .

In Montereau the factory was surviving and making sales at home and abroad.[88] In 1778 the company had been made a Manufacture de la Reine. Thus the Queen's Manufactory produced Queensware. This was probably not much more

than window dressing to attract customers impressed by Wedgwood's royal patronage. At some point soon after this the company had added 'Royale' to its business heading. By June 1780 this unauthorised promotion of the factory as a royal manufactory was clearly blacked out on the printed invoices and delivery sheets. [89] The Clarks or Holker had doubtless been warned to remove the offending attribution.

The Clarks had become the mainstay of the pottery. There were certain setbacks, however, which Holker (père) reported to his son. On 20 October 1779 Holker (père) wrote his son in the United States that one of the English workmen employed by Clark had died.[90] This worker, Amson, and had died six months previously. Clark's own son had also died soon afterwards and there were problems about who would take over his functions within the company.[91] The manufactory was short of experienced English managers and foremen. The company had tried to bring over another of Clark's sons from England but had been unsuccessful. No mention is made of the war footing between France and England. This had made the illegal emigration of skilled artisans even more difficult.

Desperate to maintain standards and to continue in operation, William Clark suggested that his elder daughter's English husband, John Hall, be brought in to replace his son.[92] According to Holker (père), Hall knew nothing about pottery but was a sensible young man. Hall's family ran a cotton factory in Sens which was not too far distant from Montereau. He was a manager in this family concern.[93] In the end they did bring Hall to help run the factory.[94]

There is no mention of Shaw at this stage with reference to the Montereau establishment. Pro forma invoices used by the company at the time are headed:

> MANUFACTURE DE FAYANCE ANGLOISE, Des Sieurs Clark & Compagnie, établie à Montereau-faut-Yonne, en vertu d'Arrêt du Conseil du 15 Mars 1775, sous la dénomination de QUEENS WARE, ou Marchandises de la Reine.[95]

Similarly, their printed delivery notes give no mention of Shaw although the heading is slightly different. The rubric starts with:

> MANUFACTURE DE TERRE-POTERIE, façon d'Angleterre, des Sieurs CLARK & COMPAGNIE.[96]

By 1780 their product was reaching a level of competence and quality that was evident in their sales. In June 1780 the factory delivered a consignment of Queensware to Paris for a 'Monsiegneur (sic) Francklin (sic), à Passy'. The goods were being sent first of all to a 'Monsieur Maisonneuve au magasin anglois.' This English shop run by a Frenchman, Maisonneuve, was situated in the rue St. Jacques in Paris. Additional instructions were given as to its precise whereabouts so that the goods could be delivered with no problem or delay. This is the same shop where Thomas Bentley bought the early examples of Montereau Queensware in 1776.[97] The consignment was then to be delivered to 'Monsieur le Docteur Franklin agent de l'amérique (sic) à Passy'.[98]

The goods were sent by river to Paris because the delivery note was signed by an official, Cretté, who was the 'receveur de droits de la rivière' in Montereau. The consignment of Queensware weighed 350 livres and the total cost on the invoice amounted to 333. 3 livres tournois. This included 30 livres for straw and a special

crate used for transit.[99] The delivery note that was passed to the carriers in Montereau was very specific. It pointed out that the goods had been handed over in good condition and should be delivered to Maisonneuve within three days. The carriers incurred a penalty if the goods were not delivered within that period. They were to reduce the cost of carriage by a third. The itemised invoice was signed by an operative, Mackintosh.[100]

The goods arrived without damage as the invoice was paid in full in June 1780 'by an order on M. Grand $12'.[101] It was not entered as being paid to the company but to Clark.[102] Ferdinand Grand was a French financier who acted as the banker for Franklin and the Americans in France. He was also a friend and neighbour in Passy. Franklin had bought the Queensware in his official capacity as ambassador to his country. The official American banker had paid for it and had added the bill to the debts that the Americans were amassing in France and in the United States. Millions of livres were doled out by Grand and other French financiers and businessmen.[103] Indeed, at the end of the American War of Independence, the French national debt stood at 3 315.1 million livres (about £143.5 million).[104] This was one of the reasons why the French were prepared to accommodate the demands of the British with regard to a Treaty of Trade in the 1780s. France needed peace and a time to consolidate her economic policy.[105]

Twelve dollars for a consignment of French Queensware seems modest in comparison. Benjamin Franklin, Minister Plenipotentiary to the French Court at Versailles, did not hold sway in a separate official American Embassy. He resided in rented accommodation which was part of a large town house, the Hôtel de Valentinois in Passy. This was owned by Jacques-Donatien Leray de Chaumont,

businessman, entrepreneur and financier who had many friends in the French Government, not least Vergennes, the Minister of Foreign Affairs.[106] It was probably the comte de Vergennes who had recommended Chaumont as Franklin's host then landlord.

As Commissary of the French Army in charge of supplying uniforms, Chaumont was in a position to see that the French provided essential services to the Americans in their fight against the English. These collaborations were channelled through Franklin and the bills passed to Ferdinand Grand.[107] Chaumont also speculated with his own fortune in American military and commercial affairs but was never satisfactorily reimbursed by the United States when Franklin left France at the end of the war.[108]

Franklin lived in a wing of the family mansion and initially paid for meals prepared in the Chaumonts' kitchen although he did provide his own selection of wines. Later, he acquired a majordomo who dealt with the catering for the American household. In March 1779 the duc du Croy visited Franklin at Passy and stayed to dinner. He was amazed 'that there was only one service, and then everything all at once, without soup'.[109] Perhaps the Duke made some comment or his remarks elsewhere were repeated to Franklin. In June 1780 the Montereau Queensware service was delivered to the Passy address.[110] Franklin entertained on a personal level as well as in his official capacity. He had a wide circle of influential friends although some of his more intimate soireés took place at the home of his close friend Madame Helvétius.[111] It is fascinating to think that French Queensware made by Clark and his English workers graced a table around which

may have sat such luminaries as Mirabeau, Condorcet, the abbé Morellet, Lavoisier, Turgot or Marat.[112]

Franklin had bought Montereau Queensware because it was French. He had spent many years in England and was not unaware of English Queensware.[113] He had met Thomas Bentley who thought highly of him so he had a direct line to Wedgwood and his order book.[114] If he had really wanted to buy English pottery in 1780 while all English manufactured goods were banned in France he could easily have done so by appealing to Vergennes or Turgot. At a later date there is documentary evidence that rules could be broken with the sanction of men like Vergennes and Rayneval.[115] It would be heartening to think that Franklin bought the Montereau service because he liked it. The chances are that one of the Chaumont daughters or their mother recommended the Queensware to him as a modest outlay of what was after all mainly French cash. Perhaps Franklin was making a definitive political statement by buying earthenware instead of porcelain.

Another probable explanation of this purchase lies in the fact that he had known the Holkers for years.[116] He had been influential in having Holker (fils) appointed as a Consul to the United States of America.[117] When in America there were references to Benjamin Franklin in the correspondence of Holker (fils).[118] Whatever the reason for Franklin's purchase, Clark and his operatives had every reason to be satisfied with their efforts at Montereau.

A useful aspect of the detailed invoice that was sent to Franklin at Passy is that it shows the kind of items that Montereau was producing in 1780. These included: soup tureens, dishes for terrine, plates, soup plates, serving dishes, entrée dishes, oval plates, sauce boats with stands, salad bowls, mustards with spoons, oils,

butters, dessert sugars with spoons, glass holders, buckets for bottles, buckets for glasses, covered dishes, bowls with stands, goblets and saucers, cups and saucers, tea pot, milk jug, salts, small bowls, sugars, fruit dishes and square plates.[119]

From an English catalogue of roughly the same period these items appear to be representative of standard Queensware production.[120] The range of items is limited as the customer had ordered only the pieces that were required. Much memorabilia associated with Franklin has been preserved in museums or in private collections. No pieces of Queensware have been identified as coming from his rented wing in the Hôtel de Valentinois in Passy. Some fine examples of Montereau Queensware do exist although most date from a later period.

In the 1780s the factory continued to produce Queensware. In 1784 William Clark died and the running of the factory was taken over by his son-in-law, Jean Hall.[121] In 1792 Hall was the sole owner of the factory. On his death in 1797 his widow leased the premises to an English entrepreneur named Potter.[122] At this point the widow Hall married Pierre Edmond Antoine Merlin who changed his name to Merlin Hall and managed the factory from 1800 till 1814.[123] The assets of the factory comprised the buildings and equipment, the mills to prepare raw materials, the clay pits and the sand pits. During this time all the lands attached to the Montereau factory were purchased from Jean Holker (fils) and Antoine and Robert Garvey.[124]

Holker (père) had died in April 1786 and his only son and heir had inherited his properties and share in various industrial concerns in France. These included factories among which was 'celle de fayance établie à Montereau'.[125] In 1786

Holker was still in America so his wife, Julie Quesnel, was given power of attorney in Rouen to handle his father's estate. Holker signed the document by proxy in the French Embassy in Philadelphia. He was described as 'Jean Holker, ancien Consul Général de France en cette ville et Inspecteur Général des Manufactures de France'.[126]

3.3 **The Andenne factory: Shaw.**

One aspect of the Queensware factory in Montereau which poses certain questions is the role that George Shaw played. In the earliest documents and in the 'arrêt' of May 1775 he figures clearly with William Clark. By 1780 his name has gone from the factory heading at the top of printed invoices and delivery notes.[127] No further mention is made of him at Montereau. He does turn up, however, in Andenne, in the Spanish Netherlands, in August 1783.[128] Whether he had been in Montereau till this time but had kept a low profile is not known. The Clarks, as an extended family, had doubtless outnumbered him. Perhaps his skills had benefited the Queensware concern in the early stages and then Shaw had moved on to other things.

One of the alternative employment options for a English master craftsman in France was that of government agent and recruiter for French industry. The precedent for this was the career of John Holker (père) himself who had died a wealthy and influential man, a 'chevalier de l'ordre Royal et militaire de Saint Louis'.[129] Thus ennobled, he had certainly come a long way from being a Jacobite refugee with a background in the cloth trade in Manchester in 1745.[130] In the 1760s and 1770s there had been examples of English workers or managers becoming very successful government operatives for the French.[131]

George Shaw became one of this select band and had returned to the factories in Staffordshire to recruit for the French authorities.[132] Josiah Wedgwood was so incensed at his boldness in the Potteries that he gave Shaw's description to the Bow Street Runners to alert them of a potential arrest. Shaw apparently had a penchant for white coats. This together with his height and pronounced limp made him easy to identify.[133] He was also accompanied by a boy and a short man in a scarlet coat.[134] Wedgwood offered a reward of twenty guineas for information leading to the apprehension of Shaw.[135] This suggests that Shaw was persuasive and successful as an agent.

The fact that he ended up in Belgium in 1783 is invaluable to the basic argument that he was instrumental in the continuing transfer of English technology to foreign powers. What his responsibilities were and what his contract demanded of him are useful in understanding how this transfer worked. His situation at Andenne can be seen as adding to the bank of information on the technological 'brain drain' from England to foreign powers in the eighteenth century. Potters could not rely on selling machinery or a new piece of equipment to the French or Belgians. The pottery industry in England did not become mechanised with actual machine-produced wares till the 1840s. Emigrant workers in other industries might use the plans and drawings of a specific machine to ease their way into a foreign workshop.

All the potter had were his hand-tools and whatever information he could carry in his head with regard to kiln technology, firing techniques, recipes and processes. It could also be said that the skilled pottery worker carried his credentials in his hands. It was probably more expedient for him to demonstrate what had to be

done. Explanations and written versions of certain procedures could be made on the spot in the new work environment. It was always dangerous to carry them. Incriminating documentary evidence found on his person or in his luggage could lead to hefty fines and lengthy imprisonment if it was discovered during a search before he left England.[136] Port officials and customs officers were sometimes successful in stemming the erratic flow of English talent to foreign powers. From time to time they did make arrests.[137]

So much industrial espionage went on in the eighteenth and early nineteenth centuries despite the fierce parliamentary statutes that were in force at the time.[138] John Harris is eloquent on the subject. English workers turned up all over Europe and America in much the same way that men had served in foreign armies for centuries. Individuals had different reasons for leaving their native country. For the emigrant worker who was expressly breaking the laws of the land, the transfer of English technology took on a different significance. The very nature of the act, surrounded by secrecy and uncertainty, precludes any extensive body of data. For this reason, primary source material that throws light on this area of research is worthy of attention and its relevance suborned to the main hypotheses.

George Shaw, native of 'Hallegryn en Angleterre'[139], formed a partnership with two others, J. Wouters and J.-C. Hennichs on 30 August 1783 in Andenne. The contract was drawn up and witnessed by a notary, J. J. De Give, to authorise the legal status of a 'fabrique de faïence, de terre de pipe, de grès et de porcelaine'. Wouters (fils) was a merchant in Andenne and Hennichs similarly employed in Namur. There were nine shares drawn up and Shaw was allocated three of these. These shares in the company were given to Shaw as recompense for all the work

that he would do at the factory and for any effort that he would make on its behalf. In particular, his potting expertise and 'his secrets' are stressed in this legal document. Shaw was enjoined to put his 'secrets' in writing. These applied to his knowledge of all aspects of their production. He was also legally bound to demonstrate his recipes with Hennichs and Wouters present.[140]

Shaw was not involved in the management of the factory although he was responsible for the hiring and firing of workers as necessity demanded or their behaviour merited. His main function in the concern was as a skilled worker or foreman. He was not permitted to leave Andenne or the factory 'on whatever possible pretext' unless he was on company business. Then he would be permitted to travel outside the district with his partners' permission. His travel costs would be met by the company. If he left Andenne without permission his goods and legal status in the company would be forfeit. As regards the quality of the pottery manufactured, this was the responsibility of Shaw. This applied to the finishing and the glazing stages. If the product could not be sold his contract was null and void.

The penalties were not all directed against Shaw. Neither of his partners was permitted to exploit his 'secrets' outside the partnership. If either did so he forfeited his investment and had to pay a fine of 2000 florins to the other partners.[141] In addition, no one in the partners' families might set up a similar manufactory during the lifetime of the partners. The final clause of this legal agreement between Shaw and his partners refers to the pension of 300 florins per year that his wife would receive on his death. She would only receive the pension

'if he has fulfilled all aspects of his contract' and his son carried on his father's duties at the factory.

This was a demanding partnership for Shaw with these businessmen who were bolstered by the legal precision and prescription of the contract. The aspects in the agreement that cover Shaw's expertise and 'tricks of the trade', his 'secrets', his recipes, are all standard requirements in contracts that English workers drew up with their foreign employers in the eighteenth century. This intangible but vital patrimony of the English artisan abroad was what the foreign employer wanted above all. The responsibility of running the factory without making any of the executive decisions was standard. The emphasis in this legal contract was on the commitment that Shaw has made to the company of which he was co-owner.

There is no mention of wages for Shaw. It would appear from the context that Shaw could expect no fixed payment from his partners. His third of the company should provide his living costs and any profit that he might expect. The only time that he would receive extra cash would be when he travelled for the company on business. The contract states that his three shares were also intended as payment for bringing English expertise to the manufacture of fine earthenware in Andenne. The term 'Queensware' is not specifically used but the production of 'terre de pipe' signifies that creamware was manufactured.[142]

The expectations of his partners with respect to quality were predictable but Shaw seemed to be in danger at every turn of not fulfilling his contract to the letter. Moreover, who but his partners were to decide when he had under-performed or not met the stipulated requirements. This was particularly true of the proviso attached to the payment of a pension to his widow. There was no reassuring

certainty for an English woman in a foreign country who had just been bereaved. The additional stipulation that Shaw's son continue in his father's place so that the widow's pension be paid is stringent. The surprising thing is that Shaw actually signed this contract. Perhaps he did not see this contractual agreement in Andenne as a lifetime commitment and was prepared to move on to other things if need be.

3.4 The Douai factory: Leigh brothers.

At about the same time in France, in June 1781, in the 'province réputée étrangère' of Flanders,[143] the transfer of English pottery technology was also about to begin. This was in Douai. The English workmen were Charles and James Leigh and their French partner was Georges-Chrétien-Joseph Bris.[144] According to English and French accounts there was no hint of industrial espionage involved in the recruitment of the Leighs in Douai. Ceramic historians suggest that their presence in Flanders had something to do with their religious persuasion.[145] They were Catholics and were visiting other Englishmen in Douai when they encountered Georges Bris. French sources argue that the Leighs had chosen Douai because it had a long history of English connections. There were several English or Scottish colleges in the town. These schools or seminaries were attended by catholic students from abroad.[146]

The Leighs had most likely not attended any of these colleges as they did not speak French and required the services of an interpreter in the early stages of the partnership.[147] Other explanations have cited the Gordon Riots in England as forcing many Catholics to leave England to find employment elsewhere.[148] As recent scholarship has shown, the lot of Catholics had actually improved in 1778

and the disturbances occasioned by the followers of Lord Gordon in 1780 were aberrations.[149] Nonetheless, the religious climate in England could well have influenced English workers to take their skills to a more sympathetic and tolerant environment.

