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William Small 1734-1775: Teacher, Mentor, Scientist

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William Small, 1734-1775

Teacher, Mentor, Scientist

By

Martin Richard Clagett

In Partial Fulfillment of the Degree Requirements for

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Abstract

William Small, 1734-1775: Teacher, Mentor, Scientist

Several studies have examined the life of William Small but only in respect to certain phases of his life, particularly Small's connections to Thomas Jefferson, James Watt, or the Birmingham Lunar Society. In 1758 William Small was recruited for the post of professor of mathematics at the College of William and Mary. From 1760 through 1762, he was Thomas Jefferson's only professor at the College of William and Mary. In 1764 Small returned to England and, with the assistance of Benjamin Franklin and others, became physician and scientific advisor to Matthew Boulton, a wealthy industrialist. Small, Boulton, and Erasmus Darwin established the celebrated Birmingham Lunar Society, which played an important role in the industrialization of Britain in the late eighteenth century. In 1767, Small met James Watt and thus began a collaboration that produced the steam engine. While American scholars have concentrated on Small's influence on Thomas Jefferson, British scholars have focused on Small's role in the Birmingham Lunar Society or his role in the development of the steam engine. This study examines Small's life in its entirety. Areas of Small's life overlooked by previous studies include his early life and education, the substance of his teaching career at the College of William and Mary, and his medical career. The true extent of Small's influences and the connections that he maintained between British and American intellectuals can only be seen by examining his life in its entirety. This study sought to bring together the disparate elements of Small's life in order to make clearer his place in history.

Chapter 1

Introduction

The two events that had a great impact on the evolution of Western culture into a modern industrial society were the American Revolution and the Industrial Revolution. Two actors that played pivotal roles in these revolutions were Thomas Jefferson and James Watt. Jefferson, who as the author of the Declaration of Independence, gave us a new way of defining ourselves and our relationship with society. James Watt, whose invention of the practical steam engine hastened the industrialization of Western society. An obscure fellow, who led an almost invisible life, stood as mentor and friend to both of these men, William Small. At the youthful age of twenty four, when most are endeavoring to find themselves, Small was in charge of all the courses at the College of William and Mary. He was a peer and daily companion of the Governor of the colony of Virginia, and an innovating catalyst for reforming instruction in the institutions of higher learning in America.

The remarkable life of William Small may to be divided into three stages; the first stage is his early life in Scotland, the second stage is his professorship at the College of William and Mary, and the third stage is his role as a confidant and advisor to some of the pioneers of the Industrial Revolution. British scholars have concentrated on Small's life as a leading figure in the Birmingham Lunar Society and the impact he had on James Watt, Erasmus Darwin, Joseph Priestley, and Matthew Boulton.

American scholars have focused on the Virginia phase of Small's life and on his influence on Thomas Jefferson. From the American perspective, he seems to have been born, as Athena was from the skull of Zeus, full grown at a meeting of the Board of Masters in Williamsburg in 1758.

Statement of Purpose

It is said that there is no end to the influence of a teacher. William Small acted as a mentor and collaborator to many influential men of his day. A partial listing of those individuals would include: Thomas Jefferson, John Page, George Wythe, Peyton Randolph, Francis Fauquier, Benjamin Franklin, William Hunter, Matthew Boulton, Josiah Wedgwood, Thomas Day, James Keir, Erasmus Darwin, and James Watt. The central purpose of this study will be both to examine the life of William Small and to fill in some of the gaps of information and to make the connections that have been previously overlooked by researchers. Small is a man about whom precious little is known, particularly his educational influences both in America and in Britain, despite his important influence on many significant individuals of his generation.

Research Questions

Three interrelated research questions are: Who was William Small and why is he an important figure in history? What were the educational and intellectual influences on his life and how did they mold his character? What was his educational impact on his students and colleagues?

Need, Background, and Scope of the Study

Need for the Study

Although William Small has long been recognized as influencing a number of important figures of his time, little has been written about the man himself. A lack of interest on the part of researchers and unenthusiastic record keeping on the part of Small himself probably have contributed to the almost inexplicable dearth of information about this man.

One possible explanation for the lack of comprehensive information about this remarkable man is the foci of previous researchers. American researchers have been interested only in Small's Virginia Experience and, in particular, his impact on Thomas Jefferson; British researchers have concentrated only on Small's connection to members of the Birmingham Lunar Society and, in particular, his influence on James Watt. For American researchers, anything

concerning Small that was post Jefferson seemed anticlimactic and unworthy of investigation; likewise, for British scholars Small's life seems to begin in May of 1765, when he took up residence in Birmingham and began his complex relationship with the Birmingham Lunar Society. To those scholars, Jefferson and Virginia were but distant footnotes. Neither group seems to have given special attention to Small's familial and educational background, to those forces that shaped his mind and character, or to the links that connected his British and American experiences.

Another possible explanation for the paucity of biographical analysis about William Small's background and personal life was his own lack of self promotion. In an age of routinely meticulous record keeping, of Machiavellian schemes of self-aggrandizement, Small apparently was reticent in spite of his connections and activities. Small himself wrote to Watt that he had little interest in participating in a life of heightened public visibility, "my Taste having induced me to decline fellowships in Societies & Publications &c, &c, &c..."

James Keir, a close personal friend of Small, gave what may be the best contemporary explanation for the lack of information concerning a man who touched the lives of so many:

Dr. Small, although possessed of various and eminent talents to instruct mankind, has left no trace behind of all that store of

knowledge and observation which he had acquired, and from which his friends never left without drawing fresh information.²

At the age of 21 Small was engaged as the only non-ecclesiastic faculty member at the College of William and Mary. At the age of 24, Small found himself teaching all the academic classes and subjects at the college. According to Thomas Jefferson, Small was the first professor in North America to replace the rote system of instruction and introduce the lecture system and the teaching of belles-lettres. He was an important influence on a small group of preeminent American intellectuals and political figures who would later play a central role in the founding of the United States. When he returned to Britain in 1764, he obtained for the College of William and Mary such advanced scientific equipment as, arguably, would have no equal in America for decades. Small, along with Matthew Boulton, a leading figure in the Industrial Revolution, established a renowned intellectual society in Birmingham that counted among its members such distinguished scientific figures as Erasmus Darwin, James Keir, Joseph Priestley, Josiah Wedgwood, and William Withering. Small also played a central role in the planning, financing, production, and patenting of James Watt's steam engine, a major development of the Industrial Revolution. Sadly, at the age of 41, when he was approaching the prime of his life, William Small died of malarial fever. Shedding light on the life of William Small will help provide insight into the lives of many individuals important in the scientific and intellectual

community and emphasize the interconnected nature of the Anglo-American cultural and scientific community.

Background of the Study

Although several works have presented William Small in a minor role, none have directly addressed his life in a comprehensive fashion. He has been mentioned in the biographies of several prominent men of the eighteenth century, among them Thomas Jefferson, Matthew Boulton, and James Watt, and he has also been mentioned in connection with several institutions, among them the College of the College of William and Mary and the Birmingham Lunar Society.

Small's influence has also been noted in a number of political histories, among these are Garry Will's *Inventing America : Jefferson's Declaration of Independence*,³ Wilber Samuel Howell's "The Declaration of Independence and Eighteenth-Century Logic",⁴ and Lola Blardinelli's unpublished dissertation *Thomas Jefferson :The Making of a Republican*.⁵ The difficulty with these otherwise excellent studies is that none have given an in-depth analysis of William Small and his contributions. While such past studies have included William Small, their focus has only been in context of his relationship with or influence upon someone else. There have only been discrete segments of Small's life and personality subjected to scrutiny. As a result a shadow image of him has come forth, an incomplete portrait.

The picture of Small that emerged from his years at the College of William and Mary seemed to be that of a man of youthful vigor and enthusiasm, an optimistic and outgoing social and political creature, full of ambition and conviviality. Once back in Birmingham a different Small emerged. Although he was a primary mover in the establishment of the Birmingham Lunar Society and one of the generating forces behind the development and production of the steam engine, Small seemed to have taken on a totally different personality than was projected during his Virginia experience.

Contemporary records indicate that the William Small of Virginia was a man full of vigor and self-confidence, a man of ambition and charm, a convivial man interested in all things scientific. The Small of Birmingham was subdued and withdrawn, reticent and reclusive, confined by the parameters of select friends and special interests.

Scope of the Study

The intended scope of the present study will encompass the complete span of William Small's life in three chronological stages. The first stage will include his family background and his early life and education. The second stage will explore Small's experiences during his professorship at the College of William and Mary. The third and final stage will examine Small's life as teacher, mentor, scientist, and doctor in Birmingham.

In summary, American researchers have concentrated of Small's stay at the College of William and Mary, and British researchers have focused on Small's connections with members of the British Intelligentsia and early innovators in the Industrial Revolution, but neither side has taken a determined look at the entire life and career of William Small. As a result, large gaps exist in the story of William Small's life. The present study will attempt to bridge these two perspectives, fill in some of the overlooked aspects of Small's life, and present a more complete picture of William Small.

ENDNOTES CHAPTER 1

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- 1 William Small to James Watt, 27 October 1773, Matthew Boulton Collection 125/37, Birmingham Public Library, Birmingham, England.
 - 2 J.P. Muirhead (ed.) *Life of James Watt* (London: J. Murray, 1854), 252.
 - 3 Garry Wills, *Inventing America : Jefferson's Declaration of Independence* (Garden City, N.Y.: Doubleday, 1978).
 - 4 Wilber S. Howell. "The Declaration of Independence and Eighteenth Century Logic." *William and Mary Quarterly*, 3rd Series, Vol. 18, No. 4 (Oct., 1961), 463-484.
 - 5 Lola Blardinelli, "Thomas Jefferson: The Making of a Republican" (Ph.D. diss, Washington University, 1992).

Chapter 2

The Early Life of William Small

Secondary Sources

The secondary sources concerning Small's early life can be divided into two major areas; the first area deals with Small's family background and early education and the second area deals with the Scottish educational institutions of the era and their impact on Small's life.

Important among the secondary sources concerning Small's early life is Dos Passos' work, *The Head and Heart of Jefferson*,¹ which provides much interesting information and speculation but, unfortunately, is almost entirely lacking in documentation. The importance of this work in investigating William Small is that it provides both a contextual background for Small's connection with Jefferson and the College of William and Mary, and introduces potential avenues for investigation. In *The Head and Heart of Jefferson* Dos Passos relates the story of Selim and, also, partially reproduces a letter that was reputedly written by Dudley Diggs to the Bishop of London. The first story, concerning Selim, illustrated a private side of Small's personality not often revealed. The second

reference, the letter to the Bishop of London, gives indications concerning Small's appointment to the College of William and Mary and his relationship with members of the Board of Visitors. Unfortunately, due to poor documentation the story of Selim was difficult to verify and the letter to the Bishop of London is incomplete and possibly draws inaccurate conclusions concerning the substance of the letter. Fortunately, these vignettes provided the current study with several primary sources that may have not otherwise been uncovered.

Dumas Malone's *Jefferson the Virginian*,² with ample research and documentation, presents one of the most complete accounts of Small's tenure at the College of William and Mary and his relationship to members of that community. Of particular value are the sources cited in Malone's footnotes and bibliography. Although thorough for its time, new information has been uncovered since the publication of this work that may bring new insight into the life and accomplishments of William Small. Several of those later works include: Dos Passos' *Head and Heart of Jefferson* published in 1954, J.E. Morpurgo's *Their Majesties Royal Colledge : The College of William and Mary in the Seventeenth and Eighteenth Centuries* published in 1976, and Gillian Hull's article, "William Small, 1734-1775", was published in the *Royal Journal of Medicine* in 1997.³

Several biographical dictionaries include basic information on James Small, William's father; Robert Small, William's brother; and John Gregory, William's mentor. More detailed and fresher information about John Gregory is

provided in Paul Lawrence's *Occasional Paper*⁴ written for the Royal Society of Edinburgh. Lawrence was the former archivist at the University of Aberdeen.

The next group of secondary sources address issues surrounding William Small's early education. Previously little was known of Small's early education except that he attended Dundee Grammar School. Little information was known about this institution except that it was located on St. Clement's Lane. Angela Lockey of the Dundee Town Council provided two very informative works on this subject. The first was J.W.W. Stephenson's *Education in the Burgh of Dundee in the Eighteenth Century*⁵ and the second was an article entitled "Dundee Grammar School"⁶ which appeared in the June 1934, edition of the *Dundee High School Magazine*. A chapter of Stephenson's work focused on the educational practices, funding, and faculty at Dundee Grammar School during the eighteenth century, and the article in the *Dundee High School Magazine* concentrated on the history of Dundee Grammar School.

During Small's lifetime, two institutions of higher learning were located in Aberdeen; King's College and Marischal College. These institutions joined together in the mid nineteenth century to become the University of Aberdeen. And although these two centers of learning did not merge until nearly a century after Small's death, they were closely connected even in Small's time. Professors from both institutions mingled professionally and personally, and occasionally students from one college would be advised by professors from their sister institution. P.J. Anderson's *Studies in the History and Development of the*

*University of Aberdeen*⁷ provides a contextual and historical background for Small's Alma Mater, Marischal College. The analysis provided helps to explain the differences in administration and curricula between the two institutions. One of the most striking differences between the two colleges was implemented in 1752. In that year Small's institution, Marischal College, adopted a new academic plan that abandoned the regenting system. Previously Marischal, as most Scottish colleges at that time, used the regenting system. Under this system a single professor was responsible for an entire class of students all the way through their college career. The professor who would teach an incoming group of students, the Bajans, or freshman class, would remain their primary professor throughout their whole college career. As the students progressed through the classes from being Bajans to become Semis, then to Tertians, and finally attaining the status of Magistrands, their initial professor would proceed along with them.⁸ Thomas Reid, regent at King's College, decided to retain the ancient regenting system at that institution and gave the following reasons for retaining that system.

Though more laborious to the professors, [it] seems more beneficial to the students; because every Professor of Philosophy in this University is also tutor to those who study under him; has the whole direction of their studies, the training of their minds, and the oversight of their manners; and it seems generally agreed that it must be detrimental to the student to change his tutor every session.⁹

By contrast, at Marischal a system of fixed professors was adopted. According to this plan, one professor was assigned the teaching of a specific class of students and each stage had prescribed subjects. In this way each professor would become an expert in his own branch of knowledge. This concept is expressed in the minutes of the Senatus of Marishal College, January 11, 1752:

[I]t will be of great advantage both to the Masters and the Students, that each Professor should be fixed to a particular branch of Philosophy and they are resolved that their successors in office to each of these respectively shall, by their patents, be confirmed in that particular branch in which their predecessors were fixed.¹⁰

This radical change took place in the middle of Small's college career. He seems to have benefited from this dual experience. It seems likely that under the old regenting system Small would have observed professors who were capable of teaching all the subjects in the entire curriculum, and that under the new system he benefitted from the increased specialization of his professors. More explicit information concerning specific professors, the level of class that they taught, and the years in which they taught those classes is contained in *Fasti Academicæ Mariscallanae Aberdonensis*.¹¹ The current study will attempt to use this

information to explain some of the reasons for Small's innovations and successes while teaching at the College of William and Mary.

Jennifer Carter and Joan Pittock co-edited *Aberdeen and the Enlightenment*,¹² a collection of essays investigating diverse aspects of the educational process at Marischal and King's Colleges during the eighteenth century. Of particular relevance to the present study regarding Small's education at Marischal College is an essay entitled "Aberdeen Professors", in which several of the professors who taught Small were reviewed. Another essay included in this collection of essays of special interest to Small's story is Dorothy Johnston's "Registers, Receipts, and Personal Reminiscences", which recounts anecdotes about students, professors, bursars, and classes in eighteenth century Aberdeen and provides information concerning sites for potential investigation. Although both of these works addressed issues relevant to the education of William Small, they were not written with Small in mind. One of the aims of the current study is to incorporate this new information into the story of William Small.

A report in the December 1752 issue of *Scot's Magazine*¹³ details the class and curricula changes instituted at Marischal in 1752. This article reports the abandonment of the regent system at Marischal, the courses, and the professors in charge of the different classes of instruction. These changes, which occurred while Small was a student at Marischal, possibly made the necessity of assuming all academic classes a decade later at the College of William and Mary a more manageable task for Small.

John Bulloch's *A History of the University of Aberdeen*¹⁴ is an historical account of the origins of the University of Aberdeen. John Bulloch follows the beginnings of two institutions, Marischal College and King's College, and shows how, through political, social, and religious forces, they conjoin into a single university. This work helps establish a contextual background that details the surroundings of William Small's education.

Jennifer Carter's *Crown and Gown : An Illustrated History of the University of Aberdeen*¹⁵ takes a look at Scottish education from a more political point of view. This work explores the reasons behind the differences in the curriculum and administrations of Kings College and Marischal College during Small's years in college and how each, in turn, may have impacted Small's instruction during his tenure at the College of William and Mary.

George Pryde's *The Scottish Universities and the Colleges of Colonial America* and Winfred Horner's *Nineteenth -Century Scottish Rhetoric: The American Connection*¹⁶ make the connection between teaching methodology in Scottish universities and education in colonial America. Pryde discusses the impact and contributions that Scottish educators and institutions had on American education during the eighteenth century, and Horner provides a background for educational practices, customs, and innovations that were prevalent during Small's college career, but neither studies specifically addresses Small and his innovations at the College of William and Mary.

Richard Sher's *Church and University in the Scottish Enlightenment*¹⁷ relates the impact of religious issues and philosophical influences which made Scotland an intellectual powerhouse during the eighteenth century. Roger Emerson's *Professors, Patronage, and Politics: The Aberdeen Universities in the Eighteenth Century*¹⁸ and Paul Wood's essay, "Science and the Aberdeen Enlightenment," which appeared in *Philosophy and Science of the Scottish Enlightenment*,¹⁹ point out the scientific and philosophical aspects of Marischal's influence on Small.

Hugh Trevor-Roper's seminal article "The Scottish Enlightenment"²⁰ enumerates and details the importance of the Scottish Enlightenment leaders and the wonderful burst of activities which occurred in Scotland during the beginning of the eighteenth century. Trevor-Roper's article provides a background for the intellect milieu of Small's youth and how his surrounding may have acted as a catalyst for his intellectual and scientific enthusiasms. The present study will focus in on the members of the Scottish Enlightenment who may have made an impact on Small and show how that impact manifested itself during the course of Small's life.

A organization that provided an important influence on Small's intellectual development and philosophy was the Aberdeen Philosophical Society and two works address its importance; Lewis Ulman's *The Minutes of the Aberdeen Philosophical Society: 1758-1773*,²¹ and a doctoral dissertation by Stephen Conrad entitled "Citizenship and Common Sense: The Problem of

Authority in the Social Background of the Wise Club of Aberdeen.”²² Ulman’s work addresses the history and importance of the Aberdeen Philosophical Society and provides the actual minutes of the club, which provide a clear idea of the nature of the society. Ulman’s work also uses a cleometric design to draw conclusions about members of the society and the importance of its work. Conrad’s dissertation describes and addresses issues relating to the Aberdeen Philosophical Society and the unifying importance of Thomas Reid’s Common Sense Philosophy to the members of this organization.

Primary Sources

Unpublished primary sources for this period include four pages from two family Bibles. The first is the Small Family Bible which James Small gave to his bride, Lillias Scott, as a gift in the year of their marriage, 1722. The births of their children David, Anne, James, Robert, and William are recorded in the Small family. The second Bible is the Thorton Family Bible which originally belonged to the family of Robert Thornton who married Agnes, the daughter of Robert Small. Many of the same Christian names appear in both family Bibles, establishing a linkage between the two of similar naming patterns.²³

Another primary source from this time is the Baptismal records of the family of James Small. This record indicates the baptism of four children to James Small and Lillias Scott Small, the family Bible indicates a fifth child by

name of David. An inference may be drawn that David died either in childbirth or shortly thereafter.

The Virginia Experience

Secondary Sources

Secondary sources for Small's Virginia Experience pertain either to the general political, social, or religious events in colonial Virginia which led up to the appointment of William Small to the office of Professor of Mathematics at the College of William and Mary, or are works relating to the history and development of the institution itself, or Small's personal history during this era. Many of the works overlap these categories in the information that they provide. These background materials are essential in understanding the institutions in which William Small worked and how he impacted their development, the circumstances that made the arrival of William Small at the College of William and Mary possible, and the personalities with whom Small came into contact and how they effected one another.

Among those works that supply social background for William Small's story is *Old Churches, Ministers, and Families of Virginia*²⁴ by William Bishop, describing the social environment in which William Small found himself in 1758. This work describes the close family and professional ties that bound together

diverse people into a social, political, and religious infrastructure. A positive relationship with one part of the network often facilitated relationships throughout the whole of that interrelated society. This social environment helps explain how William Small was able to become so widely connected to such divergent elements of the Williamsburg community in a relatively short space of time.

In *Colonial Virginia*,²⁵ Richard Morton provides a general historical backdrop for the events that led up to the appointment of William Small to his post at the College of William and Mary. Many of the same people who played an important role in Small's stay in Virginia are investigated in Morton's work. The current study will show the relationship of some of the events described in this work to the story of William Small.

In *The Transformation of Virginia*²⁶ Isaac Rhys describes changes that took place in Virginia's religious institutions and in colonial loyalties that made possible the appointment of Small to a professorship at the College of William and Mary, an institution established for the purpose of training ministers for service in the colonies.

Louis Koontz's *Robert Dinwiddie*²⁷ may be the most complete treatment of the contentious governor who clamored for a "layman" on the faculty of the College of William and Mary, and clarifies many of the deeds by which Dinwiddie alienated the local gentry. Koontz also explains Dinwiddie's financial motivations for the divisive Pistole Fee. Dinwiddie was one of the principle supporters of a move to break up the monopoly of the Oxford ministers in the faculty of the

College of William and Mary. In this work Koontz also makes a strong case for the bias that Dinwiddie showed in the appointments of fellow Scots.

The most detailed account concerning the events that led up to Small's appointment and the work that provides many details about his stay in Williamsburg is J.E. Morpurgo's *Their Majesties Royal Colledge*.²⁸ Morpurgo gives possibly the most comprehensive explanation about the sequence of events which made it possible for Small, an unknown Scot with Presbyterian connections, to be recruited for a teaching position at an Anglican institution.

Also important and with fresh material is Thad Tate's *The College of the College of William and Mary*,²⁹ which takes a careful look at the early history and development of the second oldest institution of higher learning in British America. Tate goes into great detail concerning the contentious relationship between the Board of Visitors and the faculty of the College of William and Mary. This adversarial situation was possibly the most important element that led the Board of Visitors to search for a non Anglican faculty member, potentially the most important factor in explaining Small's recruitment.

Robert Polk Thomson's article, "The Reform of the College of William and Mary: 1763-1780"³⁰ is a comprehensive explanation of the political and academic infighting that took place before and during Small's years at the College of William and Mary and provides a contextual background for his appointment.

Political events that were central to Small's appointment to the College of William and Mary, and thereby made possible his relationship with Fauquier,

Franklin, Jefferson, Peyton Randolph, Wythe, and many others are laid out in articles by Jack Greene in "Landon Carter and the Pistole Fee Dispute" and "The Report of a Hearing on the Pistole Fee Dispute Before the Privy Council, June 18, 1754", both of which appeared in *The College of William and Mary Quarterly*.³

Glenn Smith's "The Affair of the Pistole Fee" was published in the *Virginia Magazine of History and Biography* and his "The Parson's Cause, 1755-1765" in *Tyler's Quarterly Historical and Genealogical Magazine*² recount events that, because they exacerbated the relationship between the native born colonial aristocracy and the imported establishment clergy, were central to the appointment of William Small to the College of William and Mary.

And finally, an article by Isaac Rhys, entitled "Religion and Authority: Problems of the Anglican Establishment in Virginia in the Era of the Great Awakening and the Parson's Cause" ² helps to explain the religious changes, which aggravated the relationship between the Board of Visitors and the faculty of the College of William and Mary, and thereby, were partially responsible for the request of the Board of Visitors for an appropriate replacement for the Professor of Mathematics and "preferably a lay-man". This request may be the primary reason for the extended search for an appropriate candidate for the post and the ultimate recruitment of William Small.

Dumas Malone's *Jefferson the Virginia*²⁴ provides perhaps the most well known and best documented resource for Jefferson's college years. This work is valuable to the researcher for the number of relevant primary sources it cites and

the comprehensive treatment of this time in Jefferson's life. Although comprehensive for its time, several more recent studies have uncovered primary material unknown to Malone.

Alf Mapp relays revealing information about Small in *Thomas Jefferson: A Strange Case of Mistaken Identity*.³⁵ Mapp makes one of the earliest substantial attempts by an American author to provide background information about Small. In addition to the information that he provides about Small, Mapp portrays Small's physical characteristics in vivid detail.

Lyon G. Tyler, former professor and President of the College of William and Mary presented a study of previous faculty members, including Small, in *The College of the College of William and Mary in Virginia : Its History and Work*.³⁶ Although this slender work provides some essential information about William Small, it provides no new information.

"Francis Fauquier's Will", which appeared in *The College of William and Mary Quarterly*,³⁷ provides a revealing look at the governor who was Small's friend and companion. In telling us about Fauquier the article also provides information about the people with whom Small kept company and their interests.

Two articles which provided details about early teaching at the College of William and Mary appeared in the *the College of William and Mary Quarterly*, Ewing Galen's "Early Teaching of Science at the College of the College of William and Mary", and Lyon G. Tyler's "Early Courses and Professors at the

College of William and Mary College."³⁸ Both include a cursory treatment of Small's time at the College of William and Mary.

Small is the primary focus of the three following articles. The first is by F.W. Hawtrey and is entitled "Descriptions of the College of William and Mary."³⁹ It provides a partial replication of a letter written by Stephen Hawtrey to his brother Ned in 1765. Ned Hawtrey had been offered a professorship to the College of William and Mary and he had sent his brother, Stephen, to interview William Small about the circumstances in Williamsburg. Stephen hoped that the fresh information would allow the younger Hawtrey to make a more informed decision about his acceptance or rejection of the offer. In the course of the interview, Small provided many daily details about life in Williamsburg and inside information about the college and faculty life. Small gave candid assessments about his perceptions of life in Williamsburg and the life of a professor at the College of William and Mary. A more complete version of this letter, however, exists in the Ganter Collection.

Interesting information concerning Small's stay in Virginia is also provided in the second article, "William Small's Expense Account",⁴⁰ which appeared in the July 1907 issue of the *College of William and Mary Quarterly*. It gives a detailed account of what Small purchased and valued. It is possible to make important inferences concerning information in the article. For instance, one entry contained information about Small's laundry. At first glance it seems to be insignificant, but the account specifies the date the final bill was paid,

September 15, 1764. The account further states the span of the service, five years and 345 days. It is possible to estimate by this information both Small's length of stay in Williamsburg and the approximate date of his departure. This, in turn, is revealing information as it can be used to approximate the day of Small's arrival in London.

In "William Small - Jefferson's Beloved Teacher,"⁴¹ Herbert Ganter unveils the complete text of a letter that was written by Jefferson to Small in 1775. Unknown to Jefferson, Small had passed away several weeks before the letter was written. Nevertheless, both the tone and the content of the letter, written almost twenty years after Small left Virginia, relay the close relationship the two men had and how much Jefferson valued his continued friendship.

John Page's tribute to Small in an article entitled "Memoir of Governor Page",⁴² that appeared in the Virginia Historical Register gave important details about Small's instructional methods as did an article entitled "Letter of Questions Posed to John Page from Skelton Jones", which was glued in a book that was owned by St. George Tucker.⁴³

Primary Sources

Primary sources may be categorized into published and unpublished collections. Among the important unpublished primary sources collections are the Herbert Ganter Collection at Swem Library of the College of William and Mary.

The Ganter Collection is comprised of documents obtained by Herbert Ganter, former archivist at Swem Library at the College of William and Mary. This is the most complete archive available in which William Small is the central focus. The Ganter Collection includes not only material on Small's tenure at the College of William and Mary but also typescripts of some documents from his days in Birmingham. Most of the documents in this collection were produced by Herbert Ganter and are available in typescript with Ganter's handwritten notations. These addenda often provide extra information, point out various avenues for potential investigation, and provide Ganter's personal perspective on the material. The additional information includes reference numbers to other documents, dates of important events not listed in the manuscripts, Ganter's conjectures on who or what is implied in the text of the documents. The disadvantage of the typescripted documents is that handwriting is not available for comparison and the documents may contain transcription errors.

The Edgehill-Randolph Collection located at Alderman Library at the University of Virginia contains documents that are not readily available in other collections. Of particular interest are three letters that were purportedly written by Dudley Digges concerning William Small. Two of the letters are to the Bishop of London and the third letter is to William Small. All three have the same acerbic tone and castigate Small for not returning to his post at the College of William and Mary. The two letters to the Bishop of London are in the hand of Dudley Digges, but the third, written to Small himself, appears to be in the hand of Robert Carter

Nicholas. The reason for the discrepancy is, at this time, still a mystery. This collection is important in that it contains materials that are not available in other places and directly address issues central to Small's stay in Virginia. The misidentification of the authorship of the letter to William Small emphasizes the need for this material to be more closely investigated and analyzed.

The Benjamin Franklin Papers, available in the archives of the American Philosophical Society in Philadelphia, contain documents that indicate the close personal and professional relationship between Franklin and Small. Many of the documents are unimportant in their substance, but significant because they provide evidence of Franklin's movements, associations, and interests. Some of the documents may provide potential links between Small, Franklin, and people who were associated with both men. There are indications in some of these documents that Franklin may have played a more substantial role in Small's life and career than has been previously suspected.

There are many letters and documents scattered throughout family papers in the Archives of the Virginia Historical Society that provide clues to the interconnectedness of disparate elements of society in colonial Virginia. There are numerous family collections that link together many characters who had associations and friendships with William Small, who were hostile to Small, or had common friends and interests with Small. The value of these resources is the range of material and correspondence; the disadvantage is that the material is not very well categorized or cross indexed. The Virginia Historical Society holds, for

instance, a number of documents attributed to Robert Carter Nicholas, which may potentially provide valuable information about William Small and his activities both in Virginia and back in England, but they are spread among several collections.

The original Jones Family Papers are available at the Library of Congress and a partial collection of photocopies are available in the Faculty-Alumni Collection in the archives of William and Mary.⁴⁴ Of particular interest to this study are a number of letters written from Walter Jones to his brother Thomas from William and Mary from 1760-1762. Jones was both a classmate of Jefferson and Small's student, and the letters discuss Small's teaching methods, texts, and subjects as well as college affairs.