Another hypothetical explanation given by a French contemporary of the Leighs was that they were supporters of the Americans in their struggle against England. They wanted to demonstrate their solidarity with the American rebellion but felt that this was unwise in the political climate of the late 1770s in England. Consequently they had decided to come to France where they knew the sympathies of the people, as a whole, were with the Americans.[150] Perhaps the Leighs had offered such expedient explanations from time to time.

Whatever the reasons, these two potters were in Douai at a time when their particular brand of expertise was sought by an enterprising soap manufacturer called Bris. No mention is made that diplomatic diplomacy between France and England had broken down during the Anglo-American confrontation. England was at war not only with America but also with France.[151] The Leighs were consorting with the enemy in criminal and treacherous activities. As skilled workmen they were contravening the statutes that prohibited the emigration of artisans and their tools to foreign powers.[152]

No mention is made that they had left England illegally or arrived in an enemy country where movement was restricted even for French nationals. In earlier confrontations with England special documents or 'passports' had been required both to leave France and to regain entry.[153] A few years later French workers were arrested and returned to their place of employment under close arrest

because they did not have the requisite documentation with them, a certificate and a passport.[154] This was in 1784. How did the Leighs who did not speak French, reach and traverse French territory in a time of war, when borders and coastlines were more stringently supervised and when Frenchmen were arrested and imprisoned if they did not carry the correct papers? The hypothesis is that they were expected and were either accompanied to Douai or had been provided with the necessary papers along the way, probably in London. Their route likely included Belgium or Holland.

According to French sources, the Leighs claimed that they had managed earthenware factories in Newcastle and Stafford. Bris wanted to imitate English wares. He was interested in establishing an English factory to manufacture earthenware which he called 'grès anglais'.[155] This translates as English stoneware. What they did produce, however, was not stoneware alone but fine earthenware and Queensware, the typical English pottery products of the period. The Douai factory copied the creamware of Wedgwood and of the Leeds pottery.[156] Bris pointed out that English pottery was already being manufactured elsewhere in France or in the 'provinces réputées étrangères'.[157]

It is unlikely that the Leighs just happened to come across Bris in Douai. The more deductive argument would be that he had 'head hunted' them or placed an 'order' for them in England through a small industrial espionage network that was in place in all sorts of manufacturing communities. Trudaine de Montigny[158] and John Holker (père) had outlined the ground rules for such organisations years before this and there is archival evidence to substantiate that the system existed and worked.[159] The fact that the Leighs have never been associated with

industrial espionage does not mean that they were not recruited in England. There is evidence to suggest that there was probably some kind of central agency through which pottery workers who were interested in working abroad could be approached by potential employers or by recruiting agents. The agent or contact need not have had anything to do with the pottery industry. In one particular instance he was a bricklayer with business premises nowhere near the Potteries.[160]

De Montigny and John Holker (père) had suggested a possible profile of the kind of English worker that the French wanted to recruit. They proposed that ideally he be catholic and unmarried. James Leigh was probably married before he came to Douai but the two brothers rented lodgings together in a house in the town.[161] This house was used as premises for storing the pottery produced at the factory. It was managed by a Mrs. Halfort. Later a Sarah Halfort is recorded as being married to Charles Leigh. Her brother also worked at the factory and became the manager in the 1790s. After this he is known to be the owner of another English pottery in Douai which manufactured English goods. This factory competed with the company in which the the Leighs worked. The director of the Leigh concern was a man called Houzé.[162]

On 4 August 1782, the management of the Douai manufactory which included one of the Leighs decided to 'write to England to arrange for five workers to come to Douai'.[163] The requirements were very specific for specialist craftsmen. They included a turner, a plate maker, a handle maker and a modeller.[164] When the English workers arrived soon afterwards the modeller was found to be very skilful and was paid 48 livres per week at a time when the Leighs themselves were paid

only 36 livres per week.[165] In addition, the plate maker was so highly skilled that he was engaged on a contract basis to make plate moulds.[166]

The management of the Douai factory had no difficulty in getting the workers that it wanted from England. It appears to have been as simple as placing an order and waiting to see what calibre of worker turned up. There is another instance of a similar occurrence in 1784. In June of that year the Douai company had been granted 'lettres patentes' with an exclusive privilege awarded by Calonne, the Controller General of Finance.[167] The first thing that the management did was to write to England 'et d'y envoyer des fonds pour recruter des chefs d'atelier'.[168]

In this instance, they were still contacting an intermediary to act on their behalf. They also had some means of providing this agent with funds. They then expected this person or team of individuals to recruit not just workmen but men who saw themselves in the role of foremen or supervisors. This would necessitate a consequent increase in the amount of hard cash it took to persuade them to come to France. The management wanted to relieve the Leighs of some of the heavy workload that they had carried since the formation of the company.[169] It also planned an increase in its training programme. With the regular extra income from the French Government by way of the yearly grant they could now afford to bring in more technical help.[170]

These specialist workmen duly arrived and were immediately involved in a training programme with apprentices from the town of Douai. Houzé de l'Aulnoit, partner and signatory of the government 'lettres patentes' to the company, wrote to the Intendant of Flanders. He indicated that these English workers were not permanent additions to the company's workforce.[171] Their main function was to

train French apprentices and workers. Once this had been achieved the French workers would assume the role of trainers and pass on their acquired English skills to more French trainees.[172] After some time, Houzé argued, the French workers would effectively replace the English specialists and the foreign workers could be dismissed.[173] This is what Wedgwood had been saying all along when he warned emigrant workers of the pitfalls of taking their skills abroad, or selling their industrial heritage 'for a mess of pottage' as he expressed it.[174]

Houzé had then gone on to petition the provincial Government this time for extra financial aid. This was in preparation for the time when he had to persuade the English workers to leave the Douai training programme.[175] Houzé anticipated problems with the English workmen. The Leighs remained partners and were not included in this short-term policy. They would both remain till the mid-1790s.

In Year 4, when France was on a war footing and the factory was experiencing production difficulties due to staff shortages caused by compulsory conscription, Charles Leigh remained in Douai.[176] James Leigh had left and was in Chantilly in Year 4 before moving on to Montereau.[177] He appears after this date as a prisoner-of-war registered by the French Government.[178] Sources other than the Archives communales in Chantilly indicate that James Leigh went to Montereau. Aimé-Houzé de l'Aulnoit states that one of the new initiatives that Leigh was involved in was at the 'manufacture de faïence fine façon anglaise' in Montereau. This factory had continued to manufacture English wares and Queensware under new management.[179] Leigh also figures on a list naming workers at a cotton manufactory in Montereau. Perhaps his skills as a trainer and manager were being exploited in different factories in the same town. He may have been working

for the same employer, Christopher Potter. It could be that both the Leighs were in Montereau in the late 1790s. There is no hard evidence, however.

On the English side there is a valuable piece of documentary evidence that involves Josiah Wedgwood and his workers. This links the Douai manufactory, Georges Bris and James Leigh with Wedgwood and the transfer of English technology to France. In the Wedgwood Manuscripts relating to Liverpool and Etruria there is a letter dated 8 March 1784 from Samuel Jones to Georges Bris of Douai.[180]

Samuel Jones worked as a painter for Wedgwood. He had heard that Bris was looking for workmen 'in the Different Branches of the poting (sic)' and he was offering the Frenchman his expertise as a recruiter of English workmen.[181] His services were conditional on the financial terms that Bris was prepared to offer. As he was free of family commitments, Jones suggested that he travel to Douai and make all the necessary arrangements for the group. He could negotiate with Bris personally. This would be at the Frenchman's expense.[182]

The workers that Jones could recruit for the Douai manufactory included a 'turner a presser and handler a modeller and a man that can make as good a China glaze and Enamel coulers (sic) as any man in the country'. If Bris' response was a positive one he was asked to write to Jones stating his terms of employment. He was also asked to send money to London to help with the travel expenses.[183]

Jones concluded his letter by voicing his fears that there was always the threat of interference from 'the masters in this country'. There could be trouble from the authorities who opened mail going abroad. This is why he had not given his own

address in the Potteries.[184] Instead, he had enclosed a contact name and address, a bricklayer called Alsop in Ashbourne, Derbyshire.[185]

Jones' letter is a crucial piece of hard evidence that shows just how the transfer of technology might take place in the very heart of the Potteries, on Josiah Wedgwood's own premises. It makes the sentiments expressed in his 'Address' all the more comprehensible. Enticement and recruitment by foreign manufacturers were realities and not just threats. Samuel Jones' unease at what reprisals the Government might take were well-founded as David Jeremy has shown. The English secret service did open mail and conduct clandestine operations to catch industrial spies. Jones himself was in a dangerous position if he were charged under the Traitorous Correspondence Act.[186] He could also be charged as a recruiter and enticer and be imprisoned and fined on all these accounts.[187] Wedgwood and his fellow master potters were serious in their intent to prevent further loss of English technological skills.

On a more general level this letter verifies that Bris had contacts among English potters. Furthermore, the list of workers that Jones offers to recruit is very similar to the one sent by Bris in 1782. The question of funds being despatched to England and, in this case, to London is also worthy of note. They likely passed through the French Embassy in London. It has been stated that the ambassadors, de Guerchy in the1760s and de Guines in the 1770s and 1780s quietly coordinated French industrial espionage in England.[188] Jones seemed to know where to collect the money that Bris might send so it was probably a recognised procedure. The importance of this document lies in the fact that an English worker still employed in an English factory was prepared to recruit his fellow workers for a

foreign employer. This, indeed, was English technology transfer and it was taking place within a Wedgwood factory. This letter from Jones to France was intercepted on the same day as it had been sent.[189] It is not known if Samuel Jones was arrested.

After the Samuel Jones episode, Josiah Wedgwood became more pro-active in devising inhibitory measures. He drafted several versions of a policy document on the prevention of the emigration of English workmen.[190] He suggested that the Committees of Commerce should pressurise Parliament into tightening up the law on this matter. Ports were to be more rigorously patrolled by 'searchers' and parishes held financially responsible for the return of absconding workmen. Informants should be encouraged with rewards and assurances of secrecy. The names of recalcitrant workmen should be published nationally and in certain cases descriptions of individuals 'be sent by the post to every sea port in Great Britain'.[191]

Wedgwood also suggested 'Further proposals, including the secret opening of mail'.[192] He was also interested in using the mail as a means of counter-espionage. In the Keele Manuscripts, 10 April 1784, there is a reference to 'James Leigh of Douay'. It is in a letter endorsed in Josiah Wedgwood's own hand with the single word 'Emigration'.[193] Here is an example of how Wedgwood reacted to the dangerous situation in his own factory. The letter was actually a 'forgery', a fabrication from a purported agent in the Potteries acting on behalf of James Leigh of Douai in Flanders.[194] Wedgwood had his nephew Thomas Byerley write the letter. It was signed William Jone and was addressed to Samuel Jones.[195]

Jone claimed to act as James Leigh's agent in the Potteries. He knew that Jones had contacted Bris. Jone wanted Samuel Jones to meet him, bringing with him a document signed by all the other pottery workers who wanted to work with Leigh in Douai. As an incentive or lure, Jone promised cash payment of the travel expenses to Douai for Samuel Jones.[196] He maintained the façade of anonymity and secrecy by declining to sign 'my real name or place'. As a ploy to convey authenticity, he told Jones that Leigh did not require all the workmen that Jones had offered to entice. He warned against impeachment from the unwanted individual, the presser. He pointed out to Jones that: '...this is a business of hazard to myself as well as you'. Jone ended the letter on a firm but friendly note, arranging to meet Jones after the 27th of the following month.[197] It is not known if this decoy letter was ever sent. The subsequent fate of Samuel Jones is also not recorded in the Keele Manuscripts.

The Jone letter is hard evidence that Wedgwood knew that there were recruiters in the Potteries, even in Etruria. He also knew how the system worked. James Leigh was a known employer and enticer abroad otherwise Wedgwood would not have used his name. Wedgwood's maternal grandmother was a Leigh.[198]

As has been mentioned, in June 1784 the group of foremen and supervisors that Bris and Leigh had requested in the Potteries arrived in Douai. Houzé de l'Aulnoit immediately petitioned the provincial Government for more money to initiate the programme of training that he and the Leighs had envisaged.[199]

By cross-referring information from English sources with French material it appears that Josiah Wedgwood had far greater experience of French industrial espionage in the Potteries than he admitted. The Leighs at Douai were certainly

not the only French manufacturers with contacts in the Potteries as the prosecutions in the Stafford Assizes against the suborner and potter, James Perry, attest.[200] French factories were 'advertising for' and 'ordering' skilled workmen from the Potteries.[201] As has been seen, workers from Wedgwood's factory responded and offered their services as recruiters for others in the industry.[202]

In his 'Address' it has been noted that Wedgwood inveighed at length against the reprehensible character and behaviour of the English recruiter, George Shaw.[203] He passed on a detailed description of Shaw to the Bow Street Runners who posted it in readiness of an arrest.[204] The 'Address', with his plea for patriotic rectitude and artisan responsibility, can be interpreted not as an histrionic diatribe but as an urgent expression of concern if Wedgwood's own workmen were negotiating contracts with French manufacturers and preparing to suborn others.

The Douai factory involved the Leighs in contractual agreements with their French partners. This was in common with other English entrepreneurs running English factories abroad. This they did on two separate occasions. Like the factory at Montereau, Douai was granted an exclusive privilege for ten years. It, however, enjoyed a range of exemptions and benefits for fifteen years.

On June 28 1781, Bris and the Leigh brothers set up a company to create 'une manufacture de grès d'Angleterre'. The contract was to be binding for ten years. The Leighs were going to do most of the potting themselves until such time as the company could afford to employ more workers. At that point the Leighs would become managers. As partners, the Leighs owned fifty per cent of the collateral. The Englishmen had contributed no cash in the initial expenditure which amounted to 2400 livres. Accounts were to be kept each day and the net product of the

factory was to be divided every three months among the three shareholders. None of the partners could set up a similar factory for ten years.

With regard to 'all their secrets' involving raw materials, bodies, glazes and 'anything else that should be known about the manufacturing process' the Leighs proved reluctant to reveal all to Bris. Eventually a compromise was reached whereby they were to tell him and show him everything in the sixth year of the contract. If one of the Englishmen died then the survivor had to reveal the 'secrets' forthwith. As regards wages, James Leigh received a weekly wage of 27 livres and his brother 18 livres. This suggests that James Leigh had taken a more dominant role of responsibility from the beginning.

In many ways this was a fair contract for the Leighs. It was unfortunate that this company ran into difficulties after a year and was dissolved. Before this happened, however, Bris had petitioned the French Government for an exclusive privilege lasting for fifty years. His petition went to the French Controller General of Finance on 20 October 1781. In this petition, Bris included a testimonial from D'Haubersart, the Intendant for Flanders, in which the latter called the Leighs 'two excellent workers'. Perhaps because Bris' request was excessive the company heard nothing more.[205]

On 31 July 1782 a new company was formed under the title Houzé de l'Aulnoit et Compagnie. Gaspard-Théodore-Joseph Houzé de l'Aulnoit was a lawyer in the Flanders Parlement. Of the eleven shareholders, ten were in the professions like Houzé. The Leighs had one share and were paid 36 livres per week for the duration of the company. This time they had no share in the buildings or industrial plant. The company which still manufactured 'grès d'Angleterre' paid Bris 18 000

livres for his share in the old company. The Leighs were to have a third of the profits but their wages were apparently being taken out of this share. For a period of five years the Englishmen were to do most of the potting themselves. After this time they were to do less of the work and concentrate more on running the factory. At the end of five years they were to consign their 'secrets' and information on their firing techniques to Houzé. There was also the customary clause about not setting up a similar factory in France on pain of a fine of 10 000 livres.[206]

This contract was less advantageous to the Leighs with regard to their share of the profits and assets. Furthermore, instead if fifty per cent of the company they owned only one eleventh. They did have a certain amount of autonomy, however, and stayed with the company till well into the1790s.