The Fulham Palace Papers in the Lambeth Palace Library are available on microfilm at the Alderman Library at the University of Virginia and other locations, but the originals are housed in the Lambeth Palace Library in London. This collection is essential for understanding the political and religious context which led to Governor Dinwiddie and the Board of Visitors to request an appropriate candidate for the office of Professor of Mathematics and "preferably a lay-man". The Fulham Palace Papers include the correspondence files of the Bishop of London. Among the subjects covered in the file are documents relating to the case of the Reverend Mr. Kay, the Two Penny Act, the Brunskill Controversy, the Stith-Dawson Controversy, the Pistole Fee, and the "New Lights", or new Protestant religious communities. Among the correspondents

were John Camm, William Dawson, Dudley Digges, Governor Dinwiddie, Governor Fauquier, John Pownall, and Thomas Stith.⁴⁵ The work contains only incoming correspondence and not the replies of either Bishop Sherlock or his assistant, Samuel Nicholls. These letters are revealing in their detail, clarity and directness, humor, and, in many cases, vitriol. This collection is raw material and it is necessary, sometimes, to go through an arduous process to locate information.

Published primary sources include the *Historical Collections Relating to the American Colonial Church*⁴⁶ which is a partial index for the Fulham Palace Papers. While this collection supplies an incomplete but helpful index to papers in the Fulham Palace Collection, its disadvantage is that it gives only a brief and incomplete accounting of the content of the documents. William Perry's *Historical Collections Relating to the American Colonial Church*⁴⁷ provides full transcriptions for selected correspondence from the Fulham Palace Papers. This work is valuable in that it provides full text transcriptions but it is only for selected letters and not the entire collection. The weaknesses of this work are that it is a partial representation, handwriting cannot be compared, and there may be transcription errors.

The *Journals of the House of Burgesses of Virginia*⁴⁸ provides materials relating to many of the political events surrounding the arrival of Small at the College of William and Mary. This record contains evidence of a number of events that are indicative of the development of the adversarial relationship that developed between the Board of Visitors and the Establishment faculty of the

College of William and Mary. This is raw material in terms of detailed analysis or indexing, but important for understanding many issues concerning the College of William and Mary and William Small.

Andrew Burnaby's, *Travels Through the Middle Settlements in North-America*⁴⁹ recount Burnaby's visit to Williamsburg in 1759. It contains valuable insights into life in Williamsburg and into the College of William and Mary when Small was ensconced there as the professor of mathematics.

The Diary of Colonel Landon Carter,⁵⁰ recounts Landon Carter's side of the dismissal of the Reverend Mr. Kay and his intermittent verbal warfare with the Reverend John Camm. Although extremely one-sided, this account is always descriptive, often humorous, and brings out the acerbic nature of local politics. The case of the Rev. Kay was one of the events that exacerbated the relationship between the Board of Visitors and the Anglican faculty at the College of William and Mary, which in turn was partly responsible for the appointment of William Small. The bias of the author may taint the reliability of some of the information and often presents only one side of the argument.

The Official Papers of Robert Dinwiddie,⁵¹ contains varied accounts which mix government directives with political business and personal invectives. Like many gentlemen of his time Robert Dinwiddie was extremely forthright in expressing his opinions on contemporary political issues. He was not reluctant to take sides and state his sentiments. Governor Dinwiddie, although it is doubtful that he made the specific request for Small's appointment, he was instrumental in

setting the stage for the initiative to recruit a layman for William and Mary's faculty.

Likewise, *The Official Papers of Francis Fauquier*,⁵² although written more eloquently than Dinwiddie, reveal the Lieutenant Governor's sentiments, true feelings, and convictions. Governor Fauquier wrote on many issues that are directly connected to the appointment of Small and on the leading figures of Small's world in Virginia. Particularly enlightening is the personal nature of political infighting between Fauquier and Camm, the *ad hominem* attacks between the members of the Board of Visitors and the "establishment" faculty of the College of William and Mary. Both of which serve as a microcosm for the power struggle between a British administration trying to control its colonies and the native administration endeavoring to control its own destiny. This edition provides the official papers of Fauquier but does not include his personal papers. Fauquier's private secretary, John Foxcroft, later succeeded William Hunter as Benjamin Franklin's co-Postmaster-General. The researcher of the current study is presently attempting to locate the personal correspondence of both Francis Fauquier, John Foxcroft, and William Hunter. Related to Fauquier and William Hunter, another Small associate, are probate papers located in the York County Records,⁵³ included in these records are details of Fauquier's musical collection and details of Hunter's will.

*The Papers of Benjamin Franklin*⁵⁴ edited by Lawrence Labaree is a useful resource because Franklin was a prolific letter writer who corresponded

almost daily. This sixteen volume collection is notable for the wide variety of correspondents and the range of subject matter. Franklin's compulsive record keeping was responsible for a correspondence file that included both incoming and outgoing mail, often noting the date, location of the posting, and the names of the corresponding parties. This system helps to facilitate tracking Franklin's movements, friends, and interests. Of particular value for the current study is Franklin's meticulous record keeping, which is useful in ascertaining the probable date of the first meeting between William Small and Benjamin Franklin. It was through Franklin's letter of introduction that Small was able to secure his position as doctor and advisor to Matthew Boulton when he returned to England. Franklin seems to have acted as a benefactor and friend to William Small. A more recent and complete edition, presently being compiled by Ellen Cohn, will soon be published by Yale University. It is to be hoped that this edition will fill in some of the gaps of the earlier edition. Another less encyclopedic but valuable collection of Franklin's letters is *The Writings of Benjamin Franklin*, edited by Albert Henry Smith.⁵⁵

James Abercromby was an agent for the Governor of Virginia, and *The Letterbook of James Abercromby*⁵⁶ provides an insightful look on the interrelationships between government officials in England and their counterparts in the colonies. This work also provides a look at prominent individuals in both Colonial and English administrations and dramatic first hand accounts of political

decision making which impacted the circumstances surrounding Small's appointment to the College of William and Mary.

Important published collections of Jefferson's correspondence include *The Writings of Thomas Jefferson* and *The Papers of Thomas Jefferson*⁵⁷ which revisit Jefferson's own perceptions about his relationship with William Small and importance of the influence that his old mentor had on him. The strongest indication of the impact that William Small had on Thomas Jefferson are in Jefferson's own words found in his *Autobiography*. Boyd's edition contains complete copies of correspondence with ample annotations, Peterson's version is less authoritative and some of the letters are printed in part. *The Life and Writings of Thomas Jefferson*,⁵⁸ edited by Adrienne Koch and William Peden also provide a substantial representation of Jefferson's writings. Perhaps the most complete and the purist resource for Jefferson is the Library of Congress website. Its drawback are lack of annotation and Jefferson's crabbed handwriting.

William Small and his influence as a teacher is also recounted by another former student, John Page, in an article entitled "Memoir of Governor Page", which appeared in the *Virginia Historical Register Magazine* in 1850⁵⁹ Like Jefferson, Governor Page pays homage to his old teacher and mentor. A more complete and direct recollection of William Small and his influence was given by Governor Page in response to several questions put forth by Skelton Jones, possibly a student or a journalist. A printed version of this series of questions appeared in the *American Biographical Dictionary*⁶⁰ owned by St. George Tucker.

As the article was inserted or tipped in, the original publication and date of publication is presently unknown.

The Birmingham Years

Secondary Sources

The secondary literature concerned with this era is more abundant and detailed than that of earlier phases of his life for several reasons. The first reason for the wealth of this material is the prolific nature of Small's associates in the Lunar Society. Many of these gentlemen were fecund writers and correspondents. The second is that the interest revolving around this confederation of scientists and industrialists has been more intense than the interest in Small's Virginia circle. Watt and Boulton, perhaps the most well known members of the Birmingham Lunar Society and celebrated figures in Birmingham even while living, have long been the subjects of numerous books, articles, and speeches. The third reason for the more inclusive documentation is Matthew Boulton ordered correspondence and plans relating to the steam engine be scrupulously maintained in order to protect himself against patent infringement claims and infringements on the steam engine that Watt had developed with Small's help.

Several books are helpful in providing both contextual background and essential information about this productive stage of Small's life. Among those

works is Robert Schofield's *The Lunar Society of Birmingham*,⁶¹ perhaps the most inclusive recounting of the accomplishments of the members of the Birmingham Lunar Society, both individually and collectively. In this work the institution and its accomplishments, and the lives of its members are recounted. Although Schofield sets forth the personal histories of the individual members and links them together in a cohesive fashion, the information is generalized in its scope and there exists many gaps in the individual stories of the members lives.

Also important is Samuel Smiles' *Lives of the Engineers*.⁶² This work focuses on Boulton and Watt, with Small's role being treated incidentally. It is possible for some information on Small to be gleaned from this work, but, as the work was not directly concerning Small, many issues concerning him were not addressed.

There are several works concerning the milieu of the early Industrial Revolution which are helpful in understanding the importance and prominence of the Birmingham Lunar Society and its members. John Money's *Experience and Identity : Birmingham and the West Midlands, 1760 - 1800*,⁶³ is one of the most encompassing of these works. Money gives a detailed account of the political and social circumstances surrounding the activities of Small's intellectual coterie, the Birmingham Lunar Society. While the work does not address Small directly, it is important for understanding the political and economic importance of both the region and the influence of the intellectual clubs flourishing at the time.

Robert Allen's *The Clubs of Augustan London*⁶⁴ provides an informative background for the activities and nature of intellectual clubs and their centrality in the processing of networking across social barriers in eighteenth century England. Benjamin Franklin, along with several members of the Birmingham Lunar Society, who were also members of a number of these very clubs, often invited Small along to dinners. The article by Vernon Crane entitled "The Honest Whig Society" ⁶⁵ more specifically addresses the intellectual clubs to which Benjamin Franklin belonged, their memberships, interests, and menus. These articles are potentially important because members of the Lunar Society also were members of these clubs and Small is documented to have attended several of the meetings of the Honest Whig's Society.

There are several articles dealing with Small during this era and the most provocative of them are by James McCash; the first of which appears in Volume 20 of the *College Courant* is "Notes on a Man of Little Showing." ⁶⁶ The second article, which made its appearance in the very next edition of the same magazine, is entitled "William Small - Note 4 on a Man of Little Showing." The first article concentrates on Small's activities in connection with the Birmingham Lunar Society and the second is more compelling for it hints at where further information concerning Small's early and more obscure life lay hidden. Attempts to locate information suggested in the second article have, as yet, been unsuccessful.

A.K. Bruce's "Dr. William Small,"⁶⁷ covers familiar facts of Small's life without adding new material, but an article by Gillian Hull "William Small, 1734 - 1775"⁶⁸ expounds several interesting, although unsubstantiated, theories about Small. Among those are: 1) Small's connection with fellow physician and Franklin associate, William Heberden; 2) Small's probable apprenticeship with John Gregory; 3) Small's initial meeting with Franklin in 1763, during which a personal and professional relationship was established, and; 4) a suggestion that Small may have died of malaria. Many of the conclusions that are drawn by Hull, although logical, are inferential and without authoritative documentation. The researcher in the present study has contacted the author of the article by both telephone and email. All of the above assertions are presently being investigated by both the author of the article and the researcher for the current study for substantiation.

There are a number of articles that address specific facets of the Lunar Society, chief among which are Robert Schofield's "Membership in the Lunar Society of Birmingham" and "The Society of Arts and the Lunar Society of Birmingham."⁶⁹ Schofield's articles relate the names, achievements, eccentricities, interests, and relationships of the members of the Birmingham Lunar Society. He gives a brief but interesting history of this institution with which Small was so intimately involved.

G.J. Stoker's "The Lunar Society", again looks at the membership and accomplishments of the Lunar Society. Interesting, but not as precise, are

R. V. Well's "The Lunar Society",⁷⁰ and several occasional works done by Matthew Carrington Boulton concerning the Lunar Society. The papers of Stoker, Wells, and Matthew Carrington Boulton relate accounts of the Birmingham Lunar Society with variations in anecdotal information and documentation.

Finally there is a paper by Eric Robinson, "The Lunar Society",⁷¹ presented at the Science Museum in London on January 2, 1963. Eric Robinson's account is more valuable in that it provides fresh information, gives listings of the substance of manuscript references to the Lunar Society which exists in the Birmingham Public Library, and references to the still unpublished Doldowlod House Papers.

Primary Sources

The greatest number of primary source documents relating to Small come from this period and the greatest repository for these documents is the Birmingham Public Library. The Birmingham Public Library houses the five main collections relating to Matthew Boulton, James Watt, and the Birmingham Lunar Society. Those collections are the Boulton-Watt Collection, the James Watt Papers, the Matthew Boulton Papers, the Muirhead Collection, and the recently obtained and still being catalogued Doldowlod House Papers.

In addition, to these important resources are the private papers of John Ash, Erasmus Darwin, Thomas Day, James Keir, and Joseph Priestley, who were

all friends and collaborators of Small.⁷² Published primary sources include accounts of specific events in several magazines and newspapers -*Scots*, *Gentlemen's Magazine*, *Birmingham Post*, and *Aris's*. These articles relate events from Small's life; his role in founding the Birmingham Public Hospital, Small's sponsorship of the Birmingham Theater, an account of Small's death, and his obituary.

There are five major collections which contain correspondence either to or from Small in the Birmingham Public Library: the Boulton-Watt Collection, the Matthew Boulton Papers, the James Watt Papers, the Muirhead Collection, and the recently acquired Doldowlod House Papers. Adam Greene, the current archivist at Birmingham Public Library, estimates that the combined documents in the five collections number from one to four million documents. The first, and most extensive collection, is the Boulton-Watt Collection which is primarily an archive of the partnership which lasted from 1774 until the 1890s. Although it is mainly a business archive, consisting of work orders, account books, and record books relating to business matters, it also contains some personal correspondence by William Small.

The second major collection is the James Watt Papers, which covers a wide range of subject matter and interests. There are more than 4,500 pieces of incoming mail from some of the most prominent figures of the early Industrial Revolution. In addition to William Small, correspondents include Matthew Boulton, Erasmus Darwin, Richard Lovell Edgeworth, and Joseph Priestley. All

of these men were members of the Birmingham Lunar Society and close personal friends of William Small. Also of note in this collection are the letters of Josiah Wedgwood, who was a leading figure in the London Chamber of Manufactures, was able to influence legislation concerning the patenting of the steam engine, an invention in which Small played a central role in developing, financing, and patenting.

The third major collection is the Matthew Boulton Papers, which contains over 30,000 pieces of personal correspondence to Boulton from various political, intellectual, and industrial figures on a wide range of subjects. Many documents in this collection relate to Small's role in the development and creation of the steam engine and other inventions and scientific innovations in which he played a part.

The fourth major collection is the Muirhead Papers. This is the only one of the collections that exists, in part, in a published format. J.P. Muirhead was a relative and executor of the estate of the son of James Watt and published both a three volume work on the inventions of James Watt in 1854, and a biography of James Watt in 1758.⁷³ Selected letters between Watt and Small from this collection were reproduced in the earlier work and personal information on Small and his family are included in the Watt biography by Muirhead.

The fifth collection of papers, only recently obtained from Lord Gibson - Watt, is the Doldowlod House Papers. These papers are the most personal of Watt's correspondence and contain letters from Small. Included in this collection

are a number of letters from a wide and distinguished group of friends and acquaintances on a variety of subjects. Perhaps the most important aspect of this collection is their personal nature and inaccessibility for over a century.

The importance of these collections should not be underestimated. To a large extent the only portions of these papers that have been examined and analyzed are those that pertain directly to the development and patenting of industrial and mechanical inventions. There is the potential for a large and, as yet, unexamined body of correspondence and documents that may provide important and enlightening information about developments and personalities which played important roles in the transition from an agrarian society into a modern industrial society.

Conclusion

One might draw the conclusion, from the lack of in depth research done on William Small, that there was an absence of secondary and primary sources relating to him. Nevertheless, as the preliminary review of literature demonstrates, there is sufficient resources from which to draw. New material is becoming available almost daily. Several examples might include the forthcoming editions of *The Papers of Benjamin Franklin* and *The Papers of Thomas Jefferson*, the Doldowlod House Papers, the findings of genealogists David Craig and Richard Small, the new two volume biography of James Watt by

Dr. Richard Hills, new research on the life of John Ash by Dame Rachel Waterhouse, Jenny Uglow's fresh research in *The Lunar Men, 1760 - 1810*,⁷⁴ investigations into Small's medical background by Gillian Hull and Andrew Doig, and the combined collaborative efforts of all of the preceding researchers.

In addition to newly recovered materials it is possible to review previous research for new perspectives on materials that may provide fresh information about Small's background, his innovations, and his influence.

ENDNOTES CHAPTER 2

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Chapter 3

Methodology

But man - let me offer you a definition - is a story telling animal. Wherever he goes he wants to leave behind not a chaotic wake, not an empty space, but the comforting marker-buoys and trail-signs of stories. He has to keep making them up. As long as there's a story, it's all right. Even in his last moments, it's said, in a split second of a fatal fall - or when he is about to drown - he sees, passing rapidly before him, the story of his whole life.

-Graham Swift, *Waterland*¹

Methodological Approaches

Scientific Approach and Narrative Approach

The methodology of a study is determined by its focus and its purpose. The present study is a narrative biography. According to Lawrence Stone there are two major classifications of historical approach; the "new" history, or scientific approach, and the "old" history, or narrative approach.

The first approach, "new" history, has also been called "scientific" history. Stone states, "There have been three very different kinds of "scientific history" all

based not on new data, but on new models or methods: they are the Marxian economic model, the French ecological/demographic model, and the American “cliometric” model.”² According to Stone, “in the old Marxian model history moves in a dialectical process of thesis and antithesis, through a clash of classes which are themselves created by changes in control over the means of production.”³ The main emphasis of second variation of scientific history, the French demographic model, “is the shifts in the ecological balance between food supplies and population,”⁴ a balance best determined by long term quantitative studies of agricultural productivity, demographic changes and food prices. The third variation of scientific history, cliometrics is “defined by a methodology rather than by any particular subject-matter or interpretation of the nature of historical change.” [Cliometricians] are historians who use paradigmatic models and test the validity of the models by the most sophisticated mathematical and algebraical formulae applied to very large quantities of electronically processed data.”⁵

By comparison, the crux of the “old” history is its narrative, or story-telling format. According to Stone, the narrative approach emphasizes a more chronological order and focuses on a single coherent story, albeit with sub-plots. Two ways that narrative history differs from scientific history is that it is descriptive rather than merely analytical and its central focus is on man not

circumstances. It therefore deals with the particular and specific rather than the collective and statistical. ⁶

Reasons for a Narrative Approach

The current study is a narrative biographical study and that, according to Stone, tells the story of a life and, while it calls for a good deal of analysis, analysis is not the skeletal framework around which the work is constructed. All historical studies contain a certain logic and method, and how the study is carried out depends on its purpose. In accordance with the purpose of the present study, it employed the “old” historical approach of a descriptive and interpretive narrative biography. This methodology is more appropriate for the current study than the scientific methodology because its focus is the life of a man and not an analysis of a set of circumstances, and it deals with the particular and the specific and not the collective and statistical.

Stages of a Historical Study

According to William Brickman, the writing of history involves five stages: 1) the selection and delimitation of the research problem; 2) the classification, accumulation, and criticism of source materials; 3) the consequent determination of the facts; 4) the formulation of tentative hypotheses, or

generalizations, to explain the facts; 5) and the synthesis and presentation of the facts in a logically organized form.⁷ The implementation of the steps of this process depend on the nature of the study, and a narrative approach is very different from a scientific approach.

Delimitation of the Research Problem

In the current study the first stage, the selection and delimitation of the research problem, was addressed in Chapter I but can be summarized as follows. The scope of the study must be viable. Although there are a number of interesting analytical problems that could be investigated in connection with William Small, for the purpose of this study it was necessary to concentrate on the events of Small's life and their immediate consequences. Some analytical questions may be interesting topics for future studies but may not be addressed in the present study.

Classification, Accumulation, and Criticism of Source Material

The classification, accumulation, and criticism of source material for the present study proceeded in the following manner. First, reference sources and tertiary sources were reviewed for general background, secondary sources and possible primary sources; next secondary sources were investigated for information, other potentially information rich secondary sources and references

leading to primary sources; and finally, primary sources were examined for fresh information and additional insight for the interpretation and analysis of existing information.

Classification

Sources which are surviving should be regarded as primary, secondary, or tertiary. Although several definitions of these classifications exist, for the purpose of the current study those given by Susan Grigg were used.

The most fundamental of sources in a study are primary sources. According to Susan Grigg, "historians have generally agreed that the primary source is the core concept of historical method. The validity of the historian's writings as secondary sources is said to derive from their use of primary sources as best surviving evidence of activity." She states, "A primary source for a segment of historical activity is any surviving material that is generated or altered in the course as an outcome of that activity or provides context for its occurrence." She advises, "Contemporary materials" are equivalent to primary sources as most historians use that label in their research and writing."⁸ Examples of "contemporary sources" from the time period used in the present study include *Aris' Gazette*, the *Birmingham Gazette*, and the *Gentleman's Magazine*.

Materials that may be regarded as primary can either come from archives, historical collections, or contemporary sources such as newspaper or

magazine articles contemporary of the current study. A tertiary source is a source that “is based on secondary sources.” A secondary source “is a derived source, once removed from first hand material. It is usually a document which describes or discusses a primary source.”⁹

Accumulation from Archives and Historical Collections

According to Susan Grigg, archives are records of institutions preserved by those institutions and historical collections are personal or family papers. Those definitions are used for the purpose of the present study. Among the archival source that are used in this study are the Fulham Palace Papers, the Meetings of the Faculty and Board of Visitors of the College of William and Mary, and the Boulton-Watt Collections. Historical documents include the Ganter Collection, the James Watts Papers, the Matthew Boulton Collection, and the Franklin letters from the American Philosophical Society records.

Use of Expert Sources

In addition to the use of published and unpublished materials, the current study also contacted experts and specialists in the fields of history and education. Contact was made by telephone, by post, and by email. Several experts in the appropriate areas of study have already been contacted. Jennings Wagoner of the

University of Virginia advised the researcher in the current study in respect to Small's connection with Jefferson and provided utile contacts in the fields of colonial history and education. Alf Mapp Jr., Jefferson scholar and author of *Thomas Jefferson: A Strange Case of Mistaken Identity* pointed out informative primary and secondary sources to the researcher of the current study. Garry Wills, Jefferson scholar and author of *Inventing America: Jefferson's Declaration of Independence* offered advice concerning Small's impact on Jefferson's political and religious views. Marion Roberts, Small expert, BBC journalist and author of *The Swan of Lichfield* has collaborated in locating important primary sources and shared valuable contacts. Jenny Uglow, editor and author of *The Lunar Men, 1760-1810*, has offered information concerning Small and his connections with the Birmingham Lunar Society. Richard Hills, historian and author of a two volume biography of James Watt supplied the researcher with a list of uncatalogued references to William Small in the Birmingham Public Library and his own monograph detailing Small's contributions to the development of the steam engine. Jack Greene, historian and editor of *The Diary of Colonel Landon Carter* provided background information on the political situation surrounding the appointment of Small to the post of Professor of Mathematics at the College of William and Mary. Harry Dickinson, Professor of History and Anglo-American expert at the University of Edinburgh, aided the researcher in locating primary sources concerning Small in Scotland, verified primary source material and shared expert colonial history contacts in Scotland, England, and America.

Gillian Hull, British medical historian and author of "William Small, 1734-1775" is presently attempting to locate information concerning Small's medical training. Dorothy Johnston, archivist at the University of Nottingham and author of "Registers, Receipts, and Personal Reminiscences" advised the researcher of the present study concerning practices in Scottish institutions of higher learning in the eighteenth century. Paul Lawrence, former archivist at the University of Aberdeen and author of "John Gregory" provided insight into information concerning John Gregory's mentorship of Small. Thad Tate, former Professor of History at the College of William and Mary and co-author of *The College of William and Mary*, advised the researcher of the present study concerning the relationship between the faculty and the Board of Visitors at the College of William and Mary during the eighteenth century. Dame Rachel Waterhouse, vice-president of the New Birmingham Lunar Society and author of *John Ash* shared her findings concerning John Ash, Small's medical colleague and roommate in Birmingham.

Several editors have been helpful in locating new information and corroborating existing primary resources. Frank Grizzard and David Hoath, current editors of *The George Washington Papers* verified the handwriting samples of several letters concerning Small. Ellen Cohn, of Yale University and current editor of *The Papers of Benjamin Franklin* is currently looking for newly uncovered correspondence that establishes links between Franklin and Small. Barbara Oberg, of Princeton University and current editor of the new edition of

The Papers of Thomas Jefferson is presently looking for new evidence of correspondence between Small and Jefferson.

The role of archivists has been central to the present study in locating primary sources. Mary Cooke, archivist at the College of William and Mary has brought to the attention of the researcher of the current study a recently uncovered interview with John Page in which William Small played a substantial role. Ann Southwell, archivist at the University of Virginia has located documents available only at the Alderman Library and alerted the researcher of the present study to ambiguities in the handwriting of documents important to the current study. Scott DeHaven, archivist at the American Philosophical Society has supplied several pieces of correspondence between Franklin, Small, and Boulton. Jerry Gewalt, archivist at the Library of Congress was helpful in locating hard to find documents concerning Peyton Randolph. Jane Pirie and Michelle Gait, archivists at the University of Aberdeen, have assisted in locating documents important to Small's life and the activities of Marischal College. Tim Proctor and Adam Green, archivists at Birmingham Public Library have advised the researcher of the present study in regard to the five major collections at the Birmingham Public Library including the recently purchased Doldowlod House Papers.

Accurate information concerning William Small is difficult to locate and decipher. Several genealogists with connections to the Small family have been extremely helpful to the researcher in the present study by sharing the fruits of their investigations. Among those genealogists is David Craig, descendent of

Robert Small, who has provided the present study with photocopies of two family Bibles and a previously unknown oil portrait of William Small. Robert Scott Small, descendent of Robert Small, who has made his family records available in the Robert Scott Small Library at the College of Charleston. And, most recently, Richard Small, descendent of Alexander Small, who is in the process of providing family records on Alexander Small, friend of Franklin and possible family relation of William Small.

Technological Approaches

In the current study an additional resource which used in the acquisition of primary source material was the digital camera. In an archival setting it is customary that photocopying of primary source material be limited to fifty pages per visit, it usually takes several weeks to receive the copies, and often the copies are expensive and of poor quality. The digital camera that was used in the current study has two compact flash packs, one flash pack is able to hold 15 normal images or 6 high definition images, the second cell is able to 320 normal image or 160 high definition images. It was possible to take, at one setting, either 335 normal pictures or 166 high definition images. After the images are downloaded to a storage file, or storage files, on a computer, the images can be deleted from the storage cells, and it is possible to use the camera again for research the next day. The advantages of a digital camera in research are: 1) a

large number of documents can be copied from the same collection within a short period of time, 2) the documents are instantaneously available, 3) the cost is minimal, 4) documents relating to different issues can be stored in separate files, facilitating record keeping and retrieval. Digital images can be manipulated on the computer, sometimes greatly improving the legibility of the primary source and they can be also sent as an attachment to an email, thereby improving communications between collaborating researchers. Because it is possible to take digital pictures without a flash, many archivists are not averse to its use. One is also able to take pictures of photocopied primary materials and manipulate the size and tones of those pictures to increase legibility.

The microfilm scanner is another technological tool that was used in this study. With the microfilm scanner it is possible to scan microfilm to a disk, the digital image can then either be saved from the disk to a computer or printed out. If saved to the computer, it has the same advantages as the digital picture. If the image produced by the scanner is of poor quality, it can be printed off, digitally photographed and manipulated like other digital images.

The internet is the third technological means of source accumulation that was used for locating and retrieval of primary sources in the current study. Repositories for primary sources for the present study may be located in the United Kingdom through Archon, a search engine sponsored by the British Government. The present study also used H-ALBION, an Anglo-American History Website and chatroom, to locate primary sources and pose questions to

experts and specialists in the appropriate areas of study. The internet was also used for collaborating with others interested in the same area of study.

External and Internal Criticism

The value of a source in the current study can be determined by external or internal criticism. External criticism is used to determine the authenticity of a document, to discover if the document is what it appears to be. According to William Brickman, external criticism is used to distinguish the original text from later printings or revised editions, borrowings and interpretations, and expurgated versions.

External criticism can take the form of a physical investigation - testing the paper, checking the watermark and ink, or comparing the handwriting; or a contextual investigation - comparison of previous works of the reputed author in terms of style, substance, and consistency of characteristics. The option of digital photographs was used as one means of external criticism in the current study. It is possible with digital images to superimpose one image on top of another and thereby be better able to compare handwriting, assessments were made in conjunction with colonial documents specialists. Internal criticism, according to Brickman, analyzes the meanings of statements within the documents which have already been established as genuine, and determines their accuracy and trustworthiness. Internal criticism is further subdivided into positive and

negative criticisms -"positive criticism is the attempt to establish the precise meaning of the statements" and "negative criticism refers to the historian's reasons, such as the writer's incompetence and bias, to doubt the statement's truthfulness."¹⁰ In the present study the facts were determined both by subjecting the documents to external and internal criticism and by the use of corroborating documents.

Determination of Facts

The facts of the present study were determined by the reliability and validity of the sources. For the present study, reliability means the source is "authentic" or what it appears to be. Some of the questions that determine the reliability of a source include: was it written by whom it was said to be written, is it the original document or a reproduction, has it been altered in any way, has the meaning of the document been changed by a subsequent interpretation. For the present study, validity means the information that the source provides is useful. Some of the questions that determine the validity of a source include: is this what the original author intended, is the author of the primary source sufficiently informed, does the author have reasons for misrepresenting the information in this document, can the information in the document be useful to the present study.

Tentative Hypotheses or Generalizations

Tentative hypotheses were formulated to explain the facts in the present study. Several preliminary hypotheses formed in the current study include: 1) due to the political, social, and economic factors in Virginia in the 1750s, Small's appointment was a logical, not aberrant, choice; 2) Small's early academic training made him a serendipitous choice for the turbulent times of his tenure; 3) Benjamin Franklin played a larger role in Small's life than was previously suspected; 4) William Small played an important part in the development of the steam engine; 5) once Small returned to England, malaria was a major contributor to his increasingly fragile physical and mental health and was the primary cause of his death in 1775.

The Written Presentation

The final step in the process of writing a history is the synthesis and presentation of the facts into a logically organized form. In the present study this was accomplished first, by locating new evidence that helped to fill in the gaps left in previous studies. Another goal was eliminating erroneous, extraneous, or unsubstantiated evidence from the study. Finally, putting the information into a logical, sequential, form; evaluating its relevance; and finally, organizing the

material into an accurate story helped to relate the circumstances of the life of William Small in a more satisfactory manner.

Conclusion

In conclusion, the current study is a narrative biography because it deals with the story of the life of a man and not with the analysis of an era, it used tangible documents that spoke with a human voice, and it should help the reader understand the importance and the impact of an individual on his society.

The current study relied heavily upon primary source materials, supported by the conclusions of secondary sources and the advice of experts in the appropriate areas of investigation. It also took advantage of technological innovations and newly discovered information in an attempt to fill in some of the gaps left in previous research.

ENDNOTES : CHAPTER 3

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2 Lawrence Stone, "The Revival of Narrative: Reflections on a New Old History," *Past and Present*, 85 (1979), 5.

3 *Ibid.*, 5.

4 *Ibid.*, 5.

5 *Ibid.*, 6.