On 25 May 1784 the King's Council granted Houzé de l'Aulnoit et Compagnie an exclusive privilege for ten years. This was in recognition of the newness of the product, 'fayance résistante au feu'.[207] The company had pointed out that it had incurred considerable expense in transferring from England the secret of this manufacture by recruiting English craftsmen. It had also carried out tests and trials which were costly. The King's Council felt that it was only fair that the manufactory at Douai be given some measure of protection. This was particularly true because of the large amount of English pottery which was still coming into France. This pottery was the same as the Douai factory was manufacturing. It was, so Houzé claimed, 'the only kind of pottery that they produced in England'.[208]

On 9 June 1784 the Douai company was granted letters patent in an arrêt du Conseil du Roy. These letters gave the company an exemption for fifteen years in a variety of areas. These included paying industrial dues and having soldiers

billeted on their factory premises. The workers at the factory would be exempt from service in the militia as well as from certain feudal duties. The land attached to the factory would also be rated favourably for this same period of time. A perquisite for the director and his workers was tax-free wine, beer and brandy. As regards the tax imposed on the company's goods when they entered the jurisdiction of the 'cinq grosses fermes' in France, this would be imposed at three pounds per hundred in weight. The company would be exempt of all duties within the 'provinces réputées étrangères'. There would also be exemptions on all duties imposed on wood, coal, clay and other raw materials used in the manufacture of their pottery which were imported from outside Flanders.[209]

Finally, the Parlement of Flanders, on the instructions of King Louis XVI, granted the 'fabrique de grès d'Angleterre' at Douai an exclusive privilege for ten years on the 9 June 1784.[210] The factory thrived and supplied Paris manufacturers with Queensware in the 1790s and later.[211] English technology had been transferred yet again.

3.5 **Conclusion.**

The information that has been acquired in this study of the transfer of pottery technology in the 1770s and 1780s is useful in understanding the broader picture of what industrial life must have been like for an English national in a foreign working environment. For the worker it certainly seemed to be an advantage to be employed in a factory that had government protection in the form of 'arrêts' and exclusive privileges and letters patent. The Englishman had a much better deal both as a worker and as a foreigner when the King's Council or the local Parlement offered exemptions from all sorts of irksome responsibilities or chores

that everyone, including immigrant workmen, had to deal with. A valued foreign worker could be granted temporary status as a French national if escheat duty were suspended. This also meant that his family could inherit his estate on his death. These were both valuable concessions. Factories protected by the State had obvious advantages and were usually successful and profitable. They also received grants which were invested in the factory.

It is surprising to learn that the French worker and the French apprentice were protected not so much by the law or by their trade guild as by the Government. In disputes with their employers they could apply to the regional government administrator, the Intendant, and even to the King's Council if they wished to appeal. The French corporations were essentially legal institutions dealing with the larger issues affecting their trades. The minutiae of everyday employment disputes were not their preserve.

The French Government had encouraged the creation of what amounted to free enterprise zones in the suburbs of several large cities, like Rouen. In these areas the trade corporations had no input or influence. This makes it easier to understand why shrewd operators like the Holkers kept most of their business operations in Saint Sever, a suburb of Rouen. The Montereau establishment was an exception in the Holker portfolio and owed its existence as much to historical precedent as anything. Holker (père) had been watching and waiting for years before this factory became available.

Something else that emerges from the material on the transfer of technology is just how popular English pottery was at the time. Factories were opened to produce only English wares. A shop in Paris sold only English pottery. A 'dummy'

business was set up in a French port to bring into France consignments of illegal English pots. The French Government actually created special customs offices to handle illegal English goods which were seized and sold. Smuggled English goods were common in France even during periods of war.

This craze is what the French called 'anglomanie'. This is why French pottery manufacturers were keen to recruit English workers from the Potteries in England in order to open their own English factories. In this climate of enthusiasm for everything English the factory at Montereau was producing a standard selection of English tableware. The fact that Franklin ate off Clark's Queensware dinner service gives greater zest to the whole idea of the transfer of English technology to France.

The information on the Andenne enterprise leaves a much starker impression of life for the English worker. Much seems to be couched in negative terms. The workman-foreman received no weekly wage, could not leave the factory or the town without the permission of his partners and was under constant pressure to deliver quality products. There are positive aspects. He was a partner in the company and had autonomy in running the factory. The contract hints that his workers were not going to be easy to handle.

In addition, his pension rights were not clear-cut but dependent on the judgment of his two partners and on the fact that his son had to take his father's place as manager. That Shaw's widow would only receive her husband's pension if the son worked for the company is surprising. Thus it is clear that an English worker in a factory that was not protected by the Government was subject to much more

stressful demands from his partners. This may well have been the norm in the reality of the industrial workplace in the eighteenth century.

Few factories had the cushion of monopoly and privilege that can be seen in the establishments at Montereau and Douai. They had them because they were the first in France or the first in their region. The French Government recognised the uniqueness or the newness of what these factories were producing. Information on the government policy of the Austrian Netherlands towards the transfer of technology is at this point unknown. The only deductions that can be made are from the contract that Shaw signed with his two partners.

At the Douai establishment, this factory had the protection not only of the Government in France but also of the regional Parliament in Flanders where one of its partners was employed as a lawyer. The information that is most valuable concerning this factory is that the Leighs were involved in industrial espionage in the Potteries. This is quite a surprise after reading Solon or the Rhead brothers who portray the Leighs as innocent catholic victims who happened to be in Douai when Bris needed workers.

The factory thrived and enjoyed an exclusive privilege with letters patent and an arrêt du Conseil du Roy. The management of this factory which included James Leigh ordered and received English pottery workers from England. This happened on two occasions, in 1782 and in 1784. It did not seem to be a problem for the French company in Douai to arrange that funds were available in England for any espionage initiative. These were probably placed with the French Embassy in London.

There are important aspects to the Douai factory. These involve the links with the Potteries. Some of these contacts were within the Wedgwood organisation. Workers offered their services to foreign manufacturers even though they must have known what Wedgwood's views on the subject were. They were also prepared to risk hardship and imprisonment to gain employment abroad. Wedgwood discusses the whole issue of English workmen going abroad in his 'Address'. He does not reveal that the industrial espionage was taking place among his own workers.

This is perhaps why the part played by the Leigh brothers has been neutralised to such a point of ineffectuality that they appear quite innocent. Wedgwood did not want it to be public knowledge that foreign manufacturers had such easy access to his workmen, perhaps to his best craftsmen. He was prepared to resort to forgery and subterfuge to entrap potential renegade potters as well as devise more stringent legal applications. It should also be mentioned that industrial espionage might only have involved knowing names, having contacts, passing the word to the right people.

Two final points that have been learnt from this study of the transfer of pottery technology. They are connected to the issue of the training of workers and apprentices in France. Houzé de l'Aulnoit understood that training was a 'hands-on' initiative and had recruited English workers precisely for that purpose. His plan was to exploit the English trainers and then sack them once the French workers had grasped the rudiments of the English processes. This was exactly what Josiah Wedgwood had foreseen in his 'Address'. Houzé made no comment about the aptitudes of the French worker to assimilate what the Englishmen were

teaching them. This is where the critical appraisal of the government officials, Besson and Darcet, matters. When they wrote a detailed report at a later date on an English Queensware factory in France, they analysed the comparative working potential of French and English workers. They castigated the negative qualities in the French worker and suggested that the only salvation was English training and English discipline. This in itself was another kind of transfer of English technology.

Endnotes to Chapter 3.

[1] Archival research of industrial files has shown that these were scattered around France. The towns with Queensware factories mentioned in this thesis include Chantilly, Creil, Douai, La Charité-sur-Loire, Montereau, Paris, Rouen, Thionville and Tournus. Andenne was situated in the Spanish Netherlands, now Belgium. An outline of where they were located has been redrawn from a map of the Ancien Régime by Mary Potter, in Wallace-Hadrill and McManners (eds) France, Government and Society, in John Lough, An Introduction to Eighteenth Century France (London, 1960), p. 2. See the Illustration entitled: France at the end of the Ancien Régime. Towns where English Queensware workers appeared. The 'typed' towns had English workers at the end of the Ancien Régime and after the Treaty of Amiens.

[2] A. N. F 12 1497, 21 September 1776, Observations des Maîtres Gardes to the Intendant for Trade on the advantages of a Manufacture Royale. They said that it 'enjoyed the advantage of public approval and thereby sold its goods more easily and advantageously'. Any manufacturer in the same town producing the same goods lost out in the market place. Customers went for the goods with the government seal of approval. Products from Royal Manufactories were often no better and sometimes worse than those of their competitors. They did not need to improve the quality of their product. They had a ready market and an unfair advantage in the eyes of many of their competitors.

[3] A. N. F 12 1497A, February 1786, 'mémoire' de Dietrich to Blondel, Intendant du Commerce.

[4] A. N. A D X I 42, Arrêt du Conseil d'Etat du Roi, Concernant les Marchandises étrangères prohibées dans le Royaume, 17 July 1785, Calonne, Contrôleur des Finances.

[5] Idem.

[6] A. N. F 12 1497, 31 August 1788, Madame Champesle, pottery proprietor.

[7] Ibid., 25 May 1784, 'arrêt' granting a 'privilège exclusif' for ten years to Houzé de l'Aulnoit and the Douai pottery. Houzé refers to the amount of English pottery that is in France.

[8] Henry-Pierre Fourest, 'La Faïence Fine Française des Origines à 1820', Cahiers de la Céramique, du Verre et des Arts du Feu (Paris, 1969), p. 206. The Pont-aux-Choux factory (1743-1788) was awarded an exclusive privilege for ten years in 1743 to manufacture faïence 'façon d'Angleterre'.

[9] A. N. F 12 95, 15 May 1748, Montereau, 'poterie de terre à l'imitation de celle d'Angleterre', 'earthenware in imitation of that made in England'. Also Maddy Ariès, Donation Millet (Paris, 1979), p. 11.

[10] André Rémond, John Holker: Manufacturier et Grand Fonctionnaire en France au xviiième siècle (Paris, 1946), p. 53.

[11] See Chapter 2 for the background to Queensware.

[12] A. N. F 12 1497, 5 December 1774, Holker (fils) to Trudaine de Montigny. Le Mazois died on 31 March 1774.

[13] A. N. F 12 2442.

[14] Fourest, 'La Faïence Fine Française des origines à 1820', p. 203.

[15] Idem.
[16] A. N. F 12 2442.
[17] Maddy Ariès, Donation Millet, (Paris, 1979), p. 11.
[18] A. N. F 12 1498, 1 Nivôse An 3, mémoire, Houzé de l'Aulnoit and Georges Bris to the Comité de Commerce.
[19] Provinces Réputées Etrangères, Provinces Reputed Foreign, constituted a special tariff area. In effect, Douai, as a part of the Flanders region, had to pay duty on goods entering or leaving the rest of France. This included Paris which had extra tariffs.
[20] A. N. F 12 1497, January 1775, Holker to Trudaine.
[21] H. J. Powell, Glass-Making in England, (Cambridge, 1923), p. 31. In 1615 the use of wood as fuel for glass furnaces was forbidden by proclamation. Coal then superseded wood as the predominant fuel in most furnaces, including glass.
[22] Hilary Young, 'Evidence for Wood and Coal firing in the Design of Kilns in the 18th. Century English Porcelain Industry, English Ceramic Circle, Transactions, vol. 17, Part 1, 1999, pp. 8, 9.
[23] Michael Sonenscher, Work and Wages. Natural law, Politics and the eighteenth-century French Trades (Cambridge, 1989), p. X1. The livre was the standard unit of currency. 1 livre comprised 20 sous and 1 sou or sol comprised 12 deniers. An écu or crown was worth 3 livres. A louis was worth 6 livres. The rate of exchange in 1787 was 25 to the English pound. This is calculated from the comparative prices of Manchester cotton quoted by Rabasse and Hurard (fils) of the Normandy Chamber of Commerce in 1787. They said that cotton 'has at present not surpassed 8 shillings or 10 livres the yard'. Archives départementales, Seine-Inférieure, C 1092, Observations préliminaires de la Chambre de Commerce de Normandie sur le Traité de Commerce avec l'Angleterre.
[24] A. N. F 12 1497, 10 September 1774, application for an 'arrêt'.
[25] Ibid., January 1775, Holker to Trudaine.
[26] Sonenscher, Work and Wages , p. 64.
[27] Idem.
[28] A. N. F 12 1497, January 1775, Holker to Trudaine.
[29] Yale University, Beinecke Rare Book and Manuscript Library, Holker Papers, April-August 1786, c. June 1786. Holker (père) died on 27 April 1786 and details of what his only son inherited are given. Factories are mentioned like 'celle de fayance établie à Montereau'.
[30] A. N. F 12 1497, January 1775, Holker to Trudaine.
[31] Ibid. Holker signed his name and full title on some of the documents in this file.
[32] Yale, The Papers of Benjamin Franklin, 25, Passy near Paris, 4 December 1777, Benjamin Franklin to John Hancock, recommending Holker (fils) as a useful friend to America.
[33] A. N. F 12 1497, September 1774 till May 1775. These included: manufacture de terre façon d'Angleterre, fabrique de potterie (sic) d'Angleterre, fabrique anglaise telle Queens Ware, fabrique de fayance angloise, fabrication de la fayance angloise dite Queens Ware, une manufacture de fayance à l'instar de celle d'Angleterre, une manufacture de fayance à imiter celle d'Angleterre, entrepreneurs de terre façon d'Angleterre.
[34] A. N. E 2515 folios 292-294, 15 March 1775, arrêt du Conseil du Roy.
[35] Idem.

[36] Josiah Wedgwood, An Address to the Workmen in the Pottery on the subject of Entering the Service of Foreign Manufacturers (Newcastle, Staffs.,1783), pp.11-13. This work is cited by courtesy of the Trustees of the Wedgwood Museum, Barlaston, Stoke-on-Trent, Staffordshire, England.
[37] A. N. F 12 1497, January 1775, Holker to Trudaine.
[38] Idem.
[39] A. N. F 12 1315, Alcock, 1757-1762.
[40] A. N. F 12 2442, 23 Brumaire An 3, Rapport sur la Manufacture de Faïence de Chantilly fait à la Commission d'Agriculture et des Arts, par les Citoyens Besson et Darcet.
[41] Idem.
[42] Sonenscher, Work and Wages, pp. 32-38.
[43] A. N. F 12 2442, An 3, 'mémoire', Besson and Darcet.
[44] A. N. E 2515, folios 292-294, 15 March 1775.
[45] Idem.
[46] Idem.
[47] Idem.
[48] Idem.
[49] Idem.
[50] Idem.
[51] Ibid., folio 295.
[52] A. N. F 12 1497, 15 May 1775, arrêt du Conseil du Roy.
[53] Idem.
[54] Idem.
[55] Michel J. Roullot, Les Faïences Artistiques de Quimper aux xviie et xviiie siècles, (Paris, n.d.), p. 40.
[56] A. N. F 12 1497, 15 May 1775, arrêt du Conseil du Roy, Clark and Shaw.
[57] Sonenscher, Work and Wages, p. 3.
[58] A. N. F 12 1497, 15 May 1775, arrêt du Conseil du Roy, Clark and Shaw.
[59] John R. Harris, Industrial Espionage and Technology Transfer. Britain and France in the Eighteenth Century (Aldershot, 1998), p. 552.
[60] John Torpey, The Invention of the Passport. Surveillance, Citizenship and the State (Cambridge, 2000), p. 20.
[61] A. N. F 12 1497, 15 May 1775, 'arrêt'.
[62] Idem.
[63] These were obligatory and intermittent duties that the local seigneur expected his vassals to perform free of charge. It was a form of taxation which affected every French citizen unless they had exemption.
[64] A. N. E 2515, folios 292-294, 1774-75, Clark and Shaw.
[65] A. N. F 12 1497, 15 May, 1775, 'arrêt'.
[66] Idem.
[67] Idem.
[68] A. N. E 215, folio 295, 15 March 1775.
[69] Idem.
[70] A. N. F 12 1497, January 1775, Holker to Trudaine.
[71] Thomas Bentley, Journal of a Visit to Paris 1776 (Sussex, 1977), edited by Peter France, p.71.
[72] The Transcripts of the Letters of Josiah Wedgwood 1, in 15 vols. Unpublished, the Wedgwood Museum. August- September 1776, L 8687 25. These documents