6 *Ibid.*, 3.

7 William Brickman, *Research in Educational History* (Norwood: Norwood Editions, 1973), 91.

8 Susan Grigg, "Archival Practices and the Foundations of Historical Method.", *The Journal of American History*, Issue I (June 1991), 232.

9 *Ibid.*, 229.

10 Brickman, 95.

Chapter 4

Small's Early Life

Introduction

The early influences of William Small's life helped shaped his future. The scholarly nature of Small's family, the unusual nature of the institutions he attended, and the connections he made in college and maintained afterward are significant factors that help explain his unique personality and its impact on others.

William Small came from a long line of ministers who were educated at the University of St. Andrew's. This solid academic tradition made a college education imperative for a boy of William's talents.

Dundee Grammar School and Marischal College, the two institutions that trained Small, were uncommon both in their rigor, emphasis, and curriculum. Both institutions were known for the excellence of their faculty, the stress they placed on science and mathematics, and a diverse curriculum. Marischal College underwent a fundamental change in its method of teaching during Small's years there. The rigor and the scientific nature of the curriculum played important roles in Small's work ethic and intellectual inclinations.

Small's professors also had an important impact on the young Scot. Thomas Blackwell was a renowned classical scholar. William Duncan was a

leading exponent of experimental philosophy and the influential author of the *Elements of Logic*. Alexander Gerard was in the vanguard of the study of belles-lettres, and John Gregory was one of Scotland's most prominent physicians. These men also had connections to the Aberdeen Philosophical Society that advocated a rational and scientific approach to study and the Common Sense philosophy of Thomas Reid. Small, influenced by both these men and the institutions that they represented, passed on that influence to others.

Family Background

William Small was born on the thirteenth of October 1734, to James Small and Lillias Scott ¹ in the town of Carmyllie, Forfarshire, Scotland. William Small counted among his ancestors a Thomas Small of Corrihall, who registered a coat of arms in the Lyons Office around 1680. ² William Small's father, James (1681-1771), grandfather, also named James (c.1650-1729), and great-grandfather, Thomas (c.1620-1687) were ministers; his father and grandfather graduated from St. Andrew's University.

James Small, William's father, also served as the treasurer of St. Andrew's from 1710 to 1720. In 1720 he was ordained by the presbytery and given charge of a church. James Small married Lillias Scott (1694-1775) August 22, 1723.³

The couple had five children.⁴ William's brother, Robert Scott Small, was born in 1732, two years before William. Both he and William attended grade school in Dundee.

The two brothers were very much alike in their non-conformist attitudes, in their pursuit of philosophy and science, and in their concern for the less fortunate. Robert was chastised by the General Assembly when he was Moderator of that body for deviating from established forms. His books, *The Laws of Keppler* and *Demonstrations of Some of Dr. Stewart's General Theorems*, were famous in their time for advancing scientific knowledge, and in 1782 he co-founded the Royal Infirmary in Dundee to tend to the needs of the poor.

By the early eighteenth century the Small family had established a firm academic background and a tradition of service to their fellow men. Robert followed the traditional way of his family and became a minister, but William struck off on a new path.

Dundee Grammar School

William Small's first formal education took place at Dundee Grammar School. Small was among good company, for Dundee Grammar School was the nurturing mother to many distinguished alumni, including William Wallace, the thirteenth century Scottish national hero; Hector Boece, who wrote *History of*

Dundee and was the first principal of King's College, Aberdeen in the fifteenth century; Robert Edward, who wrote another *History of Dundee* in 1678, and Sir George McKenzie, who taught the poet Dryden the principles of versifying.

Dundee Grammar School's early history is literally lost in the mists of antiquity.⁵ Around 1225 Gilbert, the Bishop of Brechin, granted a charter to the Abbot of Lindores to appoint a master or masters of the school in Dundee. A number of disputes arose between the masters of the school and ecclesiastical authorities until 1555 when control of Dundee Grammar School passed from the church to the Town Council of Dundee, after which the Town Council jealously guarded its rights in regard to the school.⁶

In 1589 the Town Council provided Dundee Grammar School with its first permanent home, between Adam's Town House and St. Clement's Church, where it would remain for the next two hundred years. It was here that William and Robert Small attended school. The building included a hall raised upon a vaulted basement, reached by an outside stair where the masters, janitors, and rector could shout at their classes simultaneously.

The length of attendance at Dundee Grammar School was seven years, two years longer than other schools in Scotland at that time. (In 1773 Dundee Town Council it would be reduced the terms to five years to bring it in line with other Scottish schools.) The extended span of time speaks to the rigor of the curriculum and thoroughness of instruction at that institution. When Robert and William attended Dundee Grammar School, the customary age to enter was eight

and to exit was fifteen. Since William was born in 1734, he probably entered grammar school in 1743, and exited in his sixteenth year, 1750.

In most respects the administration of Dundee Grammar School was similar to other schools in Scotland. The school was controlled by the town council; the hiring of masters, the curriculum, the texts all had to be approved by the council; the tenure of the masters was generally "*ad vitam aut ad culpam*" (for life or until fault is found); and, salaries were derived from local funding. In the case of Dundee Grammar School the primary sources of revenues were the "two pennies on the pint" and other local liquor taxes, sale of town property, and loans and legacies.⁷ In addition to the salaries provided by the Town Council, masters shared the students' quarterly payments equally between themselves irrespective of the size of the class, but each was permitted to retain his own gratuities on New Year's Day or Hansell Monday.⁸

The teaching staff at Dundee Grammar School consisted of a rector, or headmaster, a janitor, and several masters, whose number was determined by the fortunes and the needs of the institution. The rector was in charge of setting school policies, establishing the curriculum, selecting the texts, administering scholarships, scheduling times for classes and vacations, fixing regulations and punishments, and teaching the senior class. The janitor was in charge of maintenance and instructing the entrant class, and the masters were assigned to the intervening years.

Town Council records show that Gilbert Lundie, or Lundy, as janitor in 1743 and he would likely have been William's first formal teacher. Lundie, frustrated by the lack of a promised raise from the Town Council, resigned in 1747 and took up residence in Spott, Haddingtonshire. The funds for his raise were supposed to come from "Bruce's Mortification", a fund that disappeared when Lord Gray, to whom it was entrusted, went bankrupt.⁹

George Blair, minister of the Gospel at Abernyte, was appointed rector for life in 1738 and served in that capacity until the spring of 1749 when he not only heard the call of the Ministry, but was resettled in it.¹⁰ As rector, he instituted many changes during his administration: the school acquired a more substantial reputation, men of distinguished backgrounds applied for teaching positions, irregular payments to the masters were changed into a "scholar's fee" or fifth quarter payment, and a library and the office of librarian were established.¹¹

When George Blair returned to the ministry in 1749, the Dundee Town Council appointed John Coutts as rector. Coutts previously was the rector of the school in Herriot's Hospital in Edinburgh.¹² One of his first changes as rector was in the method of teaching English. He also endeavored to clean up and repair the buildings of the school. Because of the difficulties of maintaining a capable faculty, he was able to secure raises for several of the schoolmasters.

During much of Blair's administration the number of masters was generally three, for Blair believed that it was too much for any one of the masters to have charge of three classes. William Small's most likely instructors were

John Mearns and William Lauder. Less likely were John Knox, John Pitcairn, and John Davidson. John Mearns was a master for the entire time of William's stay at Dundee Grammar School and one of the more qualified teachers.¹³ William Lauder was probably the most highly regarded of the classical scholars, although he possessed a sanguine temper and a persecution complex. He may have been one of William's earlier teachers. John Pitcairn and John Knox are less likely candidates due to their short tenures. Overall, the four most likely instructors of William Small were John Mearns, William Lauder, Gilbert Lundie, and John Coutts.

John Mearns served as one of the masters of the Latin School. He had a reputation as an excellent classical scholar and competed along with several other candidates for the position. However, frustrated in his ambitions for greater salary and a more respectable position, Mearns became unhappy. He was accused by a local merchant of speaking ill of the town fathers and was publicly rebuked by the Provost in a Town Council meeting for defamation.¹⁴ Soon thereafter, he accepted a position as master at the Latin School at Dunkold.

Although he began his career with great promise, William Lauder had more serious deficiencies. In 1743 he accepted a position as a master at Dundee Grammar School, but before he took his post and shortly after graduating from Edinburgh, he was watching a game of golf when "a ball unluckily struck him on the knee, which festering from careless inattention, it became necessary to amputate the leg."¹⁵ Thereafter, he underwent a change of personality. A

contemporary described him as having a “rolling eye, stentorian voice, shallow complexion and ungovernable temper [that] created difficulties of their own and he eventually left Britain.¹⁶ He attacked the reputation of the dead poet Milton fraudulently and was forced to sign a confession dictated by Dr. Samuel Johnson. After this humiliation, he moved to Barbados, established a school there, and subjected his daughter to the most infamous treatment from which strangers rescued her.¹⁷ He died in Barbados around 1771, a despised and discredited figure.¹⁸

After William Lauder was demitted, two masters in quick succession took his place. It is less likely that they actually taught William Small. The first was Andrew Knox, who probably never took office, for his father advised the Town Council to hire another master as his son was in a dying way.¹⁹ John Davidson was hired to take Knox's place a month later. Davidson performed his duties without complaint until 1755 when his woman servant delated him the father of her child, an imputation which he admitted and for which he was publicly rebuked by order of the Kirk Session. He, nevertheless, continued in his office until 1760 when he was described as going away.²⁰

When the Rector George Bruce died in 1738, he left a substantial legacy to the school for the purpose of buying new books, paying the salary of a librarian, and supplementing the income of a third master, or janitor. A former master of the school, George Cargill, became the first official librarian. Besides books, the contents of the library included "an oak table, a chist, a chamber pote, creels,

peats, a mop to clean the library, a stripped cloath to cover the head of the staircase of the library, and four brass lifters for the windows."²¹

Despite the transgressions of some of the masters, the reputation of Dundee Grammar School made great strides as demonstrated by some of the candidates who applied for positions there. In addition to a gifted and dedicated staff, the students also benefited from rigorous discipline and a challenging course of studies.

Classes were held almost continuously throughout the year, the exceptions were vacances which extended from the day before the fair in August until the day after the fair in September, a day at New Year, a day at spring and autumn fasts, days at both Christmas and Easter (which were considered Popish or pagan festivals), one or two sports half-holidays, and orations and occasional plays transmuted into weekly half-holidays.²²

But whatever vacances existed, they were well earned. School opened at 6 a.m. in the summer and 7 a.m. in the winter; prayers and religious instruction in English preceded breakfast and after breakfast, probably about 10 a.m., regular lessons started and continued until lunch, around noon; and about 1 p.m. classes would resume and continue until about 6 p.m. George Blair changed the late afternoon session during his tenure to 2 p.m. until 5 p.m. rather than the traditional 4 p.m. to 6 p.m. session. Saturday was an ordinary school day on which disputations were scheduled, and once a month the senior boys harangued on some subject arranged by the master. On Sundays students and masters were

compelled to attend service, after which they convened in the school and the students were questioned on aspects of the sermon.²³

The curriculum was rigorous and considered progressive for grammar school students of the times. It focused primarily on the study of the major branches of Latin, including grammar, prose, poetry, disputations, and rhetoric; religion, including church music; physical recreation; and writing and basic math. The favorite texts at the school were Kirkwood's, *The Improved Despauter*, and Thomas Ruddiman's *Rudiments of Latin Grammar*.²⁴

The students were trained to be not only scholars, but gentlemen as well. Among the more recalcitrant students were found to be swearers, breakers of the Sabbath, rebels to their masters, truants from school and fugitives from discipline. For the first offense they were to be "publicly whipped", for the second "flogged", and for the third they were expelled until assurances could be made for better behavior in the future. Also not tolerated were those students "who disturbed the walk below the Town House by playing hand or football, those that ride horses, especially in time of mercat [market], those that frequent the shoer [shore] boats or ships, and those senior scholars who had been found speaking English instead of Latin and been betrayed by the clandestine captors." On five out of the six school days there was no corporal punishment, but on Monday morning all infractors presented themselves to the rector for their condign reward.²⁵

Thus, William Small began his life with the lessons of academic rigor and monastic discipline imposed by the masters of Dundee Grammar School. He

would matriculate from the halls of Dundee Grammar School to Aberdeen and Marishal College. It seems odd, considering his family's intimate and extended history with St. Andrew's University, that William would attend Marishal College. However, the answer may lie in funding because the benefactors of Dundee Grammar School provided many scholarships not only for students to attend the grammar school but also continue their education at college or in an apprenticeship. Some of these scholarships were very specific in regard to the way funds were awarded. Some scholarships were allocated to students attending a particular college, such as, Guthrie's Mortification, which specified St. Leonard's College at St. Andrew's University. Some were gender specific, such as Paton's Bursary, which was for girls, and some were awarded on the basis of name, such as Bruce's Mortification, which called for preference being given first to students with the name Bruce, next to those with the name Gray, third Duncan, and finally, the son of an indigent burgher by any name.²⁶ It is not inconceivable that Robert was able to get a scholarship to St. Andrew's and William a scholarship to Marishal. Whatever the deciding factors were, William Small matriculated at Marischal College in 1750.

Marischal College

Marishal College was located in Aberdeen, a town in the northeast section of Scotland, and it was fertile ground for the precepts of the Enlightenment. The

independent nature of Scotland in the eighteenth century was perhaps due to its isolated and remote location. There was a lack of central infrastructure, and towns were separated from one another with no reliable roads, canals, or means of transportation between them, which created an archipelago of isolated communities connected only by the sea. Due to its proximity to the sea, the disconnect with the interior of the country, and the influences of its primary trading partners, Holland and France, Aberdeen contained the most progressive and scientifically oriented institutions of learning in Scotland at that time.

In the eighteenth century there were five major universities in Scotland: the University of Glasgow, the University of Edinburgh, St. Andrew's University, King's College, and Marishal College. The last two institutions were located in Aberdeen. Proximity, among other factors, provided for a love-hate relationship between the two colleges. Marishal was originally a Presbyterian foundation, while King's was Anglican; Marishal emphasized a curriculum dominated by science and practical subjects, while King's stressed traditional subjects; Marishal drew the majority of its clientele from the merchant families of New Aberdeen and Aberdeenshire, while King's students mainly came from the old families of the Highlands; and Marishal seems to have produced more aggressive and ambitious students, while those from King's seemed more contentious, litigious and conservative in outlook.²⁷ The rivalry between the two institutions was exacerbated by the hubristic attitude of King's College, religious and political polarizations, and the prosperity of the upstart Marishal College. During summer

vacation the rivalry extended to poaching, with regents from both colleges roaming the countryside in attempts to lure away students from the other institution.

Marishal's status rose consistently during the eighteenth century. King's College was located in Old Aberdeen and Marishal College in New Aberdeen, which were two separate burghs at the time. In addition to the increasing population from which to draw students, Marishal also seems to have gained by its closer connection to national politics, its location in a more urban setting, and the lack of faculty strife that plagued King's.²⁸

After the demise of Charles I, both colleges flourished under the patronage of the Puritans and Oliver Cromwell, and the size of the institutions and the number of students increased dramatically. The end of the eighteenth century saw even greater catalysts for the growth of Scottish universities. First, the end of the Stuarts and the ascension of William and Mary in 1688 brought with it a renewed interest in the expansion and support of Protestant institutions. Second, the Act of Union of 1707 not only accomplished its goal of lessening the threat of a return of the Stuarts but also had the unintended consequence of opening up trade with the American colonies. Scottish merchants were especially interested in the tobacco trade, and bartered directly with the colonial farmers to their own advantage and to the detriment of the London merchants. Naturally this added to the revenues of the Northern kingdom. In addition to the newly found wealth of the middle class, the Union of 1707 also had the effect of siphoning off Scottish nobility. So that

they might not lose position and influence, many Scottish nobles went to London, thus creating a social and political vacuum soon taken up by *nouveaux riche* merchants. The initial trappings of wealth and respectability were material objects, clothes, fine houses, and ostentatious carriages, but the more lasting attributes of *gravitas* stemmed from a comprehensive education. And so the enlarged and energetic middle class in Scotland hungered after knowledge and polish. The new class of students was also more receptive to the ideals of the Enlightenment. At this juncture in history, with Aberdeen transformed from a quiet and traditional village into a city teeming with enthusiasm, new blood, and new ideas, William Small matriculated to Marischal College. Small was born into a region that both topographically and psychologically nurtured strict morality, stubborn pride and a resistance to authority, and into a time that polished those traits with intelligence, sophistication, and intellectual curiosity.

The buildings of Marishal College were not known for their aesthetic qualities. In comparison with the more ancient campus of King's College, Marishal had the appearance of an impoverished cousin. Although Marishal had been repaired and refurbished in the 1730s under the direction of William Adam, by 1750 it was looking old and tired again, "a very ordinary building in bad order ... the stairs are not so much as plastered."²⁹ The main building was constructed in three segments awkwardly joined and haphazardly thrown together. In the middle was a regular building of four stories, it had in its left hand corner a main gate with double doors over which was a design of no great beauty or purpose. On the

right side was an annex of like design; on the left side of the main building was a narrow building which was taller than the other two and of great eccentricity. In the joint between this annex and the main building was misplaced turret of bizarre appearance. The genius of Wren could not have redeemed the inherent ugliness of Marishal College, which gave one the impression of a hastily built granary.³⁰

From a drawing of the time the classrooms were set up with a pulpit up in the front of the class with a long desk before it. Facing the pulpit and desk were rows of benches and in front of the benches slanting counters for writing. The ceilings were tall, the room airy with large windows, and a fireplace on the side.³¹

Marishal College was one of the most scientifically and philosophically advanced institutions in the most liberal section of one of the most educationally enlightened countries in Europe. Roger Emerson, a noted researcher of Scottish educational institutions of this time, compared Marischal College with its sister institution King's College and concluded the following; since the members of the faculty at Marischal College were less likely to come from a landed or titled family, less likely to be the eldest son, and less likely to be related to another faculty member, they were more likely to be ambitious and motivated; since members of the faculty of Marishal College were more likely to have taken higher degrees and more likely to be employed by their own institutions, they were probably better qualified; since the faculty more likely traveled abroad and had families connected to trade, they were more likely to emphasize scientific and practical subjects than their counterparts at King's College. Emerson concluded

that members of the faculty of Marishal College were brighter, more aggressive and higher achievers, were better educated and more accomplished by the time they were appointed, and were more likely to pursue pragmatic and scientific subjects than their counterparts at King's College.³²

Scottish Universities had a more democratic tradition than their English counterparts and a different mission. English universities were elitist institutions that catered to a small percentage of the population, their mission was to turn out classically trained gentlemen. Life at Oxford and Cambridge has been described as port-mellowed and it has been noted that, "during the eighteenth century English university life centered in residential colleges where wit and indolence were more characteristic than purpose and industry."³³ Scottish universities, by contrast, were available to almost any student of talent regardless of finances or social status. John Knox formulated a plan and instituted a tradition of extending educational opportunities to the entire population. A myriad of bursaries and mortifications was established to help students from less affluent backgrounds attain training and erudition. The mission of the universities of Scotland was also directed toward more ambitious clientele. The more traditional schools, like King's, stressed the classics, history and religion, and prepared men for law, medicine, or the church. More innovative schools, like Marishcal, emphasized science, mathematics, and the practical arts, and prepared men to enter into professions of science, industry, and business.

Marishal College typified Scottish institutions in its method of operating. Until 1753 it used the regenting system. Under the regenting system, a single professor instructed a single class of students throughout its entire college career, teaching all subjects and conducting all exams. Professors lived at the college and were responsible for the student's moral upbringing and behavior. It was not uncommon in this age for a young man to leave home and enter college at the age of fourteen, and so the regent was a guardian as well as a teacher, with specified duties including closing the gates in the evening, "perlustrating" through the dorms at night, and conducting evening prayers.³⁴

In the first year a student was known as a bejani, from the French *bec-jaune*, a baby bird; in the second year they were styled semi-bejani, or more commonly semis; in the third year they were crowned with laurel leaves and called baccalaurei, or tertians; and finally, students in their fourth year were termed magistrands. Thus, a regent was responsible for a student from the time he was a bejani until he graduated. William Small spent the first two years of his time at Marishal under the regenting system. While Marishal College changed over to the new system, its more venerable rival in Old Aberdeen, King's College, voted to retain the traditional approach. In January of Small's second year at Marishal, the Senatus of Marischal College, at the urging of Alexander Gerard, ended the system of circulating regents and adopted the professorial system. In this new system each professor taught a different set of students in a specific

subject areas each year. Students would circulate through the professors rather than with the professors.³⁵

Even after regenting was abolished at Marischal College and professorships were established, however, regenting persisted, and the holders of these chairs moved quite easily from one course to another, more on seniority than on qualifications, and often presenting the same set of lectures. Some professors even offered lodgings to students in their own homes and took fees not just for living expenses but also for extra teaching and supervision.³⁶ Although no documentary evidence has been found, it has been suggested that William Small lodged with and was tutored by John Gregory during his early days at Marischal. Given the prevalence of the custom and the likelihood that their families knew one another from St. Andrew's University, this does not seem an impossible conjecture.

Also common in Scottish universities at this time was the catechetical, or lecture, system in which the professor lectured for part of the class and then spent additional time questioning the students about the material covered in the lecture. By way of reinforcement, the professors would often begin the next class with a catechetical examination of the previous day's lesson. In this system the primary materials were notes taken in class. The notes for established courses were often passed on from one year to the next. In order to avoid controversy, the lecturer often read these notes verbatim, and any deviation from the expected order might lead to foot-scraping, a sign of disapproval. Professor Alexander Bain, on giving

an unpopular lesson, was interrupted by “continual noise from bagpipes, trumpets, hooters, and other improvised instruments, and fireworks were thrown as well as dried peas.” Another professor so inflamed his class that “he was followed to his home by a jeering procession and pelted with stones.”³⁷

Although the lecture system was standard, there were a variety of presentations. In Scottish universities there were many incentives for a professor to be popular with his students. To avoid being pelted with dried peas and stones, being serenaded with bagpipes and hooters, professors dictated word for word. Popular professors like Dodderidge and Priestley read directly from their notes then passed the manuscripts out to the students after class, so that they could copy them at leisure. Professor Pye Smith provided students with a general outline and many professors had their lectures printed locally.³⁸

Lecture notes were of such a regular nature that students would often sell copies of their own notes and, lest new pupils be led astray by the erroneous copies of former students, professors often augmented their own salaries by the publication of their own lectures. If the professor deviated from the established text of the lectures, he was often called back to the original script by the sound of scrapping feet. It is said that the three Munros, father, son, and grandson, who taught anatomy at the University of Edinburgh for 150 years used the same set of notes. Munro Secundus, who held his grandfather’s seat nearly a century later, customarily read verbatim from his grandfather’s lectures and not even the

shower of peas, with which expecting students greeted his annual reference, “When I was a student at Leyden in 1719”,³⁹ could induce him to alter the date.

John Gregory is also said to have used his grandfather’s medical notes, word for word. Even those professors who were new men, without the recommendation of ancestors, used their mentors lectures virtually unchanged. And not only were the same notes used by the same lecturers within the same school, but they were also shared between Marischal College and King’s College.⁴⁰ This evidence suggests that a curricular agreement may have existed between the two schools by which some classes were taught in the same fashion at both institutions.

This arrangement may also account for the possibility of William Small, who attended Marishal College, studying under John Gregory at King’s College. In addition William Small brought many of his lectures on mathematics, natural philosophy, moral philosophy, history, ethics, and religion to Virginia and imparted them to his students intact. Thus, the basics of the Scottish Enlightenment and Reid’s Common Sense Philosophy, as they were delivered to Small, may have devolved undiluted upon Thomas Jefferson, John Page, John McClurg, Walter Jones, and their companions.

The changes instituted at Marischal College in 1753 impacted not only the way students progressed through their classes and instructors, but also the curriculum itself. The most vocal supporter of this change was Alexander Gerard, who was William Small’s magistrand professor. The general reason given for the

change was to make the study of the sciences more natural and progressive, and to prepare their students to be useful in life.⁴¹ The specific reason for the change given in the meeting of the Masters of Marischal College was to have each professor be better prepared and suited for the subjects that he was teaching, "... it will be of great advantage both to the Masters and the Students, that each Professor should be fixed to a particular branch of Philosophy ... and they resolve to do their endeavours that the successors in office to each of these respectively shall, by their patents, be confirmed in that particular branch."⁴²

For the first two years of William Small's college career, 1751-1753, he was under the old regent system and Thomas Blackwell was his bejan professor of Greek, Francis Skene was his semi-bejan professor of history and chronology. Under the regent system the bajan regent would normally have circulated with his incoming class, but the Greek Professor, considered of paramount importance, was a fixed office since 1700, when the Parliamentary Commissioners of Visitation ordered that "hereafter the said teacher of the Greek tongue be fixed, and continue still to teach the same in the first class to all that shall come to him from year to year, as constant master of the said Greek language."⁴³ According to Marischal College records, Francis Skene taught the second year, or semis, in 1752-1753.⁴⁴ The new professorial system began in the 1753-1754 session and it was decreed that "Mr. Francis Skene shall constantly teach the Semi Class, Mr. William Duncan the Tertian, and Mr. Alexander Gerard the Magstrand."⁴⁵ Very likely William Duncan was Small's Tertian Professor and Alexander Gerard his

Magstrand Professor. The change from the regenting system to the professorial system allowed Small the benefit of Duncan's and Gerard's instruction, whose influence was most profound on his intellectual and philosophical development.

Previous to 1753 the first class was "instructed in Philologie, Hebrew, Greek and Latine, and the principles of Arithmetick," and by the end of the year students were expected to make declamations both in Latin and Greek. The second class was instructed in "Logick and the methods of reasoning, and likeways instructed in the principles of Geometrie." The third class was "instructed in Generall Physiologie and the principles of Naturall Philosophie, and ... informed in the principles of Morality and Aethicks." Subjects covered by the senior, or magistrand class, included "Metaphysicks and Speciall Physiologie and Astronomie" and the students were to write and defend a thesis "in ane solemne maner in presence of all the Doctors, Professors, and learned men of the University."⁴⁶

By contrast, the new curriculum at Marischal College, while maintaining the importance of the classics, included a greater emphasis on the sciences and practical studies. The first year continued to be devoted to the study of Greek, the second year introduced "History, Geography, Chronology, and Natural History, commonly called special physics, and ...students of this class shall attend the lessons of the Professor of Mathematics."⁴⁷ The third year was almost entirely devoted to scientific studies such as natural philosophy, general physics, mechanics, hydrostatics, pneumatics, optics, and astronomy. The final year was

spent in the abstract sciences, moral philosophy, logic, ethics, and “the philosophy of the human mind and the sciences that depend on it - which include politics and law, and what we would now call psychology.”⁴⁸

With its shift in emphasis, Marischal College began to initiate practical demonstrations and experiments. As early as 1717 the college had a collection of experimental equipment, and during the course of the century the collection was augmented by generous patrons, alumni, and friends of the university. The college successfully petitioned the King in 1718 for purchasing “proper instruments towards advanceing Experimental Philosophy”. In 1720, Professor Maclaurin lobbied for a set of astronomical instruments, and in 1726 a plea went out to solicit funds from alumni for “setting on Foot a Compleat Course of Experimental Philosophy,” specifically “Entire Setts of Instruments necessary in Astronomy, Mechanics, Opticks, Chymistry, Hydrostatics, and Anatomy”. Also on the wish list were “the Best Books which treat of Natural and Experimental Philosophy and Models of the newest Machines in Husbandry.”⁴⁹ The appeal must have met with at least limited success for the college was able to make a small collection of instruments for its courses in experimental philosophy and the faculty minutes of 1733 mention an Instrument Room.⁵⁰ Sir William Forsyth gave the college a medical library and Lord Bute donated a telescope. In the 1750s, Dr. David Skene and Dr. John Gregory attempted to raise funds to build a medical department to service both King’s College and Marischal College, complete with “a proper dissecting room and chemical laboratory.”⁵¹ The

emphasis on scientific study and the importance of experimentation may have prompted William Small to initiate scientific experiments at the College of William and Mary.

Thomas Blackwell, Small's Greek Professor and first year regent, was also principal during Small's time at Marischal College. Blackwell was born in 1701 and attended Aberdeen Grammar School for several years in his youth. He received an M.A. in 1718, after which time he devoted himself to the study of the classics. In 1723 at the tender age of twenty-two he was promoted to the Regius Chair of Greek and he remained in that capacity and in charge of the bajan class until his death in 1757. His works were considered valuable contributions to the study of classics in their day and, as a proof of their lasting importance, were still in print two hundred and fifty years later.⁵²

In addition to his duties as the Greek Professor, Thomas Blackwell was selected principal in 1748. In 1750, Blackwell introduced a new course for the instruction of the students in ancient history, geography and chronology, which informed students about the principles of natural bodies and about "the rise and fall of states, and of the great revolutions that have happen'd in the world"⁵³

Francis Skene, Small's semi-bejan professor, had tutored Lord Monboddo and was the first to teach the new course of civics and natural history designed by Principal Blackwell.

William Duncan, Small's tertian professor, taught natural and experimental philosophy, criticism and belles lettres, and mathematics. Natural

and experimental philosophy included mechanics, hydrostatics, pneumatics, optics, astronomy, magnetism, and electricity. The mathematical component probably was devoted to trigonometry, geometry, and algebra. Duncan was a local youth who attended grammar school in Aberdeen and graduated from Marischal in 1737. After graduation he migrated to London where he was an author of several well received translations of Caesar and Cicero. However, his most famous work and the one that is most likely to have made an impression on the young William Small was published in Dodsley's *Preceptor* in 1748. Its full title was *Elements of Logick...Designed...for Young Gentlemen at the University and to prepare the Way of the Study of Philosophy and the Mathematicks*".

Samuel Johnson in the preface to *The Preceptor* advised the student to advance to Isaac Watt's *Logick: or, the Right Use of Reason in the Enquiry After Truth* after mastering Duncan's *Elements of Logick*. Samuel Johnson considered William Duncan and Isaac Watts as the two most important rhetorical theorists of the age, and John Collard, in his *The Essentials of Logic* published in 1796, calls Watts and Duncan "the two logical writers in the highest esteem at our universities."⁵⁴

Several authors maintain that Thomas Jefferson was heavily influenced by the work of William Duncan, that the Declaration of Independence resonates both its sentiments, its logical arrangement, and its very words.⁵⁵

In 1752 Duncan received a royal appointment as Regius Professor of Natural Philosophy at Marischal College and he drowned "while bathing" in 1760. William Small was probably a student in William Duncan's first class of

natural and experimental philosophy and mathematics, subjects to which Small was devoted throughout his life. When considering a return to academic life in 1773 he wrote James Watt, "Next to the enjoyment of a good estate, I should prefer a Professorship of Mathematics at a noted University, although I am no stranger to the inconveniences of an academic life. Next to that, a Professorship of Natural Philosophy, & in the third place, of the Theory of Medicine."⁵⁶ This, perhaps, is an indication of the esteem in which he held William Duncan, his former professor.