are quoted by courtesy of the Trustees of the Wedgwood Museum, Barlaston, Stoke-on-Trent, Staffordshire, England.
[73] Ibid., 7 September 1776, L 8695 -25.
[74] Ibid., 17 September 1776, L 8695.
[75] A. N. F 12 1497, 25 May 1784, 'arrêt', Houzé de l'Aulnoit.
[76] A. N. F 12 1498, 1 Nivôse An 3, Houzé and Bris, 'mémoire' to the Comité de Commerce. Also A. N. F 12 2442, 4 Floréal An 10, Michaut to the Minister of the Interior.
[77] Jeremy Black, War for America. The Fight for Independence 1775-1783 (Bath, 1991), p. 146.
[78] A. N. F 12 1498, 1 Nivôse An 3, Houzé, 'mémoire'.
[79] Idem.
[80] Idem.
[81] Yale, The Franklin Papers, The Franklin Library, Facsimiles of Manuscripts relating to the United States, Holker, 322 (2), 332, 771, Passi (sic) 5 January 1778.
[82] Yale, B. F. Stevens, W. B. Willcox (eds) The Papers of Benjamin Franklin, 25, p. 141.
[83] Ibid., 25, pp. 96, 238, 349.
[84] Ibid., 28, p. 333, Jonathan Williams to Benjamin Franklin, Nantes, 12 January 1779. An American vessel going from France to the United States had been blown up. Williams tells Franklin: 'I had nothing on board except a cask of Queens china which Mr. Holker presented me with'.
[85] Holker (fils) was involved in the late 1780s in setting up ironworks near Pittsburg. Beinecke, Holker Papers, ud. Information passed on by the late John Harris.
[86] Yale, The Papers of Benjamin Franklin, 11, 5 November 1780, Killingworth, Benjamin Gale to Benjamin Franklin.
[87] Wedgwood, Address, 1783, p. 8.
[88] Beinecke, Holker Papers, Rouen, 26 July 1782.
[89] Yale, The American Philosophical Society, X1, Clark et Cie., bill for tableware, June 3-4, 1780, other documents dated 4 June 1780.
[90] Beinecke, Holker Papers, Rouen, 20 October 1779.
[91] Idem.
[92] Idem.
[93] Jacques Bontillot, Curator, Musée de la Faïence, Montereau. Sens Yonne is situated at no great distance from Montereau.
[94] Idem. .
[95] Yale, The American Philosophical Society, X1, Clark et Cie.,Bill for Tableware, June 3-4 June 1780.
[96] Idem.
[97] Keele, The Wedgwood Transcripts, Etruria, 8 August 1776, 8687-25.
[98] Yale, The American Philosophical Society, X1, Clark et Cie, Bill for Tableware, June 3-4 1780.
[99] Idem.
[100] Idem.
[101] Idem. This is a surprisingly modest sum.
[102] Idem.
[103] Claude-Anne Lopez, Mon Cher Papa. Franklin and the Ladies of Paris (New Haven, 1966), pp. 123, 335-336.

[104] Stephen Conway, The War of American Independence 1775-1783 (London, 1995), pp. 241-242. This loan required 165.4 million livres (about £7.16 million) per year in interest payments.
[105] Conway, The War of American Independence, p. 222.
[106] Lopez, Mon Cher Papa, pp. 126-128.
[107] Idem.
[108] Idem.
[109] Ibid., p. 131.
[110] Yale, The American Philosophical Society, X1, Clark et Cie., Bill for Tableware, 3-4 June 1780.
[111] Claude-Anne Lopez, Benjamin Franklin and the French Revolution (Philadelphia, 1990), passim.
[112] Idem.
[113] Yale, American Philosophical Society, X I, Clark et Cie, 1780, accompanying documents. Benjamin Franklin's daughter, Sally Bache, asked her father in 1773 when he was in England to send her some 'Queen's Ware'.
[114] Bentley, Journal, 1776, p. 61.
[115] Yale, Jefferson Papers, I X, 313, 3 March 1786, to Rayneval referring to Vergenne's promise about giving him permission to import banned goods.
[116] Beinecke, Holker Papers, Rouen, 29 January 1783, Holker (père) talks about 'notre ami de Passy'. This is one of many references to Franklin.
[117] Yale, The Papers of Benjamin Franklin, 25, Passy near Paris, 4 December 1777, Benjamin Franklin to John Hancock : 'Sir, the bearer of this, Mr. Holcker (sic), is a Gentleman of excellent character, of great credit to this country and one of my particular friends...I beg leave therefore to recommend him to your acquaintance'. Also, Passy near Paris, 24 December 1777, Benjamin Franklin to Jonathan Williams : 'Sir, the bearer Mr. Holker is a gentleman of great worth and excellent character and a particular friend of mine'.
[118] Beinecke, Holker Papers, miscellaneous references.
[119] Yale, The American Philosophical Society, X1, Clark et Cie., Bill for Tableware, June 3-4 1780.
[120] R. G. Haggar, The Whitehead Catalogue, 1798 (Milton Keynes, n. d. [1973]).
[121] Ariès, Donation Millet, pp. 11-12.
[122] Idem.
[123] Idem.
[124] Idem.
[125] Beinecke, Holker Papers, June 1786.
[126] Idem.
[127] Yale, The American Philosophical Society, X1, Clark et Cie., Bill for Tableware, June 3-4 1780.
[128] Acte d'Association pour l'établissement à Andenne, d'une fabrique de faïence, de terre à pipe, de grès et de porcelaine, 30 August 1783. The surname Shaw appears as Shoan. I am indebted to Pat Halfpenny, former Keeper of Ceramics at Hanley Museum and Art Gallery, who passed on this document. It had been sent to Hanley by a Colonel Victor Howart in Brussels.
[129] Beinecke, Holker Papers, April-August 1786, c. June 1786.
[130] Rémond, John Holker, pp. 26-27.
[131] A. N. F 12 1315 A , Alcock, Willoughby, Hide, Holker (fils).
[132] Wedgwood, Address, 1783, pp. 9, 10, 15.

[133] Keele, The Wedgwood Manuscripts, Liverpool and Etruria, Public Office, Bow Street, Saturday, 25 October 1783, L 47-8660.
[134] Idem.
[135] Idem.
[136] David Jeremy, 'Damming the Flood : British Government Efforts to Check the Outflow of Technicians and Machinery 1780-1843', Business History Review, LI, No1 (Spring1977), p. 8.
[137] A. N. F 12 1315 A, 1757-1758, Alcock, referring to Mrs. Alcock who was imprisoned in England.
[138] John Harris, unpublished lecture text, 'Industrial Espionage in the Eighteenth Century', 1985.
[139] According to Simeon Shaw, History of the Staffordshire Potteries (Hanley, 1829), p. 2, Hall Green does not figure among the list of pottery areas. There is, however, a district of this name in the suburbs of Birmingham.
[140] Acte d'Association pour l'établissement à Andenne, d'une fabrique de faïence, de terre à pipe, de grès et de porcelaine, 30 August 1783. Recipes refer both to the constituent composition of clay bodies as well as glazes.
[141] No precise equivalent for the Belgian florin in the eighteenth century could be found in various encyclopaedias dealing with currency. Partners in another factory in France in 1784 had to pay 10 000 livres in similar circumstances. It was probably worth 5 French livre tournois.
[142] Donald Towner, Creamware (London, 1978), chapter on European imitation creamware.
[143] Tom Kemp, Economic Forces in French History (London, 1971), p. 65, note 5, on the different fiscal divisions that existed within the territories of France.
[144] A. N. F 12 1498, 1781, Leighs, Bris.
[145] G. W. & F. A. Rhead, Staffordshire Pots and Potters (London, 1906), p. 333.
[146] Aimé-Houzé de l'Aulnoit, Essai sur les Faïences de Douai dites grès anglais (Lille, 1882), pp. 5-8.
[147] Ibid., pp. 11-12.
[148] Fourest, 'La Faïence Fine Française', Introduction, unpaginated.
[149] Colin Haydon, 'The Mouth of Hell: Religious Discord at Brailes, Warwickshire, c. 1660-c. 1800, The Historian, No. 68 (Winter, 2000), p. 23.
[150] A. N. F 12 1497, 1995, Houzé de l'Aulnoit, 'mémoire' to the Minister of the Interior.
[151] Jeremy Black, War for America. The Fight for Independence 1775-1783 (Bath, 1991), p. 146. From 16 June 1778 France was at war with England.
[152] Statute 5th. Geo. Ch. 27.
[153] A. N. F 12 1315 A, Archives du Ministère de l'Intérieur, 1765, Trudaine to the duc de Praslin, Minister for War, 'pour lui demander un passeport pour le Sr. Hide qui veut passer en Angleterre', 'to ask him for a passport for Mr. Hide who wants to go to England'.
[154] De l'Aulnoit, Essai, p. 93. In 1784, Etienne Hutchinson and Thomas Oberey managed to reach England without interception but were detained on their return to France. Their employers, the Leighs, had to pay for the costs of their incarceration, fees to the gaoler and to the officers of the law who brought them back to Douai. They also had to pay travel expenses. The word 'passe-port' is actually used.
[155] Idem.

[156] Robin Reilly, Wedgwood:The New Illustrated Dictionary (Woodbridge, 1995), p. 189.
[157] De l'Aulnoit, Essai, p. 8
[158] A. N. F 12 657 f 91, 26 January 1776, Trudaine de Montigny, 'mémoire'.
[159] Bibliothèque Mazarine, Ms. 2. 840, 1752, John Holker, 'mémoire'.
[160] Keele, The Wedgwood Manuscripts, Etruria and Liverpool, 8 March 1784, E 30/22321.
[161] Archives communales, Chantilly, An 4. Anne Perry was the wife of James Leigh.
[162] De l'Aulnoit, Essai, pp. 70,75,90.
[163] Ibid., p. 18.
[164] Idem.
[165] Idem. This was a payment of 18 livres each.
[166] Idem.
[167] Ibid., p. 35.
[168] Idem. The management 'sent the funds there (London) to recruit foremen'.
[169] Idem.
[170] Idem.
[171] Idem.
[172] Idem.
[173] Idem.
[174] Wedgwood, Address,1783, p. 15.
[175] De l'Aulnoit, Essai, p. 35.
[176] Ibid., p. 73.
[177] Archives communales, Chantilly, An 4, Leigh.
[178] A. N. F 12 1498, 1798.
[179] De l'Aulnoit, Essai, p. 73.
[180] Keele, The Wedgwood Manuscripts, Etruria and Liverpool, 3, E 30-22321, 8 March 1784.
[181] Idem.
[182] Idem.
[183] Idem.
[184] Idem.
[185] Idem.
[186] Jeremy, 'Damming the Flood', passim and in particular p. 11, the Traitorous Correspondence Act, 33 Geo. 3, c 27.
[187] Wedgwood, Address, p. 18, 5 th. Geo. Ch. 27.
[188] Harris, The Transfer of Technology, pp. 210, 211, 330, 332.
[189] Ann Finer and George Savage, editors, The Selected Letters of Josiah Wedgwood (London, 1965), p. 288.
[190] Keele, The Wedgwood Manuscripts, Etruria and Liverpool, E 26-18959-18963, April 1784.
[191] Ibid., 24 April 1784, E 26 –18959, Some hints Respecting the Means of Preventing the Emigration of our Workmen into the Service of foreign manufacturers.
[192] Ibid., E 26- 18965.
[193] Ibid., 10 April 1784, E 26-18964.
[194] Flanders was part of France despite being a 'province reputed to be foreign'. The management of the Douai factory obtained their letters patent and their

exclusive privilege from the King of France. Copies are to be found in the Salle Clisson in the Archives Nationales in Paris.

[195] Keele, The Wedgwood Manuscripts, Etruria and Liverpool, 18964-26, 10 April 1784.

[196] Idem.

[197] Idem.

[198] Llewellynn Jewitt, The Ceramic Art of Great Britain (New York, 1883), p. 509. At this point no connection between Wedgwood and Leigh is known.

[199] De l'Aulnoit, Essai, p. 35.

[200] PRO, Assi. 5/103 Staffordshire Summer Assizes 1783, R v James Perry, labourer...for attempting to persuade Nathan Jackson, potter, to go to France...

[201] Keele, The Wedgwood Manuscripts, Etruria and Liverpool, March 8 1784, 3, E 30-2232.

[202] Idem.

[203] Wedgwood, Address, pp. 11-13.

[204] Keele, The Wedgwood Manuscripts, Saturday, 25 October 1783, L47-8660.

[205] A. N. F 12 1497, also de l'Aulnoit, Essai, p. 11.

[206] Idem. Also de l'Aulnoit, Essai, p. 15.

[207] De l'Aulnoit, Essai, p. 128. This translates as 'earthenware resistant to heat'. Queensware could not be used as a body for cooking vessels but it was harder and denser than ordinary wares, especially French pots of this period. The reference to 'heat resistance' was likely a circumvention of government rules to acquire the exclusive privilege.

[208] Idem.

[209] Idem.

[210] Ibid., p. 132.

[211] A. N. F 12 1498 A, An 8, Moitte.

Chapter 4

Transfer of English Coal Technology.

4.1 Introduction.

The theme of this chapter involves the transfer of English coal technology. This was an issue that had preoccupied French government thinking for decades. Coal had applications beyond its basic use in firing schedules. French government interest in English kiln technology broached the wider concerns of industrial excellence and versatile technical expertise. These were English preserves which the French wished to emulate and assimilate. The precise use of coal in controlled conditions was one of the keys to English industrial prowess. Efforts were made to apply coal-fired kiln technology to the pottery industry.

4.2 French government interest in English kiln technology.

An industrial issue which had been broached at government level for decades now came into sharper focus. As has been noted, this was a problem that affected the development of industry as a whole with particular relevance to the manufacture of pottery. The Government knew that French supplies of wood were diminishing and were unequal to meet the increasing demands of French manufacturers as industry expanded. Safeguards to maintain national wood reserves had been in force since 1723 when a ban had been placed on the export of wood.[1]

French scientists and technologists had surveyed the technological progress of the pre-eminent contemporary industrial leader, England.[2] They had reported back that coal-fired technology was essential to the continuing development of French

industry. The transfer of this technology had become a government issue.[3] Coal was being suggested as a valid alternative on multiple levels of expediency.

The French Government had been interested in English pottery technology since the 1750s. Academicians and scientists had been commissioned by the State to explore ways of improving French industry. Jean Hellot was one of these technocrats and academics. He was a member of the French Academy of Sciences and adviser to the Government on various French industries and their materials. These industries included the manufacture of ceramics.[4] As a young man Hellot had travelled and researched in England. In 1740 he had been elected a fellow of the Royal Society of London. His interest in English science and industrial technology remained a lifelong preoccupation.[5]

Hellot was an academic and professional adviser to the Government.[6] He had compiled an extensive private manuscript book of encyclopaedic detail on all aspects of technical and industrial processes. Among these writings are documents on the manufacture of ceramics in England that date from the 1750s. They include 'details of personal techniques and recipes given to Jean Hellot by Jacques-Louis Brolliet, in January and February 1759'. Brolliet was a chemist, potter and scientist. His career was varied. He had even been employed by Hellot for two years in the capacity of a servant between spells of employment in England.[7]

Brolliet had experience both as a potter and as a manufacturer in England. In January 1755 he had placed a puff in Jackson's 'Oxford Journal' promoting his china factory.[8] After service in Canada under Montcalm, he had found himself a prisoner-of-war in England in 1757 and had been employed at the Chelsea

porcelain factory. Here he had worked with Simon François Ravenet for some months. Ravenet was a skilled engraver who was involved in the early application of transfer printing to porcelain.[9]

Brolliet managed to get out of England and returned to France where he found employment in the Sèvres Royal Manufactory of Porcelain. This factory had close links with the Government and with the Academy of Sciences. Once more in contact with Hellot, Brolliet passed on information about the developments that he had noted in English pottery manufactories. His reports included details about English kilns as well as innovations in ceramic decoration.[10] He demonstrated the process of transfer printing that he had observed in England. Brolliet employed this method of decoration during his time at Sèvres before he moved on to new involvement in pottery production.[11] In this way, transfer printing was employed, briefly, in France in 1759, thirty years before a patent application for the 'Description du procédé d'imprimer (sur) porcelaine, fayance et poterie' was submitted to the Academy of Sciences and the National Assembly by an English entrepreneur in France.[12]

An important aspect of Brolliet's pottery manufacturing experience in England was the information that he passed on to Hellot about English kiln technology. An experienced potter as well as an accomplished chemist, he had not only managed his own factory in England but had worked in several factories in France besides Sèvres and Vincennes.[13]

There are indications that he was employed by the duc de Brancas Lauraguais in the 1760s.[14] He probably informed Brancas Lauraguais about the English pottery scene before the Duke came to England in 1766 and petitioned the King for a bill

to grant him 'the sole use and benefit' accruing from an invention to make 'porcelain ware' using a new method of manufacture.[15] Brancas Lauraguais was also known to have developed a high-fired white ware which was probably akin to white salt-glaze ware. Brolliet's knowledge of English kiln technology was no doubt useful to the Duke.[16]

Hellot extracted as much information as he could from Brolliet on English kiln architecture and firing techniques. He was particularly interested in how the English achieved success in manufacture and insisted on a cardboard model of the type of kiln used. According to Brolliet's information, the firing at Chelsea took place in a round kiln, shaped like a tower with between six and eight furnaces or fire-holes.[17]

Hellot's interest in kiln technology was part of the much wider issue of coal technology in which English expertise was renowned. Government Inspectors of Manufactures had been sent on reconnaissance missions to England to explore the potential of English coal-fired techniques with application to specific industries. These included the heavy metal industry and the pottery industry. As early as 1738 a government inspector, Ticquet, had written a report to Hellot on the advantages of coal-fired furnace technologies that the English were developing.[18] Brolliet's information added to this reserve of technocratic information on English manufacturing practices and firing techniques. He was later to obtain a 'privilège exclusif' for improvements he introduced to France in the manufacture of crucibles.[19] This work on refractories had been underpinned by his residence in England where such technology was more advanced than in France.