Small's senior or Magstrand Professor was Alexander Gerard. From 1750 to 1752 he substituted for Dr. Fordyce, Professor of Natural Philosophy at Marischal. When Dr. Fordyce was drowned off of Holland, Gerard was appointed professor of logic and moral philosophy.⁵⁷ Although a junior member of the faculty, he was chiefly responsible for the changes that took place at Marischal College in 1753. In 1755 his *Plan of Education in the Marischal College and University of Aberdeen, with the reasons of it*, which advocated a change from the regenting system to the professorial system, was printed by order of the faculty.⁵⁸ In 1756, Gerard, an early promoter of the study of belles-lettres, was awarded a prize by the Edinburgh Society for the Encouragement of Arts for his *Essay on Taste*.⁵⁹

Thus, at Marischal College, William Small most likely studied under these four professors: Thomas Blackwell, Francis Skene, William Duncan, and Alexander Gerard.

John Gregory

Although he never taught at Marischal College, but rather at the neighboring and rival school, King's College, nevertheless, John Gregory is frequently mentioned as Small's mentor in college,⁶⁰ there are several plausible scenarios that may explain this contradiction. Despite their rivalry, Marischal College and King's College cooperated with and complemented each other in many ways. The first accommodation pertained to lectures and notes. John Gregory, recipient of a M.D. from Marischal, regent in King's College, and Mediciner at the University of Edinburgh, used his grandfather's notes, verbatim, to teach a course in *materia medica*. Often the texts of the courses came directly from the notes, and were used by multiple professors and even in successive generations. From the evidence available through the class notes, it seems that parallel courses existed at both institutions. Christine Shepherd maintains that there "is the probability of a standard course being taught at King's and Marischal"⁶¹ and also that identical sets of lecture notes were "being used at Marischal and King's."⁶²

A second collaboration was students from one institution audited classes at the other. This was a way to extend the choices of the students and the quality of their education. Professors were able to enroll "ungowned" or private students, who paid for classes that were not a part of their requirements but those they

wished to study. In this way a popular teacher was able to augment his salary.⁶³

The third collaboration was between the professors themselves, who, despite having come from rival institutions, formed an influential intellectual association, the Aberdeen Philosophical Society, or as it was known locally, the Wise Club.

The symbiotic relationship between the two institutions allowed Small access to Dr. John Gregory. Indeed, although Gregory is frequently cited as Small's mentor, no documentary evidence exists to support the contention that Small attended any of Gregory's classes. Gregory did not teach at Marischal College but at rival King's College, and for a portion of the time that Small spent at Marischal, Gregory was in London.

In 1746 Gregory was elected a regent, taught natural philosophy at King's College and lectured there for three years on mathematics, moral philosophy and natural philosophy.⁶⁴ In 1747 he began a medical practice in Aberdeen with his brother James.⁶⁵ In 1749 John Gregory resigned his position at King's to devote himself solely to his medical practice, and in 1752, he married Elisabeth, the daughter of Lord Forbes, and moved to London to look for more challenging work in 1754. As late as 1756 Gregory's wife wrote to Elizabeth Montagu, her aunt and influential founder of the Bluestockings Club, for assistance in securing a position for her husband at St. George's Hospital in London.⁶⁶ When John Gregory's brother James died on October 16, 1755, Gregory's friend, Professor Thomas Gordon, urged him to apply for the vacant chair. On November 13,

1755, John Gregory was elected “Mediciner” in his brother’s place.⁶⁷

No evidence was found to attest that John Gregory ever taught a class at Marishal College and there is substantial evidence to contradict such a conclusion. Nevertheless, there are several reasons to believe that a mentor-student relationship did exist between Gregory and Small. The first reason is the recommendation by which William Small obtained his medical degree from Marishal College. The two recommending doctors were John Gregory and Sir John Elliot.⁶⁸ John Gregory, who had been granted an M.D. in absentia in 1746, in turn recommended other candidates for degrees. It is assumed that both physicians had personal knowledge of Small’s abilities and training.⁶⁹ Andrew Doig, a Gregory expert, indicated that if Small’s recommendation were found, it would likely give a full account of the candidate’s medical training and knowledge.⁷⁰

The second reason to believe such a relationship existed is contained in two letters from William Small to James Watt in 1773, upon the death of John Gregory. The first referred to Gregory as “my amiable friend of 22 years”,⁷¹ which dates the relationship to 1751, the year Small came to Aberdeen. The second letter state, “had Dr G lived and another died, and I could have been a colleague to G., I should have liked that very much.”⁷² The second letter implied that Small was close to Gregory and, if one reads between the lines, that they had worked together.

There is other circumstantial evidence that assumes a connection between

the two men. Both the Gregory family and the Small family had a long and intimate involvement with St. Andrew's University; it is difficult to imagine that the two families did not know each other. William's brother Robert, his father, James, his grandfather, James, and his great-grandfather, Thomas, attended St. Andrew's. Small's father was treasurer there from 1710-1720. The Gregory family had strong ties to a number of British universities, for John Gregory was the fifteenth descendant of David Gregory of Aberdeenshire to hold a professorship in a British University.⁷³ The Gregory family was most strongly represented at St. Andrew's University and King's College. John was also the grandson of James Gregorie, the inventor of the reflecting telescope and first Chair of Mathematics at St. Andrew's University, and a cousin to David Gregory, who taught astronomy at Oxford. His father, James, was mediciner at King's, and he was succeeded by his own son, James the Younger, and finally, by John himself.

It is not unlikely that John Gregory took a special interest in the son of a family friend. It was recorded that John and James Gregory of Aberdeen employed apprentices in the 1750s.⁷⁴ And it has been suggested that Gregory took Small into his home and acted as a tutor to him.

Gregory was elevated not only by his ancestral status but also by his own efforts. In addition to being a prominent physician, John Gregory was also an influential author read in the more sophisticated circles. His book, *A Comparative View of the State and Faculties of Men with Those of the Animal World*, caused

quite a stir among the literati of Edinburgh and Glasgow.

Little has been published concerning Small's life between 1755 and 1758. According to J. Morpurgo, there was a blank period of three years between Small's graduation from Marischal and his appointment at William and Mary, and it is possible that Small was apprenticing with Gregory in his practice in Aberdeen. Morpurgo opined that, "there is even more evidence that he was studying at King's College Aberdeen under his 'amiable friend' the fashionable Dr. John Gregory, for Gregory taught medicine at King's College during those years and it was Gregory who eventually recommended Small for his M.D."⁷⁵

Whether by design or by chance, William Small's attendance at Marischal College was a serendipitous event. It is not known whether Small chose to go to Marishal College or was persuaded to go there as the result of a scholarship, but the progressive philosophy, the emphasis of studies scientific and mathematical, and the system of teaching influenced Small's own teaching and research and, by extension, his impact on the lives of his students at the College of William and Mary.

Aberdeen Philosophical Society

Another institution that may have had a lasting impact on William Small was the Aberdeen Philosophical Society, or as it was locally known, the Wise Club. Various sources identify Thomas Reid and John Gregory as the founders of the Aberdeen Philosophical Society and plans for the Wise Club probably began

in 1757. However, the first official meeting took place on January 12, 1758, and the headnote to the rules simply lists the six original members : “Dr John Gregorie, Dr David Skene, Mr Robert Trail, Mr George Campbel, Mr John Stewart & Mr Thomas Reid.” According to the minutes it met the “Second & Fourth Wedensdays (sic) of the Month, at Five in the Afternoon.”⁷⁶ The meetings of the society were held at different locations, alternating between sites in the old town and the new for the convenience of the members, who were faculty members of either Marischal College or King’s College. Several sources identify the New Aberdeen locations as Anderson’s New Inn in the Castlegate and the Lemon Tree Tavern and in Old Aberdeen the meeting place was the Red Lion Inn.⁷⁷

Social, intellectual, and political clubs proliferated in eighteenth century Britain. Benjamin Franklin was a member of about fifteen such clubs. Even in remote Aberdeen, the Aberdeen Philosophical Society was not the first such “improvement” club that existed. A variety of such societies dated from early in the century. In the seventeenth century the Masons formed a beneficial society to aid orphans, widows and the sick, The Honourable Club was formed in 1718 by town merchants and landed gentry for the purpose of “promoting social intercourse among the members and of contributing pecuniary assistance.”⁷⁸ Among the society’s other good deeds, it established the Aberdeen Infirmary and Robert Gordon’s Hospital for the Maintenance and Education of Young Boys.

Thomas Reid founded the Philosophical Club, a likely prototype for the Aberdeen Philosophical Society, on January 12, 1736, coincidentally on the same day as the first meeting of the more celebrated Aberdeen Philosophical Society. Likely members of the early Philosophical Club included Thomas Reid, David Fordyce and John Stewart. In the 1740, George Campbell and Alexander Gerard founded the Theological Club, and in 1750 David and Andrew Skene founded a medical club for the “mutuall Improvement in Physick or any Branch of Knowledge connected therewith.”⁷⁹ Also in 1758 the Gordon’s Mill Farming Club was founded to promote improvements in agriculture by the use of scientific theories and methods. To that end the members of that club consulted John Gregory for advice concerning the nourishment of plants and improvement of cultivation techniques, and Thomas Reid concerning the design of farming implements and a rational system of book keeping for farmers.⁸⁰

The Aberdeen Philosophical Society was in some ways typical of the clubs that abounded, and in other ways it was atypical. It was typical in that the proceedings combined interests in morals, social theory, natural philosophy and belles-lettres; it was atypical in its strong emphasis of scientific matters and methods. It excluded many topics that were popular with intellectual clubs of the time:

The Subject of the Discourses and Questions shall be
Philosophical, all Grammatical Historical and Philological

Discussions being conceived to be foreign to the Design of this Society. And Philosophical Matters are understood to comprehend Every Principle of Science which may be deduced by Just and Lawfull Induction from the Phenomena either of the human Mind or of the material World; [and] All Observations & Experiments that may furnish Materials for such Induction...⁸¹

The members of the Aberdeen Philosophical Society were unified in their belief in scientific method and adhered to the tenets of Thomas Reid's Common Sense School of Philosophy. The Common Sense movement arose in reaction to David Hume's philosophy of skepticism. Hume argued, in *A Treatise of Human Nature*, "that all our reasonings concerning causes and effects are deriv'd from nothing but custom; and that belief is more properly an art of the sensitive, than of the cogitative part of our natures."⁸²

Thomas Reid vigorously opposed this tenet and proclaimed that "Common Sense is the sovereign mistress of [all] our opinions...it plainly dictates in every realm of inquiry; it is an irresistible torrent that carries us along; it retains its sovereign authority in spite of all."⁸³ He further stated:

If I may trust the faculties that God has given to me, I do perceive matter objectively—that is, something which is extended and solid, which may be weighed and measured, is

the immediate object of my touch and sight. And this object I take to be matter, and not an idea. And though I have been taught by philosophers, that what I immediately touch is an idea, and not matter, yet I have never been able to discover this by the most accurate attentions to my own perceptions.⁸⁴

Echoing William Duncan and foreshadowing Thomas Jefferson, Thomas Reid says in *An Inquiry into the Human Mind* that the truly important questions of philosophy are “*self-evidence to proofs* of any kind, because the former is always undeniable, while proofs are not.”⁸⁵ The concept of self-evidence within the Common School movement became so central to its philosophy that James Beattie, when asked to define what was meant by Common Sense in 1770, he stated, “as that faculty by which we perceive self-evident truth.”⁸⁶

Although William Small was not a member of the Aberdeen Philosophical Society and was residing in Virginia for the majority of the club’s proceedings, it is likely that he was familiar with its activities. Small wrote to James Watt concerning applying for an academic post at the University of Glasgow that, “neither would I oppose Mr. Trail, whose parents I loved & many of whose relations I know and love especially the Bishop of Down and Connor, his uncle and cousin.”⁸⁷ The three members of the Trail family that Small mentioned (Robert, James, and William) were all members of the Aberdeen Philosophical

Society, suggesting, perhaps, a special connection and correspondence. It is also interesting to note that Small's family in Carmyllie lived about two miles away from the Trails in Panbride, and Robert Trail officiated at the baptism of William Small.

The Aberdeen Philosophical Society may have been the model both in organization, program, and philosophy for the *partie quarrae* in Williamsburg and the later celebrated Birmingham Lunar Society. There may also be a direct link between the Common Sense philosophy of the Wise Club and the self-evident truths of the Declaration of Independence.⁸⁸

Marischal Classmates

James MacPherson, Small's classmate at Marischal College, reappeared later in his life. James MacPherson, known as "Father of Ossian", produced a volume of poems reputedly derived from the works of an ancient Celtic bard. The poems extolled the virtues of freeing one's nation from a despotic tyrant. Thomas Jefferson, among others, was an enthusiastic admirer. The poems were, at first, thought to be genuine translations from the Gaelic, but later were denounced as frauds. To this day there are scholars who attest to the authenticity of the poems.⁸⁹ Thomas Jefferson was an enthusiastic admirer of the poetry of Ossian and was even emboldened enough to try to persuade James MacPherson to send

him copies of the Celtic manuscripts. His enthusiasm may have sprung from Small's influence in this matter.

Medical Training

Small's activities from 1755, when he graduated from Marischal College, until 1758, when he was recruited for a position at the College of William and Mary, are still largely a matter of conjecture. However, it is almost certain that Small had medical training before 1758, for shortly after he arrived in Virginia he began "to practice at physick"⁹⁰ and when Small returned to London, students from Edinburgh came to London to implore him to instruct them in "surgery and medical matters."⁹¹

Certain elements of Small's medical training may be inferred from the physicians who recommended him for his medical diploma from Marishal College. Small's connection to the first physician to recommend him for a medical diploma from Marischal College, John Gregory, has already been discussed. The second, John Elliot,⁹² also had impressive medical credentials. After a colorful youth, Eliot established a practice in Cecil Street, London⁹³ and eventually became King's physician and Senior Physician at Greenwich Hospital.⁹⁴ As far as can be currently ascertained, Eliot was stationed in London for the entire duration of his medical career. The third physician associated with William Small was Alexander Small. Alexander came from Perthshire, Scotland,

which is adjacently located to Angus, the birthplace of William Small. Although not proven, the two Smalls may have been related.

Thus, it seems from his London medical connections, familiarity with London, and recruitment by the Bishop of London's office, that Small may have trained, at least in part, in London. Some authorities suggest that Small's M.D. was purchased rather than earned, but a number of factors argue against this statement. It is unlikely that John Gregory, one of the most vocal advocates for the professionalization of medical training and practice in Britain,⁹⁵ and John Eliot, King's Physician and Senior Physician at Greenwich, would recommend an unqualified candidate for a medical degree. In addition, Small's own record of early medical successes and his reputation as a physician fly in the face of such a presumption.

Summary

There are four broad areas in the early life of William Small: his family background, his years at Dundee Grammar School, his intellectual development at Marischal College, and his medical training.

Information concerning Small's family background includes a more complete record of his family's background and history.

The Dundee Grammar School, in its connection with Small, includes new background about the subjects taught, the masters that Small likely studied under,

the texts employed, details about a normal school day, vacations, discipline and the availability of scholarships. In Dundee Grammar School heavy emphasis was placed on Latin, the sciences, and mathematics; students were well disciplined and the study was rigorous. The normal span of a grammar school in Scotland at the time was five years, but at Dundee it was seven. Latin was spoken both inside and outside of the classroom, truants and slackers were punished severely on Mondays, students were taught by the catechetical, or lecture system, in which they were questioned about the lectures or sermons that they heard.