In 1764 Hellot intensified his interest in English coal-fired kiln technology. He was the organizing force behind an espionage mission to England funded by the French Government. The goal of this endeavour was to amass data on furnace and kiln technology in England. Hellot itemised what information the participating inspector, Gabriel Jars, was to collect as he toured factories and potteries. John Holker ensured that an itinerary was available in England for Jars. This indicated what he should visit as he toured the main industrial areas of England, posing as a naturalist.[20]

Hellot was particularly interested in the production of English white ware pottery. He stated in his file on English pottery that :

> La plus belle poterie blanche d'angleterre (sic) vernie par la vapeur du sel se nomme WARE et se fait (dans) Schtaffshire (sic) à 110 milles de Londres et à Brentforth (sic) à 7 milles.[21]

Hellot was referring to white salt-glaze stoneware that was produced throughout the Potteries. During his stay in England Jars visited pottery-manufacturing areas. He wrote full reports to the Government and Hellot on the ceramic wares produced in Newcastle in Northumberland and Newcastle-under-Lyme in Staffordshire.[22] His report on the manufacture of white salt-glaze stoneware in this area remains crucial to the historiography of technology in English ceramics. It provides a precise account of the preparative, manufacturing and firing processes. It also describes how the salt was added to the kiln to produce the white salt-glaze stoneware that was technically the forerunner of creamware and Queensware.[23]

Jars did not spend time describing the actual design of the kilns used in this process. 'The kilns in general that are used to fire pottery are all the same; the

only difference in the factories is in the size' was how he expressed it.[24] The actual firing process is described concisely with details of the eight firemouths and eight inner bag-flues. The only outlets for the flues were at the top to prevent discoloration of the stoneware from the flames. The dome of the vault was ringed with holes at two different levels around the kiln. These remained plugged till the critical point in the firing. It was by means of these apertures that the salt for the glazing process was introduced into the kiln. Bungs of saggars were stacked below each of the salt holes with the uppermost container covered with a conical lid. Jars then pointed out that white ware was fired once but continuously for forty eight hours.[25] It is crucial that such a good account of an English pottery process should be recorded by a French industrial spy who had been given precise instructions to do so by government officials. This is the best extant account.

The interest in English pottery and in particular English kiln technology and design continued throughout the 1760s. From 1768 to 1771 an architect and artist, a member of the Ecole Nationale Supérieure des Beaux-Arts, toured England on a variety of occasions and kept a sketchbook of buildings and installations. François Joseph Bélanger made particular note of the kilns used in the production of pottery and porcelain in Derby. His diagrams indicated a kiln design that combined elements of Staffordshire coal-fired kilns and London tin-glaze wood-fired kilns.[26] He too, like Jars, gave a precise but pictorial account of salt-glaze kiln technology.[27] Bélanger also worked for the duc de Brancas Lauraguais but this was at a later date in the early 1770s.[28]

As in the case of Jars who provided the best extant description of an English eighteenth-century pottery process, Bélanger's diagrams of the internal structure

of an eighteenth-century pottery kiln (albeit for porcelain) are the only examples that have so far come to light.[29] The French Government's interest in English pottery in the eighteenth century has provided a rich source of information that simply does not exist in English archives.

The reason for this lack of written evidence in English sources brings the historiography of technology firmly into play. David Jeremy describes it as the 'non-verbal, non-literary, non-graphic nature of technological transference'.[30] Most processes, even kiln designs, were taken as normal and ordinary and did not need to be set down for posterity. They existed in the heads of the master craftsmen who devised or operated them on the shop floor. It was their task and duty to convey these details and designs to the next generation of apprentices and workers. These 'secrets' accompanied the 'tours de main' that Chaptal said were 'the soul of industry'.[31] He may not have included pottery but he was thinking of the influence that English technology had exerted on French industry when he wrote the following:

> En ne parlant que des temps modernes, nous avons vu plusieurs genres d'une industrie s'établir, prospérer en Angleterre, et rendre pendant longues années, toutes les autres nations tributaires de leurs produits: nous avons fait tous nos efforts pour nous en approprier la fabrication; la filature par mécanique, la quincaillerie, les cotonnades, la draperie légère, tout est devenu à la fois l'objet de notre ambition: mais en important les machines, en s'appuyant sur quelques procédés transmis, a-t-on pu croire avoir naturalisé ces arts difficiles dans toutes

les parties? A-t-on cru posséder ces détails immenses, ces *tours de main*, ces habitudes qui sont l'âme de l'industrie?[32]

Chaptal was stating that the transfer of the mechanics of a craft or skill was not enough to effect the successful infusion of English industrial methods into French manufacturing. So much remained unknown.

David Vincent writes that:

> On the one side was a body of unwritten, irrational, non-analytical practices, handed down from generation to generation; on the other were scientifically deduced principles which underpinned every branch of production. These could be separately learned and then combined to form a workingman capable of responding to the next stage in the course of innovation.[33]

Akos Paulinyi stresses that it was 'difficult to acquire technical skills outside the production process itself'.[34] John Harris also argued that 'the new skills were not embodied in drawings or manuals'.[35] They were the product of years of experiment and natural technological evolution.

4.3 The issue of coal-fired technology.

There were further indications of the French Government's interest in the process of coal-fired kiln technology. These included the efforts made to explore the availability and exploitation of coal reserves in France. The archives of the Conseil de Commerce indicate that there was a developing interest in the establishment of French coal-mining companies.[36] This had begun before the 1750s. During October 1752 Mignot de Montigny, in his capacity as a member of

the Académie des Sciences[37], made a tour of inspection of the mine at Montrelais near Ingrande.[38] His assessment of the technical aspects of the mine extended to an evaluation of the poor road system that existed between Ingrande and Montrelais together with the difficult road conditions that led to Nantes.[39] This mitigated against the rapid development of a rich coal seam.

Four years later this same mine was visited and reviewed by a party of scientists and academicians. Gabriel Jars, Duhamel Du Monceau and Grimot wrote a report that came to very similar conclusions as de Montigny.[40] The quality of the coal was equivalent to that produced in Newcastle in England. They pointed out that wood was very expensive in the region. They suggested that transport costs could be reduced by using river freight along the Loire instead of pack horses across country. It was a reliable mine but needed further development. [41] Jars, Duhamel and Grimot did point out that there had been attempts to develop coal mining in Angers, St. Aubin and Luigné in Anjou. These were better situated as they were closer to the Loire. They added that the Angers company hoped to obtain a 'privilège exclusif' to exploit the seam there.[42] There were, therefore, coal mines in France ready for exploitation and investment despite the inadequacies in transport and accessibility.

The Conseil de Commerce was involved with coal mines and the legal wrangles that arose frequently. These occurred between shareholders or concessionaires of mining companies and the landowners on whose property the coal had been found and was being excavated.[43] Coal rights were seigniorial. Mine owners had to deal directly with the owners of the land and compensate them for whatever minerals were removed: 'en indemnisant les propriétaires de gré à gré ou à dire

d'experts'.[44] The Montjean mine figured in the files of the Bureau in the late 1750s, Pont-Réan in the 1760s. Coal was delivered free of duty to Paris from the Forez mines from 1763 onwards.[45] There were mining companies at Fins, Carmaux, Graveney, Mouillon and Anzin among others.[46] In 1763 the duc de Chaulnes petitioned the Conseil de Commerce for a concession in perpetuity to exploit the mines at Montrelais and Ingrande, so they were still in business despite the critical reports of the members of the Academy of Sciences.[47]

The exploitation and the use of French coal was, therefore, not unknown to the French authorities. The problem lay in the efficient application of appropriate kiln or furnace technologies. The French Government looked elsewhere for this crucial and pragmatic technical expertise. It was relevant to the issue that Gabriel Jars, on the instructions of Hellot, went to England to make a survey of the state of English coal-fired technologies. As has been mentioned, he reviewed the heavy metal and coal industries in England as well as the pottery industry in Staffordshire and Durham. [48]

The French Government gradually evolved a policy regarding the use of coal in industry. It had been forced to address a problem that had been present for some time. French technologists and scientists had studied English industry and had identified the need to use coal in certain processes. This crucial stage in French technological development needed to be translated to French industrial concerns. Technocrats like the baron de Dietrich[49] wrote reports to the Intendants of Commerce and to the Controller of Finance about the use of coal in pottery establishments.[50] These government figures agreed that pottery was an important industry to the nation. They also deemed it the duty of the Government to 'help

French manufactories to thrive and grow'.[51] The fact that wood was in short supply added an extra dimension to government imperatives.[52]

4.4 French government policy with regard to the use of coal.

As has been noted, there was a growing awareness in government circles that wood-fired industries in France were lagging behind their English counterparts where coal technology was dominant. The inspector, Ticquet, had drafted a seminal report on the use of coal for Hellot in 1738.[53] Ticquet had spent two months in England and had been impressed by the intense use of coal that he had seen there. In his report he had described the different kinds of coal used, had stressed its importance in English industry and had suggested that the French should look into coal as a future fuel source.[54] The use of coal was vital to the development of French industry. It was also part of a wider technological issue.[55]

Administrators like Charles-Daniel Trudaine together with the Royal Academy of Sciences and the Factory Inspectorate became increasingly interested in the need to develop French coal resources and a French coal-fired furnace technology.[56] Gabriel Jars had already been sent on a fact-finding mission to Germany and had toured German mines around Dresden in 1756 accompanied by a fellow Inspector, François Guillot Duhamel Du Monceau.[57] His subsequent industrial espionage in England in 1764 was concentrated, as has been stated, on the coal-fired industries like metallurgy and ceramics.[58]

From the 1770s onwards there were further reports and 'mémoires' on the need to switch to coal. Again government policy encouraged this development in technology. In 1770 Bertin wrote to all his Intendants about the increasing need to

conserve wood and use coal.[59] Certain areas like the Languedoc were in the vanguard of the new technology and more open to developments in kiln and furnace technology.[60] In the 1770s Jean Holker (fils) had intended to develop several industries in this region, among them a pottery concern which would have produced earthenware using coal-fired technology.[61] These initiatives came to nothing when Holker left France on government business. He had been assigned more pressing duties in the new United States of America.[62]

Another technocrat who took the use of coal a step further was Marchant de la Houlière who was involved in metal production. The dearth of wood had been a drawback for the development of his iron works and he had gone to England in 1773 to find out more about coal and furnace technology.[63] There, through the agency of the French Ambassador and with the help of Matthew Boulton, de la Houlière had met the Wilkinson brothers.[64] He wrote reports to the French Government and asked that the use of coal become a serious consideration in industrial policy.[65] De la Houlière maintained a useful relationship with these English ironmasters in the 1770s and William Wilkinson subsequently transferred aspects of English coal-fired technology to France.[66]

Coal and its application remained an important aspect of French government thinking. This also applied to the development of the pottery industry at this time. There is a debate whether the French were interested in coal because they understood the implications for the development of French industry as a whole. It remains uncertain whether they were addressing the problems thrown up by the acute shortage of wood from the 1760s onwards.[67] Woronoff also questions French government policy.[68] It is likely, however, that the more progressive

industrial thinkers with a long-term perspective did perceive what Rosenberg calls the 'focusing device'. This implied that technological effort was concentrated and not dissipated in multiple and unevenly successful industrial efforts.[69] Wrigley's view of a mineral-based economy is, however, much more applicable to the English situation than the French one at this stage in its industrial development.[70]

The French Government did devote expert attention to the problem. In 1773 the chevalier Grignon was employed by the Government to examine the state of French industry.[71] As an ironmaster and technologist he pursued the study of different fuel technologies.[72] By 1778 he was advocating a shift to coal-using processes and had set up a small inspectorate to study coal applications which included some of the leading technocrats of the day.[73] De la Houlière was a member of this select group of Factory Inspectors as was Faujas de Saint-Fond and Grignon himself.[74]

An important member of this 'Bouches à Feu' Inspectorate, from the point of view of pottery development during this period, was the baron de Dietrich.[75] Although an ironmaster, de Dietrich had studied English furnace technology in England and was involved in the dissemination of coal technology in the pottery industry.[76] He later helped to implement a policy which was backed by Tolozan and Blondel.[77] In the 1780s Calonne was also instrumental in the creation of a progressive policy urging the use of coal in a variety of industries.[78]

De Dietrich's report on fuel did not appear till 1788 but the intimations of what he was advocating could be detected much earlier.[79] For decades there had been indications from government officials like the Holkers that the use of coal was crucial in technological and industrial development.[80] 'Mémoires' by Jars and

Faujas de Saint-Fond and the chevalier Grignon as well as Marchant de la Houlière had honed in on the coal question.[81] De Dietrich was saying what Ticquet had said fifty years earlier and what had been an ongoing preoccupation for French technocrats during this time.[82] The conclusion was that the way forward involved emulation of the English model.

In his letters to Trudaine, Holker (fils) had already identified the possibilities of using coal in the manufacture of English pottery in France.[83] The English managers of the Queensware factory in Montereau struggled with the problems presented by the use of wood in their firing processes. The King's Council had noted this in the 'arrêt' that it had granted Clark and Shaw in 1775.[84] To have changed to firing with coal was probably not cost-effective in the 1770s for the Montereau company. Too much outlay would have been involved in building new kilns with the appropriate vents and grids that firing with coal required.[85] The problem had been noted by the French Government, however.

From the mid-1770s onwards there was a government policy to encourage the establishment of potteries and ceramic establishments that would use coal in the firing of their kilns or ovens.[86] In July 1777 Montaran received a report from a factory inspector in Montpellier regarding a factory that was producing bricks in a coal-fired oven.[87] This factory was encouraged by the Government to remain in operation.[88] In Montpellier, like so many other places in France at the time, wood was expensive because it was still in short supply. This had been a threat to the continued existence of the concern and to many other manufacturers.[89] The Minister of the Interior had endorsed the continued validity of the brick factory run by the Noubel brothers. They were granted an 'arrêt' by the King's Council on 14

October 1777 and the intendant of Languedoc-Toulouse endorsed the importance of the use of coal in this industry and in this region.[90]

As the French Government continued to encourage the use of coal in the ceramic industries another aspect of the problem emerged. This involved the cost of transporting coal to the manufacturing premises. River and road tolls were high. In 1777 the marquis de Géoffre de Chabrignac in Montélimar was granted an 'arrêt' to use a coal-fired kiln.[91] The Government encouraged his use of coal but explained that it could not help him with the tolls which came within the fiscal jurisdiction of other princes and could not be waived.[92] The problems and financial hardships occasioned by the tolls and freight charges on coal feature often in the files of the Department of Trade.[93] These include the additional import duties from the provinces reputed foreign or from abroad.

Most factories at this time were producing English pottery or Queensware. 'Anglomanie' was still in full swing and there were illegal English wares to be found in most parts of France.[94] Potters or their backers were keen to produce imitation English wares. The Government pursued the policy that any new enterprise had to use coal.[95] One such instance was in Nevers where the protégé of the duc de Nivernois, a faïencier called David, wanted to open another factory.[96] There were twelve other earthenware potteries in Nevers and David was informed that he could start up a new establishment only if he used coal in his firing process. This was in 1778.[97]

In 1784 an entrepreneur called Muguet was granted an 'arrêt' so that he could set up kilns to dry plaster for use in the pottery industry. He was using coal in his firing process.[98] In 1784 Tolozan formulated a policy on the use of coal which

echoed the earlier edicts of 1722 and 1723 when wood and coal exports had been banned.[99] He was aware of the shortages and the technological problems. He continued to endorse a policy that moved away from wood in favour of coal.

In 1785 a debate on the use of coal in the production of English ceramics began. Georges Charles, a manufacturer and protégé of the duc de Chevreuse, argued that faïence, and by this he meant English pottery or Queensware, could not be produced in France using coal.[100] It could, according to Charles, only be made when wood was used in the firing: 'Il n'est pas possible d'alimenter les fours d'une manufacture de fayance qu'avec du bois' was how he expressed his views to the Government.[101] In a correspondence with Montaran, the Controller General of Finance, Charles pointed out that he had researched the topic and had come to the conclusion that only wood was viable as a fuel in fine earthenware production.[102] He went into technical details about the quality of flame required to achieve the results he wanted. He had been granted letters patent by Calonne to produce wares using coal-fired technology, 'à ne faire usage que de charbon'.[103] This had proved difficult. The reasons why are not given.

An 'arrêt' had already been granted but he wanted a dispensation allowing him to use wood so that he could continue in production.[104] The duc de Chevreuse was more demanding than most owners. Had already asked for an exclusive privilege with detailed requests.[105] Charles argued that he wanted to use wood to fuel his factory and was prepared to pay the high import and transport costs of doing so. He pointed out that the King's forest was only two leagues away and that the forest at Carmaux was a mere twenty leagues distant. Despite these entreaties

the Bressolles manufactory in the Languedoc was instructed to persevere with coal or go out of business.[106]

Another example of the French Government's policy on the use of coal is to be seen in the factory at Thionville near La Grange.[107] The level of bureaucratic involvement in this correspondence and the number of ministerial figures that deliberated on the issues concerned are noteworthy. The question of coal-fired technology at this manufactory in Lorraine lasted from 1785 till 1791 and was conducted by the owner of the concern, the marquis de Fourquet and his factory manager, Leroux.[108] They seemed to have no problems in handling the issue of coal-fired kilns. Perhaps their location near one of the main sources of coal in France meant that coal had always taken precedence over wood as a fuel, both domestic and industrial. Fourquet petitioned the Government for the title of Manufacture Roïalle with all the customary dispensations that went with this status.[109]

Fourquet's 'mémoires' and letters reflect the quality of his product which was fine earthenware or Queensware. His factory, according to a later report, manufactured 'terre de pipe' or creamware which was subject to high import duties when it entered the fiscal area covered by the 'ferme générale'. The city of Paris had additional tax regulations.[110] The Government did not respond promptly enough for Fourquet and a further 'mémoire' was sent by his manager Leroux.[111]

It is at this point that the baron de Dietrich was brought in to make a report on the factory at Thionville.[112] He assessed how they were coping with the coal aspect of the firing and how this had affected the quality of the product. In his first report of January 1786 the baron de Dietrich corresponded with Du Pont de Nemours about

the exemption of duties that the owner had requested. He also discussed the viability of Thionville becoming a Manufacture Royale.[113] Du Pont analysed the fiscal situation and contacted Thionville later the same month about the likelihood of royal status being granted to them.[114] All was moving favourably for the Lorraine factory at this point.

In his next report, this time to Blondel, the Intendant for Trade, de Dietrich stressed that a manufactory such as Thionville was an asset to the region as it embodied the Government's policy to exploit the use of coal in kiln technology. He pointed out that there was a regional shortage of wood which would have prevented its continued existence had it not been prepared to fire its product with coal.[115] He then gave a favourable technical assessment of the factory's firing procedures. He also sent Blondel a sample of the factory's product.[116] He stated that pottery was an important industry to the nation and that it was the duty of the Government to 'faire refleurir nos manufactures'.[117] In February 1786 Blondel agreed that Thionville should become a Manufacture Royale, an accolade granted only to 'établissemens nouveaux et uniques dans leur genre'. Tolozan, his fellow Intendant for Commerce, endorsed his decision.[118]

It was at this juncture that the ministerial decisions were altered. Calonne, who was the Controller General for Finance and consequently had the final word in any industrial issue, countermanded the ruling on the 'titre royal' but did grant the manufactory at Thionville a 'privilège exclusif' and a grant of 1200 livres tournois for five years.[119] This was to be paid from the Caisse de Commerce and would be subject to the usual conditions. This meant that the entrepreneurs had to 'justifier de l'activité et de la fabrication' their continued existence and production.[120] There

was also an administrative delay in the payment of the first instalment of the grant to the Thionville factory.[121] From the 1 March 1787 to the 3 March 1787 there was a flurry of inter-departmental memoranda passing from Du Pont to Blondel and finally ending up on Tolozan's desk with the rejoinder that he had to make certain that the grant was paid to Thionville.[122]

There are other examples of the French Government's continuing concern to promote the use of coal in the firing procedures of ceramic manufactories. Calonne figures once more on the ceramic scene.[123] Like Trudaine before him, he was an enthusiastic supporter of technological development and of new influences and ideas coming from abroad. He admired English ingenuity and inventiveness and regarded the use of coal as crucial in the industrial evolution of France.[124] He valued technology and invited outstanding English industrialists like Boulton and Watt to visit him officially in Paris to explain and demonstrate their inventions.[125]

He was so enthused by the idea of English industrial progress that in the 1786 he purchased the hardware and toy manufactory that Michael Alcock had set up in La Charité in the 1750s.[126] Calonne was interested in English coal-fired technology. On 23 October 1788 he invited a Lille porcelain manufacturer to Paris to demonstrate how he fired his kilns with coal.[127] The manufacturer, Lepère, successfully built and fired his oven for Calonne and was paid 2400 livres tournois for this and for his travel expenses back to Lille with his equipment.[128] The baron de Dietrich drafted a report on the importance of coal for Calonne in 1788.[129] When Calonne fell from power shortly after this the question of coal technology was subsumed by other more pressing issues.

There were, however, some further examples of coal technology being encouraged by the French administration. The Department of Trade gave a glass manufactory in Melun permission to maintain its premises. This was only ' à condition que le sr. Duhaut alimentera exclusivement sa verrerie avec du charbon de terre'.[130] This was in July 1788. In October 1789 another glassworks, this time in St. Etienne, in Forez, was allowed to continue provided it used coal to fuel its furnaces.[131]

The issue of coal was an important one and inextricably linked with the whole question of the transfer of English technology to France. The taste of the French consumer for everything English continued to dominate French markets. This would have further ramifications in the development of French manufactories producing English pottery in the 1780s.

4.5 The Rouen factory: Sturgeon.

Jean Holker (fils) had told Trudaine de Montigny in 1775 that the English potters, Clark and Shaw, were having problems with the wood-firing techniques at the Queensware manufactory at Montereau.[132] He had explained that they were more accustomed to firing Queensware with coal.[133] He had added that there were ample supplies of imported English coal in Rouen and good quality clay from the beds at Incarville near Rouen. He had mentioned that there were several vacant potteries with an available potential workforce in Rouen.[134]

The precision with which Holker had stated these facts is worthy of attention. His father had already been involved in an English pottery manufactory in Rouen in the 1750s. Two English workers, Brunt and Hoot, had been involved although the

factory had been managed by Frenchmen.[135] This undertaking had remained in operation for a few years. The Holkers had a variety of industrial and business concerns in and around Rouen, especially in the suburb of Saint Sever. They had financial connections with the Garvey brothers who were also based in Rouen.[136] Holker had added that he could not dedicate as much time as he would have liked to the factory in Montereau because his business and professional commitments had kept him in Rouen.[137]

All these details about the pottery potential of Rouen were included in correspondence concerning another pottery establishment at Montereau. The pragmatic logic of what he was telling Trudaine de Montigny seemed to indicate that he was probably considering the possibility of a pottery concern in Rouen at some future date. Holker (fils) had not missed the opportunity of giving his government mentor an indication of his future intentions.

It was mentioned earlier that in the 1770s Jean Holker (fils) had been interested in the dissemination of coal-fired technology to develop industry in the Languedoc. He had intended to establish a Queensware factory there which would have used coal-fired kilns.[138] Holker's plan had been to set up a factory first of all in Rouen which used coal instead of wood. Then, when the workers were expert in the process, Holker had intended to have them translate the entire proceedings to the Languedoc where they would have trained other workers in the techniques of firing with coal.[139] This was very much in line with the general government policy to promote coal-fired initiatives.

In 1784 a government adviser commented that the Queensware pottery produced at Montereau was not quite perfect in its imitation of the English and Wedgwood

original.[140] In the 1780s the English entrepreneurs at Montereau were still using wood–fired kilns. This French technocrat, on an espionage mission to England, commented on the quality of English Queensware that was so readily available all over the country.

Faujas de Saint-Fond was much more than an aristocratic traveller and dilettante. He was an ironmaster and scientist who was collecting all kinds of information on the state of English technology during his tour of Great Britain.[141] He had been impressed by the standard of the English Queensware that he had seen and had used everywhere in inns all over the country. He realised that the French manufacturers could only imitate it perfectly 'when they also could employ coal in making it'.[142] This was because it had to be fired at a constant and consistently high temperature which was best achieved with coal. Faujas de Saint-Fond was doubtless stating what Holker knew only too well.

An Irish entrepreneur, William Sturgeon did turn up in Rouen and English pottery was manufactured in his factory using coal-fired technology.[143] This factory also had the backing of the Government. It became a Manufacture Royale. It would seem likely that the Holkers were involved behind the scenes, especially as the Queensware establishment owned by Sturgeon was in the Saint Sever district of Rouen[144] with all the advantages that this entailed both for Sturgeon and for the Holker family business network.[145] There is, however, no direct evidence in the industrial archives that Holker was involved with Sturgeon. The American War of Independence then intervened and Holker (fils) did not maintain his interest in the development of Queensware, this time using coal-fired technology.

William Sturgeon arrived in Rouen in 1779 to establish an English manufactory, a 'fabrique de fayence façon d'Angleterre'.[146] Sturgeon was an Irishman who had come to France in 1776 and already had experience in various business ventures. He said that a range of 'different promises' had been made to him by government officials. After due deliberation, he had eventually chosen to settle in Rouen.[147] It may well have been that the Holkers had helped him select Rouen for the site of his English Queensware pottery. In this transfer of English technology Sturgeon was going to employ coal-fired kiln technology. This was at a time when the French Government was insisting that new pottery manufactories use coal instead of wood. If they refused to comply the State withdrew its permission for them to operate.

There were already many factories in Rouen producing English pottery. They were consequently in competition with Sturgeon. These rival factories were using wood-fired kilns and were importing wood to fuel them despite the availability of expensive English imported coal. In later petitions to the Government Sturgeon argued that he was trying to encourage and educate the Rouen potters to abandon wood in favour of coal.[148] He had given demonstrations and advice on the use of coal.[149]

Besides the brief to further embed the transfer of English Queensware technology in France, it is likely that Sturgeon was expressly charged to popularise and entrench the government policy on coal. Coal-fired kiln technology in the pottery industry was the reason why Sturgeon received government backing. Intendants of Commerce like Tolozan supported Sturgeon's establishment. His factory received grants over a period of years.[150] His business was a privileged one, a

Manufacture Royale protected by the Government. It fitted the profile of being a flagship enterprise with the mission to extend the state policy on coal.

Had he been able to convince the potters in Rouen to change to coal, this would have been a step forward for the French pottery industry and an advance for the government policy regulating it. Manufacturers all over France would then have gradually followed the lead of a potting centre like Rouen.

The obstinate refusal of his Rouen competitors to adopt his methods does not detract from Sturgeon's efforts to persuade or demonstrate his effective use of coal. He lacked the long-standing, professional and administrative clout that English technocrats like the Holkers possessed. His encouragement to emulate English firing techniques had no coercive bite to it. The influence that the Holkers had exerted in Rouen probably also worked against him, both as a manufacturer and as a foreigner. External pressures then intervened and countered any advances that Sturgeon may have made.

Sturgeon had administrative and bureaucratic backing but he financed his own establishment and did not appear to have any partners.[151] His business investment came from his wife, Henrietta Wentworth, who was wealthy in her own right. She had good connections in England through her family the Rockinghams.[152] Despite the fact that there were many empty factory locations available for rent, he had bought his factory premises, probably because it was in Saint Sever. He had engaged specialists to erect English kilns on the site.[153] Sturgeon then spent time and money in research and experimentation before he produced Queensware successfully from coal-fired kilns.

Soon he claimed 'qu'on pouvait cuire toute espèce de fayance du charbon'.[154] This probably indicated that he intended to widen his range of products. The early years from 1779-1781 were backed by the French Government in the person of Tolozan.[155] In 1781 Sturgeon's establishment became a Manufacture Royale and was awarded a grant of 2000 livres tournois per year for five years.[156] Among the privileges granted to this manufactory was the exemption from escheat duty which gave Sturgeon and any of his English or Irish workers the status of a French national.[157]

Despite the government backing or perhaps because of it, Sturgeon met difficulties and hostility in Rouen among French potters competing to make English wares.[158] Queensware was still the most popular pottery product for the French consumer at the time. The rivalry went as far as attempting to discredit him and his establishment.[159] No details are given of this campaign against him. With his exclusive privilege and the kudos of being a royal manufactory, Sturgeon's factory had the advantage over his French competitors.[160] They continued to remain obdurate and refused to use coal instead of wood.[161]

The involvement of the Holkers with Sturgeon would appear to be circumstantial. The absence of hard evidence probably occurs because both Holkers were occupied elsewhere with more pressing issues. Holker (fils) was in America from 1778 onwards.[162] His father was busy keeping all the family concerns going as well as meeting his professional commitments as an Inspector General of Foreign Manufactures.[163] He was also sedulously forging and maintaining useful connections with the American representatives in France. Benjamin Franklin was a particular friend.[164]

Sturgeon was left to cope as external forces and political events intervened and altered the dynamics of English pottery manufacture in France. He continued to pump money into the factory and all but exhausted his personal fortune. Later, in desperate straits, he could not get funds out of England or any help from his wife's family.[165]

In all, Sturgeon was granted three 'arrêts", in 1781,1785 and 1786.[166] The 'arrêt' of 1786 was to prove the most problematic.[167] Sturgeon had expended considerable sums of money on the experiments with coal. To offset his own personal outlay, he had been awarded a non-conditional gift of 10 000 livres tournois and a loan of 10 000 livres tournois to be repaid within 18 months.[168] His investment had been heavy and his running costs high. He had built English kilns and had used English coal which had become increasingly expensive to import.[169] The Conseil du Roy had stipulated that tests be conducted by Sturgeon using coal-fired ovens with government witnesses present. This had been done in 1785.[170]

This Rouen manufactory had continued to produce English Queensware while Sturgeon had turned his hand to other commercial endeavours. In 1787 the Bureau de Commerce noted that Sturgeon was involved in the export of a thousand tons of flint to England.[171] In 1788 'le sieur Sturgeon, entrepreneur à Rouen d'une fabrique de faïences décorées du titre de manufacture royale' asked the Bureau de Commerce for permission to import 1248 tons of coal per year. He asked for an exemption on all import duties on this coal.[172] There is a note added by the Bureau: ' ce combustible est actuellement à si haut prix que les fabricants ne peuvent plus supporter la concurrence de la faïencerie anglaise'.[173] Coal was

becoming prohibitively expensive. The Government recognised that the French potters could not compete with English wares.

English pottery from England was threatening the production of English pottery in France and not just because of the high price of imported coal. This was a complex issue involving the continued hold of 'anglomanie' on the French consumer's taste, the chronic problem of smuggling and the 'fatal blow' that the Treaty of Commerce of 1786-87 would deal to French manufacturers of pottery. Sturgeon, like so many other entrepreneurs and businessmen, could not compete or sell his product. At this point he continued to keep his factory open.[174] He did not, however, repay the loan that the Government had granted him in 1786.[175] Tolozan had also assured him that the Government would never ask him to repay the gift of 10 000 livres tournois.[176] This had repercussions for him in the new regime of the 1790s.

After the Treaty of Commerce Sturgeon diversified his interests. He imported English pottery wares and exported flint to England in the returning English vessels.[177] English goods were coming steadily into Rouen. English manufacturers were studying the requirements of Article 12 of the Treaty carefully. Not only was Sturgeon bringing Wedgwood Queensware into the town where he and other potters were producing English Queensware but he was giving Wedgwood inside information about the wording of the customs documents. There is correspondence between William Sturgeon in Rouen and Josiah Wedgwood through the agency of his manager and nephew, Thomas Byerley, about the exact wording and precise requirements that the Rouen customs officials worked to.[178]

Sturgeon had become an agent for importing Wedgwood Queensware in 1787 and appeared helpful and informative in his letters.[179] Wedgwood had appreciated the details that Sturgeon had sent him and indicated that he was likely to consult him at any time.[180] This punctilious interest in the exact specifications of the French documentation was hardly likely to be for the benefit of the French customs officials.

Sturgeon's involvement with English shipments of Queensware to Rouen would be known in the town. As an importer and dealer he had probably exacerbated antipathies that he had already experienced as a manufacturer with government backing. He was also a foreigner even although the title of Manufacture Royale gave him status as a French national. This is perhaps why he met such relentless treatment at the hands of subsequent regimes. The verdict on his endeavours is that he would probably have continued to replicate French Queensware had the bureaucratic support remained focused and not distracted. The complications of war with England from 1778 made government issues like coal a secondary issue. These were compounded by the Treaty of Trade that allowed English Queensware into France legally. Sturgeon's subsequent stance, however clandestine, as an importer of English goods and as an informant to English manufacturers, destroyed what remained of his credibility as an agent of the French Government. Coal-fired technology took a retrograde step.

One of the first indications that Sturgeon was about to meet administrative obduracy was in May 1790. The Conseil de Commerce had flagged up that Sturgeon had not repaid the loan that had been granted in 1786. The entry in the file is as follows:

Mesures à prendre pour faire rentrer dans la Caisse de Commerce les fonds prêtés en 1786 par l'Administration au sr. Sturgeon, propriétaire de la manufacture royale de faïences établie à Rouen'.[181]

As he had not fulfilled his commitments to the agreement that had been made in the Ancien Régime, the Minister of the Interior agreed that Sturgeon should be liable for the repayment of the 'gift' that the 'arrêt' of 1786 had granted him. From 1790 onwards followed a lengthy correspondence between William Sturgeon, his son-in-law, Lachemin Hende, and various Ministers of the Interior.[182] Roland de la Platière was Minister of the Interior on two separate occasions during this period.[183] His attitude towards Sturgeon may have reflected his earlier tense dealings with the Holkers within the Factory Inspectorate.[184]

The stance of Sturgeon at this juncture was unequivocal. He was outraged that the Government was demanding the return of what he considered to be 'a gift', and what he had been assured was 'a gift'.[185] He stressed that : 'il reçut le plus grand encouragement' together with the 'les plus belles promesses' from the Minister and from the Intendant for Commerce, Tolozan.[186] He had been a privileged and respected 'manufacturier royal'. The pettiness of the demand had surprised him after all he had done for the French Government and for the French pottery industry.[187]

He argued that he had paid the Ferme générale far more than 10 000 livres tournois in duties on imported English coal.[188] Sturgeon asserted that he could not repay the money even if he wanted to. By 1792 almost his entire fortune had been expended in the Rouen venture and he was in financial difficulties because he could not obtain money from England. Creditors were also demanding payment

so that he had been forced to sell his possessions to survive.[189] It was his son-in-law who informed the French administration that Sturgeon's wife was ill.[190]

It was at this point that another aspect of the new administration made its appearance. Details of Sturgeon's correspondence were passed to Auger, the Minister for the Trésor Public.[191] Auger in turn sent an agent of the Public Treasury to Rouen to investigate the circumstances of Sturgeon.[192] This agent, Turpin, proceeded to make Sturgeon's life difficult by hounding him for payment.[193] It would appear that there were sufficient numbers of similar cases to warrant the establishment of a special commission to collect 'debts' incurred in the Ancien Régime.[194]

Turpin's title was 'commissaire aux recouvrements', and his function was similar to that of a government inspector with the powers of a debt collector or bailiff. His prescriptive brief was to deal with debtors within the pottery industry. When he visited the factory in Rouen he found it abandoned.[195] This proved that Sturgeon had broken his contract with the Government.

Turpin is known to have been a pottery manufacturer in Belleville.[196] His wares were described as being of mediocre quality but they had sold well.[197] It was claimed by rival potters that he had brought in 'foreign' imports and had sold them as his own product.[198] The French authorities had perhaps sent Turpin to investigate Sturgeon because they had suspicions about the provenance of the goods that he had sold after 1787 from his manufactory. As a potter, entrepreneur and purported 'faker' himself, Turpin would have been able to evaluate Sturgeon's establishment. Suggestions had been made that Turpin's factory was aided by the state although Turpin denied this charge.[199]

Sturgeon wrote to the Minister of the Interior on various occasions complaining of the 'injustice inouïe' on the part of the French Government which had not only demanded money from him but had allowed Turpin to open a case against him and have claims on his income.[200] In a petition in 1793 he asked that this case be dropped:

> Le sieur William Sturgeon, Irlandais, demandait la main levée de l'opposition formée par M. Turpin, agent du Trésor Public, sur ses revenus'.[201]

By 1793 Sturgeon had applied to the Department of Public Contributions which dealt with hardship cases among manufacturers. He had applied for a grant of 2000 livres for five years.[202] This request had been passed to the Minister of the Interior who deemed it untenable: 'L'objet du mémoire de William Sturgeon, Irlandais, étant absolument étranger' was how he dismissed it.[203] The fate of Sturgeon is at this point in the research unknown.

4.6 **Conclusion.**

In the 1770s the government aim with regard to the manufacture of pottery was to transfer English Queensware technology to France. This had been effected successfully on a modest scale in Montereau and Douai and other Queensware establishments had followed in various parts of France. The early English manufactories had used the available fuel that was in current use in France. This was wood.

In establishments where kilns already existed the entrepreneurs had no choice but to use wood. It was a costly business to pay for the design and construction of

English kilns. Workers who understood the firing techniques of these kilns, both biscuit and glost, had to be brought from Britain. Training of French workmen and apprentices had then to be undertaken. It was only when the forces of supply and demand in raw materials like wood intervened that French potters in general were forced to consider coal seriously. There was also certain legislative encouragement from the State to do so.

There had been an interest in English pottery manufacturing techniques together with the appropriate firing technology since the 1750s. Industrial espionage had been carried out by French government inspectors, scientists, architects and entrepreneurs. Reports and drawings about English pottery were delivered to government advisers on French industrial policy. Kiln designs and firing techniques were collected and collated. English pottery production was defined and described with clarity. These French reports constitute rare extant contemporary documentation from the eighteenth century. Nothing similar in English archives has as yet been uncovered.

In the 1770s and 1780s there was a move towards coal-fired kiln technology. This was part of a policy on the part of the Government. It was motivated by the exigencies of a chronic wood shortage and a need to emulate more vigorously the industrial and technological practices that had given England its manufacturing lead. The emphasis was on the use of coal in the firing procedures. Once more it was English technology that was being replicated. This time, however, the technological processes involved in kiln technology were part of a much larger industrial debate which focused on coal and the concerted impetus of government policy.

French technocrats and administrators from the late 1730s onwards had become increasingly aware of the necessity to transfer English furnace technology to France. Reports on English industry and on the application of coal had been compiled at regular intervals by academicians and inspectors who had visited England on fact-finding missions. What they saw in English industrial establishments convinced them that the way forward for French industry was through the application of coal technology. It is more than likely that this policy was devised with intent as an emulative measure and not simply as a means to overcome the chronic shortage of wood available for domestic and industrial purposes.

Coal was being mined in France in the 1750s and the Government was aware of the difficulties inherent in the industry. Coal was being used before the main thrust of the government initiative to switch to coal-fired kiln and furnace technology was felt. Numerous influential technocrats and scientific advisers to the Government had expounded the arguments why French industry had to use coal technology. Government officials and ministers had long subscribed to the same arguments. The concept of coal technology was, therefore, not alien to the French administration. The question that presents itself is why its penetration of the French industrial arena was slow and uneven.

The first explanation lies in the pragmatic technicalities of transferring a complicated and unwritten skill to diverse industrial applications. Heavy expenditure in the construction of the requisite kilns and furnaces was compounded by the costs of employing the right kind of skilled operatives. These experts could then train French workers in the complexities of firing with coal. This

was an expensive and lengthy business. Time spent in experimentation was also costly as was the fuel itself. Import charges and freight costs from a poorly defined transport network added to the financial outlay.

Government inspectors like Grignon and de Dietrich stressed the urgency of exploiting coal-fired technology in the wake of the continued surge of English industrial progress. Ministers like Calonne embraced the coal ethic with enthusiasm. Potters were forced to address the coal issue on an individual basis when the Government refused to validate their new enterprises unless they employed coal to fire their kilns.

The initial success of Sturgeon in Rouen proved that French Queensware could be manufactured with coal. His establishment was a typical Manufacture Royale: privately owned, state-subsidised, government-protected. He built English kilns and imported English coal. The workmen that he had brought with him trained his French workers. He had the administrative and financial backing of high-ranking bureaucrats like Tolozan.

His efforts to encourage the local potters in Rouen to emulate his own efforts in coal-fired kiln technology were not successful. The Rouen potters remained obdurate, obstructive and hostile. The reasons for their enmity are never made explicit. The fact that a foreign manufacturer with government support was in their midst making the same kind of English Queensware may have had some effect on their attitude. That he was trying to encourage them to switch to coal with all the costs and technical problems that this involved doubtless intensified their animosity.

That the Holkers were busy with other issues on the American front may also have reduced Sturgeon's chances of success in convincing his competitors and fellow potters of the benefits of coal. He lacked the governmental direction and professional thrust that these inspectors had given to new initiatives with English technological input. When the Treaty of Commerce of 1786-7 opened up French markets to legal imports of English Queensware and other pottery wares, Sturgeon claimed that he was hit just as hard as his fellow potters in Rouen.

His initiatives as an importer and dealer in Wedgwood Queensware accent Sturgeon's entrepreneurial adaptability. He may even have been using some of the English wares as a supplement to his own Queensware production. This could have been why he was hounded later for repayment of loans. His correspondence with Wedgwood and Byerley about the prescriptions of the Treaty of Commerce as it affected imports into Rouen itself was probably suspected if not actually known. This would not endear him to his fellow potters who were being put out of business by these selfsame English imports.

The closure of his factory and near-bankruptcy in the early years of the Republic beg the question as to whether he could have survived and thrived had the Eden-Rayneval Treaty not become operational and the Revolutionary upheaval of 1789 avoided. Whether he could have overcome the obstinate refusal of the Rouen potters to convert to coal is another question that presents itself.

Sturgeon's involvement with English shipments of Queensware to Rouen would be known in the town. As an importer and dealer he had probably exacerbated antipathies that he had already experienced as a manufacturer with government backing

The verdict on his endeavours is that he would probably have continued to replicate French Queensware had the bureaucratic support remained. His problems were compounded by the Treaty of Commerce that allowed English Queensware into France legally and made issues like coal a secondary issue. As an importer of English goods and as an informant to English manufacturers, Sturgeon hardly represented the French Government. Coal-fired technology lost whatever momentum it had gained. This aspect of English technology transfer was not a success.

Chapter 4 Endnotes.

[1] D. Woronoff (ed.), Forges et Forêts, recherches sur la consommation proto-industrielle de bois (Paris, 1990), pp. 57-60. See also Archives départementales, Hérault, C 2703, 25 September 1770, Bertin to Saint-Priest. Also A. N. F 12 1498, 1784, Tolozan, Report on coal.
[2] Inspecteur Ticquet in 1738, A. N. O I 1293; Gabriel Jars, A. N. F 14 1311, 1764; Marchant de la Houlière, A. N. F 12 1300, F 14 4261, 1775; chevalier Grignon, A. N. F 12 1300, 1113, 1114, F 12 107, 1773-1774, 1779; baron de Dietrich, A. N. F 12 680, 1788; Faujas de Saint-Fond, 1784, in A. Geikie, A Journey through England and Scotland to the Hebrides in 1774, A. Geikie (trans. and ed.) 2 vols (Glasgow, 1907), passim.
[3] Chevalier Grignon's Inspectorate for Bouches à Feu (coal-fired technologies) was sanctioned by the Government in 1778, A. N. F 12 1300, 1313,1314, F 12 107.
[4] John R. Harris, Industrial Espionage and Technology Transfer. Britain and France in the Eighteenth Century (Aldershot, 1998), pp. 36-37, 223. Hellot had a particular commission from the Government for the investigation of coalmines. He was also Inspector-General of dye stuffs and had translated the treatise by Schlutter on furnaces.
[5] B. Dragesco, English Ceramics in French Archives (London, 1993), p. 5.
[6] Harris, Industrial Espionage and Technology Transfer, pp. 37, 38, 116, 570. Jean Hellot (1685-1766) was a scientist, academician, expert on dyeing and from 1740 was a member of the Royal Society in London. As a trusted adviser to the French Government, he was in charge of industrial testing and implementation. Ticquet and Jars both reported to him.
[7] Ibid., p. 9.
[8] Ibid., p. 13.
[9] Ibid., pp. 8-10.
[10] Ibid., p. 8.
[11] Idem.
[12] A. N. F 12 1003, July 1789, Potter to Tolozan. 'Description of the process of printing on porcelain, fine earthenware and pottery'.
[13] Dragesco, English Ceramics in French Archives , p. 14.
[14] Ibid., p. 10.
[15] J. Redington (ed.) Calendar of Home Office Papers, 1766-69 (London, 1879), Inventions, 14 April 1766, Count de Lauraguais. A new method of making porcelain ware (p.55) p. 128.
[16] A. N. F 12 1559, 10 July 1806, Jousselin. Also Transcripts of the Letters of Josiah Wedgwood, October 1767, E25-18170.
[17] Dragesco, English Ceramics in French Archives , p. 14.
[18] Inspecteur Ticquet in 1738, A. N. O1 1293. Harris, Industrial Espionage and Technology Transfer, pp. 36, 225.
[19] Dragesco, English Ceramics in French Archives, p. 9.

[20] Harris, Industrial Espionage and Technology Transfer, p. 225. Also A.N. F 14 1311.
[21] Dragesco, English Ceramics in French Archives, p. 13. 'The most beautiful English pottery that is saltglazed is called WARE and is made in Staffordshire 110 miles from London or at Brentforth 7 miles away (from London)'.
[22] A. N. F 14 1311, 1764, Gabriel Jars. Also Gabriel Jars, Voyages Métallurgiques (Paris, 1781), III, Douzième Mémoire, Section Première, II, Fabriqes de Poterie au comté de Stafford, pp. 364-368.
[23] Ibid., p. 368.
[24] Ibid., p. 367.
[25] Ibid., p. 368.
[26] Hilary Young, 'Evidence for Wood and Coal firing and the Design of Kilns in the 18th Century English Porcelain Industry', in English Ceramic Circle, Transactions, 17, Part 1 (1999), pp.8, 9.
[27] Ibid., pp. 10, 11.
[28] Ibid., p. 9.
[29] Idem.
[30] David Jeremy, 'British Textile Technology Transmission to the United States: the Philadelphia Region Experience, 1770-1820', in Business History Review, XLVII (Spring 1973).
[31] J. A. C. Chaptal, De L'Industrie Françoise (Paris, 1819), 2, p. 430.
[32] Idem. 'When talking about modern times, we have seen several kinds of industry being established and prospering in England. Over a period of many years English industry made the other nations pay tribute to its products. We have made every effort to acquire manufacturing skills; spinning, hardware, cotton, lightweight fabrics. These have all been the object of our ambition at one and the same time. But in importing the machines, by relying on a few transferred processes, have we really believed that we have naturalized these difficult crafts in every possible way? Have we imagined that we possess these immense details, *these manual dexterities and skills*, these habits which are the very heart of industry?'. The italics are Chaptal's.
[33] David Vincent, Literacy and Popular Culture. England 1750-1914 (Cambridge, 1989), p. 106.
[34] Akos Paulinyi, 'Machine Tools in the Transfer Policy', in D. C. Christensen (ed.) European Historiography of Technology (Odense, 1993), p. 20
[35] Harris, Industrial Espionage and Technology Transfer, p. 549.
[36] A. N. F 12 107.
[37] Bibliothèque Mazarine, Ms. 2 840, Voyage dans l'Orléanois, le Blésois, la Tourraine et la Bretagne fait en 1752, depuis le 9 septembre jusq'au 23 octobre par de Montigny. De Montigny wrote about a 'Mine de Charbon au village de Montrelais situé à une lieue et demie d'Ingrande'. Ingrande straddled Anjou and Brittany with a consequent accumulation of duties and tariffs.
[38] Idem. Mignot worked closely with Hellot in advising the Government on scientific and commercial issues. See Mazarine, 3723, Receuil de Mémoires concernant les Manufactures et le Commerce. Also Mazarine 3597, 1756, de Montigny de l'Académie des Sciences, Rapport des ouvrages qui ont été lus dans les assemblées de l'Académie Royale des Sciences.
[39] Idem.

[40] Ibid., 27 March 1756.
[41] Idem.
[42] Idem.
[43] A. N. F 12 107.
[44] A. N. F 12 1497 A, 1778. Sénac de Meilhan, Intendant du Commerce, Haynault, to Blondel, Intendant du Commerce. The translation of this legal aspect is as follows: 'compensating the owners by mutual agreement or on the advice of experts'.
[45] A. N. F 12 104, 22 September 1763.
[46] A. N. F 12 104 (4) fo 138, 24 November 1763, 105 (2) fo 103, 27 June 1765, fo 135, 13 December 1765, F 12 50 (1), 23 February 1769.
[47] A. N. F 12 104 (4) fo 33, 3 March 1763.
[48] A. N. F 12 14 1311, 3 volumes of reports.
[49] A. N. F 12 680. De Dietrich had been an ironmaster and came from a family involved in iron smelting.
[50] A. N. F 12 680, 1788.
[51] A. N. F 12 1497 A, February 1778, Blondel, Intendant of Trade to de Dietrich.
[52] Ibid., February 1778, 'mémoire', de Dietrich to Blondel.
[53] A. N. 01 1293, 1738.
[54] Idem.
[55] Idem.
[56] Idem.
[57] A. N. F 14 1311.
[58] Idem.
[59] Archives départementales, Hérault, C 2703, 25 September 1770, Bertin to Saint-Priest.
[60] Marchant de la Houlière was involved in iron production here in 1773. The regional government of the Languedoc was more progressive. Coal was favoured in industrial processes as there was an acute shortage of wood in this region. There were also mines in the region at Alès. C. Ballot, L'Introduction du Machinisme dans l'Industrie Française (Lille-Paris, 1923), pp. 448-9.
[61] A. N. F 12 2427, 659 A, 1773.
[62] Beinecke, Holker Papers, 1778, Jean Holker.
[63] Ballot, L'Introduction, pp. 448-449.
[64] A. N. F 12 1300, F 14 4261.
[65] Idem. Marchant de la Houlière, Report to the French Government on British methods of smelting Iron Ore with coal and casting naval Cannon in the Year 1775.
[66] A. N. F 12 4500. William Wilkinson wrote reports about the French methods. See Mr. Willm Wilkinson's Acct. of the Iron made in France, Feby 1787, unpaginated. He mentions the Languedoc and the fact that it had no ironworks that he had heard of. Birmingham Public Libraries, Boulton and Watt Collection.
[67] Harris, Industrial Espionage and Technology Transfer, p. 557.
[68] Woronoff, Forges et Forêts, pp. 57-60.
[69] N. Rosenberg, 'The direction of technological change: inducement mechanisms and focusing devices', Economic Development and Cultural Change, 18, (1), part 1, October 1969, 1-24.

[70] E. A. Wrigley, Continuity, Chance and Change: the Character of the Industrial Revolution in England (Cambridge, 1988), p. 32. See chapter 3 (The mineral-based economy).
[71] Ballot, L'Introduction, pp. 448-9.
[72] A. N. F 12 1300, 1113,1114,107.
[73] Idem. It was called the Inspectorate of Bouches à Feu.
[74] Idem.
[75] A. N. F 12 680.
[76] Idem.
[77] Idem. Also A. N. F 12 1497 A, April 1785, February 1786, 1787.
[78] A. N. F 12 1497 A, 1785, Correspondence, Calonne to De Dietrich, February-March 1987.
[79] A. N. F 12 680, baron P. F. de Dietrich, Descriptions des Gîtes de Minerai et des Bouches à Feu de la France.
[80] A. N. F 12 2427. From the 1720s onwards the Government had limited the number of new factories using wood as fuel. An 'arrêt' of 9 August 1723 controlled wood exploitation. Woronoff, Forges et Forêts, pp. 57-60.
[81] Inspecteur Ticquet in 1738, A. N. O I 1293; Gabriel Jars, A. N. F 14 1311, 1764; Marchant de la Houlière, A. N. F 12 1300, F 14 4261, 1775; chevalier Grignon, A. N. F 12 1300, 1113, 1114, F 12 107, 1773-1774, 1779; baron de Dietrich, A. N. F 12 680, 1788; Faujas de Saint-Fond, 1784, in A. Geikie, A Journey through England and Scotland to the Hebrides in 1774, A. Geikie (trans. and ed.) 2 vols (Glasgow, 1907), passim.
[82] A. N. 0 1 1293, 1738.
[83] A. N. F 12 1497, January 1775, Holker to Trudaine.
[84] Ibid., 15 May 1775, arrêt du Conseil du Roy.
[85] Alexandre Brongniart, Traité des Arts Céramiques ou des Poteries (Paris, 1877), I, pp. 334, 337; Guillaume Oppenheim, L'Art d'imprimer sur Faïence et Porcelaine. Les procédés et nouvelles découvertes (Paris, 1807), pp. 52-53; M. O*** ancien manufacturier et M. Bouillon-Lagrange, L'Art de Fabriquer la Poterie, façon anglaise (Paris, 1807), pp. 55-58. Why Oppenheim did not wish to be named as a co-author is not known.
[86] A. D. Hérault, C 2703, 25 September 1770, Bertin to Saint-Priest; A. N. F 12 1498, 1770 onwards.
[87] A. N. F 12 1498 B, Correspondence to Montaran regarding the Noubel brothers.
[88] Idem.
[89] Idem.
[90] Idem.
[91] A. N. F 12 1498 A, in Montélimar.
[92] Idem.
[93] A. N. F 12 1497 A, B, 1498 A, B.
[94] Idem. An instance of government policy is to be found in A. N. F 12, 20 May, de Colonia to Blondel.
[95] A. N. F 12 1497 A, February 1786, 'mémoire', de Dietrich to Blondel.
[96] A. N. F 12 1497 A, 1778, in Nevers.
[97] Idem.
[98] A. N. F 12 1498 A, 'arrêt', 1784, with a grant of 1500 livres tournois per year for nine years, to Muguet. For a contemporary rate of exchange for a livre tournois

see Wilkinson, Acct. of the iron made in France, unpaginated, 1787. By a series of comparisons in nail and iron prices eight English shillings were worth ten French livres. Other sources for the same year put a similar rate of exchange at twenty five livres being worth one English pound. See endnote 128 below.
[99] Ibid., 1784, Tolozan to Blondel.
[100] A. N. F 12 1497 A, 1785, in Bressolles.
[101] Idem. 'It is not possible to fuel the kilns of a faïence manufactory other than with wood'.
[102] Idem.
[103] Idem, 'only using coal'.
[104] Idem.
[105] Idem.
[106] Idem.
[107] A. N. F 12 1497 A, 21 February 1786.
[108] Ibid., 1 March 1787, Leroux to Du Pont.
[109] Idem, 6 July 1785, marquis de Fourquet. See Chapter 4, note 2 on the advantages of a 'manufacture royale'. Also January 1786, 'mémoire', baron de Dietrich to Du Pont.
[110] A. N. F 12 1497A, January 1786. 'Terre de pipe' was another term for fine earthenware or Queensware. The Ferme générale was the main department of government taxation. Taxes were farmed out to the highest bidders.
[111] Ibid., 7 October 1785, Leroux to the Ferme générale
[112] Ibid, January 1786, De Dietrich to Du Pont.
[113] Idem.
[114] Ibid., 23 January 1786.
[115] Ibid., 16 February 1786.
[116] Idem.
[117] Idem, 'to give new life to our manufactories'.
[118] Ibid., 21 February 1786, 'to establishments that are new and unique in their field'.
[119] Ibid., March 1786. This was equivalent to around fifty pounds sterling.
[120] Idem. This government fund dealing with trade was accessible to entrepreneurs who could prove that they were still in business.
[121] Ibid., 1 March 1787.
[122] Ibid., March 1787.
[123] A. N. F 12 107, 23 October 1788.
[124] Harris, Industrial Espionage and Technology Transfer, p. 557. Also J. R. Harris, 'Michael Alcock and the Transfer of Birmingham Technology to France before the Revolution', in Journal of European Economic History, 15 (1986), p. 47.
[125] J. R. Harris, unpublished lecture, 'Industrial Espionage in the Eighteenth Century', pp. 12-13. Also Harris, 'Michael Alcock', p. 48. Boulton and Watt visited Paris in 1786.
[126] Harris, 'Michael Alcock', p 48. Calonne wished to discuss La Charité with Boulton and Watt to gain useful tips before he purchased it.
[127] A. N. F 12 107, 12 December 1787.
[128] Michael Sonenscher, Work and Wages. Natural law, politics and the eighteenth-century French trades (Cambridge, 1989), XI. In the eighteenth century in France the livre was the standard unit of currency. 1 livre comprised 20

sous and 1 sou or sol comprised 12 deniers. An écu or crown was worth 3 livres. A louis was worth 6 livres. In 1787, Rabasse and Hurard (fils) of the Normandy Chamber of Commerce commented that the price of Manchester cotton 'has at present not surpassed 8 shillings or 10 livres the yard'. This is exactly the rate that William Wilkinson in the Languedoc had quoted in February 1787. Using this comparison as a rate of exchange, in 1787 there were 24-5 livres to the English pound.

[129] A. N. F 12 680

[130] A. N. F. 12 107, 17 July 1788, 'only on condition that Mr. Duhaut fuels his glass kilns exclusively with coal'.

[131] Ibid., 27 October 1789.

[132] A. N. F 12 1497, January 1775, Holker to de Montigny.

[133] Idem.

[134] Idem.

[135] A. N. F 12 172, 1755-60.

[136] A. N. F 12 1497 A, February, Holker to Trudaine.

[137] Idem.

[138] A. N. F 12 2427, 659 A, 1773.

[139] Idem.

[140] B. Faujas de Saint-Fond, A Journey through England and Scotland to the Hebrides in 1784, A. Geikie (ed.)(Glasgow, 1907), 1, pp. 96-97.

[141] Idem.

[142] Idem.

[143] A. N. F. 12 1498 B, Sturgeon.

[144] Idem. Also M. G. Vanier, 'La Manufacture Royale de Faïence du Faubourg Saint Sever à Rouen', in Extrait des Actes du 81e Congrès national des Sociétés Savantes, Rouen-Caen 1956 (Paris, 1956), p. 389 seq.

[145] Sonenscher, Work and Wages, pp. 102-104. Saint Sever fell outside the jurisdiction of the corporations. This made it easier for any entrepreneur to operate here. The Holkers had several industrial concerns here already.

[146] A. N. F 12 1498 B, Sturgeon, 'a factory for fine English earthenware'.

[147] Idem.

[148] Ibid., 21 March 1785.

[149] Idem.

[150] Idem.

[151] A. N. F 12 1498 B, 8 January 1793, retrospective account.

[152] Idem.

[153] Idem.

[154] Idem. He claimed that 'one could fire any kind of faïence with coal'.

[155] Idem.

[156] Idem. Privileges and grant were awarded on 14 July 1781.

[157] Idem, 29 May 1786.

[158] Idem.

[159] Idem.

[160] A. N. F 12 1497, 21 September 1776, Observations des Mâitres Gardes on the nature of a 'manufacture royale'.

[161] A. N. F 12 1498 B, 8 January 1793.

[162] A. N. F 12 676 B, n.d. 1779.

[163] Idem.
[164] Beinecke Rare Book and Manuscript Library, Holker Papers. Franklin is often referred to as 'notre cher ami' or 'notre ami de Passy/Pasy'. The American Embassy was in Passy.
[165] A. N. F 12 1498 B, 8 January 1793. She was Henrietta Wentworth, the sister of Lord Rockingham.
[166] Ibid., January 1793, retrospective account.
[167] Ibid.,29 May 1786.
[168] Idem.
[169] Idem.
[170] A. N. F 12 1497 A, Fabrique de fayance façon d'Angleterre. The Conseil du Roy vetted the proceedings of Sturgeon using English kilns and coal from England.
[171] A. N. F 12 106, 26 November 1787.
[172] A. N. F 12 107, 8 April 1788. 'Mr. Sturgeon, an entrepreneur in Rouen making fine decorated earthenware in a factory with the title of royal manufactory'.
[173] Idem, 'this fuel is at present so costly that the manufacturers can no longer stand the competition from fine English earthenware'.
[174] A. N. F 12 1498 B, 8 January 1793.
[175] Idem.
[176] Idem.
[177] Keele, The Wedgwood Manuscripts, 27 May 1787, Rouen, William Sturgeon to Wedgwood at Greek Street, 6215-8. 'Likewise if the Captain will load back with Flint at an easy rate to the same port I will ensure him an immediate return'. For the import licence for this flint see A.N. F 12 106, 26 November 1787.
[178] Ibid., Willm. Sturgeon to Mr. Byerley, 13 June 1787, Rouen, 6216-8; to Mr. Wedgwood, Etruria, Staffordshire, 10 January, 1788, 15592-57.
[179] Ibid., Rouen, 4 November 1787, 6217-8.
[180] Ibid., 13 June 1787, 6216-8.
[181] A. N. F 12 108, 13 May 1790. ' Measures that should be taken to have returned to the Department of Trade the funds lent in 1786 by the Government to Mr. Sturgeon, owner of a royal manufactory established in Rouen producing fine earthenware'.
[182] Ministère de l'intérieur - L'époque de la Révolution (1789-1799), (website). François Emmanuel Guinars, comte de Saint-Priest, incumbent from 7 August 1790 until January 1791. Claude Antoine Nicolas Waldec de Lessart, incumbent from 25 January 1791 until November 1791. Bon Claude Cahier de Gerville, incumbent from 29 November 1791 until March 1792. Jean-Marie Roland de la Platière, incumbent from 24 March 1792 until 10 June 1792. Jacques Augustin Mourgue, incumbent from 13 June 1792 until 18 June 1792. Antoine Marie René, marquis de Terrier de Moncel, incumbent from 18 June 1792 until July 1792. Anne Clément Félix de Champion de Villeneuve, incumbent from 21 July 1792 until August 1792. Jean-Marie Roland de la Platière, incumbent from 10 August 1792 until January 1793. Dominique Joseph Garat, incumbent from 14 March 1793 until August 1793. Jules François Pare, incumbent from 20 August 1793 until April 1794. Ministère de l'intérieur – L'époque de la Révolution. http://www.interieur.gouv.fr/rubriques/c/c2_le_ministere/c24_histoire/Histoire_revolution (30/04/02).

[183] Idem. Early in 1793 Roland fled Paris after accusations of support for the Monarchy. His wife was executed in his absence. He then took his own life.
[184] A. N. F 12 676 B. Roland had been critical of both Holkers.
[185] A. N. F 12 1497 A, Sturgeon.
[186] Idem, 'he received the greatest encouragement' together with 'the finest promises'.
[187] A. N. F 12 1498 B, January 1793.
[188] Idem.
[189] Idem.
[190] Idem.
[191] A. N. F 12 1498 B, 25 October 1792, Minister of the Interior to Auger, Minister for the Treasury.
[192] Ibid., 10 January 1793.
[193] Ibid., 8 January 1793.
[194] A. N. F 12 1498 B, Turpin.
[195] Ibid., Sturgeon, 1793.
[196] Ibid., Moitte, Report to the Government on English pottery manufactured in France, 1793. Turpin ran an English factory at Belleville, near Paris, but according to Moitte cheated and brought in Queensware that had been manufactured in the Douai factory and sold it as his own product.
[197] Idem.
[198] Idem.
[199] Idem.
[200] Ibid., February 1793, 'an unheard-of injustice'.
[201] Idem: 'Mr William Sturgeon, Irishman, asks that an end be put to the opposition created against him by Mr. Turpin, an agent of the Public Treasury with respect to his income'.
[202] Ibid., 10 January 1793.
[203] Idem: 'The object of the memoir from William Sturgeon, Irishman, being absolutely unthinkable'.