The education Small received at Dundee Grammar School impacted the teaching philosophy, methods, and techniques that he employed at the College of William and Mary. The academic rigor imposed in these early years may have engendered Small's strong work ethic and intellectual curiosity, and the emphasis on experimental science, mathematics, and the classics may have stirred his own interests in these areas. The severe penalties for even the most minor of infractions may have spurred Small to be the only professor at William and Mary to reject the use of corporal punishment, and the introduction of the new lecture method used at Dundee Grammar School may have encouraged Small to abandon the rote and recitation system used at William and Mary from its inception.

Marishal College, due to its location and the youth, enthusiasm, and enlightened education of its faculty, and to emphasis placed on the scientific method at this particular point in history, was a known as the "Athens of the North". Such a place was perfect for a young man of ambition and intellect.

Small's contact with the lecture system, the study of belles-lettres, and the use of scientific demonstrations in natural and experimental philosophy at Marischal College had a lifelong impact on him.

Small's professors were men of distinction and innovators in their own fields. Thomas Blackwell the Younger established a reputation as a renowned classicist and an educational innovator; Francis Skene was the product of a long line of Aberdeen scholars and had been tutor to Lord Monboddo; Alexander Gerard distinguished himself not only by introducing a revolutionary change in instruction and methods at Marischal College but also by his essays and his service in the Aberdeen Philosophical Society; and, John Gregory was an early advocate for the modernization of the medical practice and setting a standard for ethical practices, for changing the perception of medical training from that of learning a trade to that of mastering a scientific process. Small's teachers at Marischal College surely contributed to his reputation as a classical scholar; his extensive background knowledge of different branches of science; the subjects, the instructional methods, and experimental demonstrations that he would later initiate at the College of William and Mary in Virginia.

Endnotes: Chapter 4

1 See Appendix 1 for Family tree. Small family Bible. Courtesy of David Craig. "This Bible was the gift of Mr. James Small, minister of Carmyllie, to his wife Lillias Scott of Torthill on their marriage in the year 1722. Their children were David born on 1726. He died in infancy. Anne born march 23, 1728. She died unmarried about the age of 60. James born Dec.r 15, 1730, He settled in Dundee as a merchant and died unmarried aged 63. Robert born December 17, 1732, and ordained minister in Dundee May 20, 1761.N.S. William born Oct.r 30, 1736. He settled in Birmingham and died unmarried, aged 41."

2 J.P. Muirhead, *The Life of James Watt* (London: John Murray, 1858), 249.

3 "James Small," *Fasti Ecclesiae Scoticae*, Vol. V (Edinburgh: Oliver and Boyd, 1925).

4 David, James, Anna, Robert, and William. David (1725-1725) died in infancy; James (1730-1794) was a merchant in Dundee who never married; Anna (1728-1788) died a spinster and it is assumed that she lived with her parents all her life; and, Robert (1732-1808), who became a man of substance in his own right. On April 24, 1764, Robert married Jean Yeaman, daughter of Patrick Yeaman, Esquire of Blacklaw and Provost of Dundee, and after her death, Katherine Scrymsiour, with whom he had five children; David, Lillias, James, Agnes, and Katherine. David died at the age of two, Lillias was 30 when she passed away, James was a merchant in Dundee whose poor business acumen was the cause of many financial worries to his father, Agnes married Robert Thorton a merchant of Dundee, and Katherine seems to have remained unmarried. Small family Bible. Courtesy of David Craig.

5 *Dundee High School Magazine*, No. 60 (June 1934), 6.

6 Two centuries later, in 1434, it was recorded that the master of the school, Gilbert Knight or Knycht, at odds with the Bishop of Brechin, appealed to the Abbot of Lindores to settle the argument. Upon discovery that the Bishop was the real authority in the matter, Knight hurried back, apologized profusely, and confident that the Bishop would be touched by his penitence, resigned. However, the Bishop took the headstrong priest at his word and assigned another master. A century later, in 1555, another dispute arose between the master and his ecclesiastical superiors. This time the Abbot of Lindores accused Thomas MacGibbon of preaching Protestant doctrines to his charges. Dundee was the first town in Scotland to openly profess the Protestant faith and the Town Council backed MacGibbon against the Abbot. The Abbot retaliated by excommunicating the Town Council but, in the end, "the dog it was that died". MacGibbon remained the master and the Congregation sacked Lindores Abbey. *Dundee High School Magazine*, 7.

7 J.W.W. Stephenson, *Education in the Burgh of Dundee in the Eighteenth Century*, (Dundee: Dundee City Council, 1969), 10-11.

8 Stephenson, 4. ; Hansell Monday: The Monday after New Year's day, when 'hansels' or free gifts were given, in Scotland to servants and children. (Anglo-Saxon, handselen = hand + sellan, to give.)

9 *Ibid.*, 41.

10 *Ibid.*, 42.

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- 11 *Ibid.*, 32, 33, 43.
12 *Ibid.*, 45.
13 See Appendix 2, Dundee Grammar School.
14 Stephenson, 38.
15 George Chalmers, *The Life of Thomas Ruddiman* (London: J. Stockdale, 1794), 146.
16 Stephenson, 36.
17 *Ibid.*, 36; Chalmer, 146.
18 Details concerning Lauder can be found in George Chalmers' *The Life of Thomas Ruddiman* (London: J. Stockdale, 1794) ; *Anecdotes of Buchanan* (London: 1794); *Gentleman's Magazine*, XX (January 1749), 535; *Gentleman's Magazine* (1754); and a more detailed account of the fraud in *The House of Forgery in Eighteenth-Century Britain* by Paul Baines, (Aldershot: Ashgate Publishing Ltd.,1999), 81-103.
19 Stephenson, 41.
20 *Ibid.*, 47.
21 *Ibid.*, 26.
22 *Ibid.*,25; *Dundee High School Magazine*, 8; Stephenson, 43.
23 Stephenson, 8.
24 *Ibid.*, 11, 12.
25 *Ibid.*, 8.
26 *Ibid.*, 29. A bursary was a scholarship to a pupil and a mortification was a bequest made in a will, often setting up the cash for a bursary.
27 Carter and McLaren, 58, 59, and 68; Carter and Pittock, 161 and 164.
28 Carter and Pittock, 51.
29 Carter and McLaren, 56.
30 Bulloch, *A History*,181.
31 Carter and McLaren, 57.
32 Carter and Pittock, 161, 162, and 164.
33 Thompson,189.
34 Bulloch, *A History*,11
35 Anderson, *Studies*, 8. "The Principle and Masters of the Marischal College of Aberdeen, being, after the maturest consideration, all fully persuaded that the present order in teaching Philosophy, introduced by the scholastics is, since the reformation of Philosophy, very improper And being likewise persuaded, both from the consideration of the thing itself, and the almost universal practice of other Universities, that it will be of great advantage both to the Masters and the Students, that each Professor should be fixed to a particular branch of Philosophy."
36 Carter and McLaren, 63.
37 Winifred H Horner, *Nineteenth Century Scottish Rhetoric: The American Connection* (Carbondale: Southern Illinois University Press, 1993), 140.
38 Horner, 43.
39 Horner, 44.
40 Christine Shepard, "The Arts Curriculum at Aberdeen at the Beginning of the Eighteenth Century," in Carter and Pittock, 147.
41 *Scot's Magazine*, Vol.14 (December 1753), 606.
42 "Minutes of the Senatus of Marischal College, 11 January 1753", in P. J. Anderson (ed.) *Studies in the History and Development of the University of Aberdeen* (Aberdeen: Aberdeen University Press, 1906), 8.
43 P.J. Anderson, *Fasti*, 41.

44 *Ibid.*, Vol. II, 592.

45 Anderson, *Studies*, 8.

46 *Ibid.*, 7; Some of the works covered in those courses were common to both Marischal College and King's College. In the first year it was customary to study the Greek grammar of Clenardus Antesignanus, orations of Isocrates, Demosthenes, and Plato, the works of Homer, and the whole New Testament, from the Latin authors - Cicero and Sallust. In the second year Aristotle and Porphyrius were popular authors. In the third year Aristotle's Nicomachean Ethics and Cicero's *De Officiis* were popular works and the final year often included selections from Pliny, Aristotle, and geometry.

47 *Scot's Magazine*, Vol.14 (December 1753), 606; the specific courses listed in H. Lewis Ulman (ed.) *The Minutes of the Aberdeen Philosophical Society: 1758-1773* (Aberdeen : Aberdeen University Press, 1990) p. 22 include : first year - Classics; second year - Classics, Natural and Civic History, Geography, Chronology, Arithmetic, Algebra, Geometry, plain Trigonometry; third year - Criticism and Belles Lettres, Natural and Experimental Philosophy, Spherical Trigonometry, Spherical Geometry, higher Algebra; fourth year- Logic, Metaphysics, Pneumatology, Natural Theology, Moral Philosophy, higher Algebra, Quadrature of Curves, Fluxions, Newton's Principals of Philosophy. See Appendix 3, Marischal Plan of Education.

48 Carter and McLaren, 59.

49 Paul Woods. "Science and the Aberdeen Enlightenment" in Peter Jones (ed.) *Philosophy and Science of the Scottish Enlightenment*. (Edinburgh: John Donald Publishers, 1988), 44.

50 *Ibid.*, 44.

51 G.A.G. Mitchell, "The Medical History of Aberdeen and Its Universities," *The Aberdeen University Review*, Vol. XXXVII, No.118 (Spring 1958), 235.

52 In 1737 Blackwell published *Inquiry into the Life and Works of Homer*, a second expanded edition, *Proofs of the Inquiry into Homer's Life and Writing* followed in 1746. A third work with a classical theme *Letters Concerning Mythology* was printed in 1748, in 1753 he published the first of a three volume work entitled *Memoirs of the Court of Augustus*, which detailed an account of literature in the Augustan Age.

53 Woods, "Science," 46.

54 Steven Lynn, "Johnson's Rambler and Eighteenth Century Rhetoric," *Eighteenth Century Studies*, Vol.19, No.4 (Summer 1986), 466.

55 See Wilber S. Howell, "The Declaration of Independence and Eighteenth-Century Logic," *William and Mary Quarterly*, 3rd Series, Vol. 18, No. 4 (October 1961), 463-484; Garry Wills, *Inventing America : Jefferson's Declaration of Independence* (Garden City, N.Y. : Doubleday, 1978).

56 William Small to James Watt. 3 April 1773. Matthew Boulton Papers. Archives. Birmingham Public Library. Birmingham, England.

57 Ulman, 35.

58 Anderson, *Fasti*, 45.

59 Ulman, 35.

60 See, James McCash, "Dr William Small : Note 4 on 'Man of Little Showing,'" *College Courant*, Vol. 20, No.41 (January 1969), 29-31; Gillian Hull, "William Small, 1734-1775," *Journal of the Royal Society of Medicine*, Vol. 90 (February 1997), 102-105.

61 Carter and Pittock, 151.

62 Carter and Pittock, 151.

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- 63 Carter and McLaren, 58.
- 64 Leslie Stephen and Sidney Lee (eds). *Dictionary of National Biography* (London: Smith, Elder & Co., 1908), 545.
- 65 Paul Lawrence, "Occasional Papers," No 1 (Edinburgh: Royal Society of Edinburgh, 1980), 4; *List of Apprentices for Aberdeen: 1750-1780*. ed. by Francis McDonnell (St. Andrew: St. Andrew's University, 1994). Entry indicates a boy, Carnegie, served as an apprentice to John and James Gregory.
- 66 Lawrence B. McCullough, *John Gregory's Writings on Medical Ethics and Philosophy of Medicine*, Vol. 57 (London: Kluwer Academic Publishers, 1998), 47.
- 67 Paul Lawrence, "The Gregory Family," (Ph.D. diss., University of Aberdeen, 1971), 154.
- 68 In respect to medical degrees at Marishal College, there were probably no degrees granted till after 1700, when the school first appointed a Professor of Medicine. Medical degrees were normally granted upon the attestations of two or three respected physicians and this continued to be the practice for a long time. Anderson, *Fasti*, 111;
- 69 Personal Communication. Dr. Dorothy Johnston, University of Nottingham to Martin Clagett, 7 December 2001. "The MD of 1765 was at the attestation of Dr. Gregory and Dr. Eliot - I expect that is the basis for the assertion that he did his apprenticeship with Gregory, but, in itself, the recommendation is not proof."
- 70 Personal Communication. Dr. Andrew Doig to Martin Clagett. 24 August 2000.
- 71 William Small to James Watt, 15 March 1773, Muirhead Collection, 107, in *The Origin and Process of the Mechanical Inventions of James Watt*, Vol. II, ed. by J.P. Muirhead (London: John Murray, 1854), 41.
- 72 William Small to James Watt, 1 May 1773, Muirhead Collection, 112, in Muirhead, 46.
- 73 "The Late John Gregory," *The European Magazine and London Review* (June 1806), 407.
- 74 Frances G. McDonnell (ed.) "Roll of Apprentices: Borough of Aberdeen, 1751-1796" (St. Andrew's, 1994).
- 75 Morpurgo, 137.
- 76 Aberdeen University Library, MS 145.
- 77 Ulman, 45; Bulloch, *A History*, 173.
- 78 Ulman, 15.
- 79 Peter Jones (ed.) *Philosophy and Science of the Scottish Enlightenment* (Edinburgh: John Donal Publishers, 1988), 53, "Thomas Reid, George Campbell, James Stewart, Alexander Gerard, and David Skene would all be later members of the Aberdeen Philosophical Society"; Ulman, 16.
- 80 Jones, 53.
- 81 *Ibid.*, 55.
- 82 Ulman, 53.
- 83 Stephen A Conrad, "Citizenship and Common Sense: The Problem of Authority in the Social Background and Social Philosophy of the Wise Club of Aberdeen" (Ph.D. diss., Harvard University, 1980), 241.
- 84 Horner, 28.
- 85 Conrad, 274.
- 86 *Ibid.*, 274.
- 87 William Small to James Watt. 27 October 1773. Matthew Boulton Papers 125/37. Birmingham Public Library. Birmingham, England. Note that the whole archive is

currently being re-catalogued (2002) but cross-references will be made from the old system to the new.

88 See, Howell, 463-484; and Garry Wills. *Inventing America : Jefferson's Declaration of Independence*. (Garden City, N.Y. : Doubleday, 1978).

89 For a discussion of the Ossian Controversy see Paul Baines' *The House of Forgery in Eighteenth Century Britain* (Aldershot: Ashgate Publishing Ltd., 1999), 103-125; also "Johnson's Last Word on Ossian" by Thomas M. Curley in Carter and Pittock, 375-395.

90 Dudley Digges to the Bishop of London, 15 July 1767.

91 William Small to James Watt, 27 October 1773.

92 John Eliot was born in Edinburgh in 1736 and went to London to become an apothecary's assistant. Enticed by the lure of adventure and booty, he signed on to a privateer's ship and returned home with a substantial praemium. He then determined to become a physician, graduated from Christ College, Oxford, and established himself in Cecil Street, London. In 1771, Eliot married the fourteen year old daughter of Hew Dalrymple, a wealthy Edinburgh barrister, and took her back to London. Elliot's wife, Grace Dalrymple Eliot, having discovered the pleasures of the flesh and ran off with Lord Valentia in 1774. When her adultery was discovered, Eliot divorced her and her father paid Eliot £12,000 in compensation. Grace was later to bear a child to the Prince of Wales, for whom Eliot became physician in 1778. Elliot was as successful professionally as he was socially and was listed as Senior Physician at Greenwich Hospital in 1779. He died in 1786. *Dictionary of National Biography*; and, courtesy of Dr. Judith Curthoys, Archivist, Christ Church College, Oxford University- J.R. Partington and Douglas McKie, "Sir John Eliot and John Elliot," *Annals of Science*, Vol. 6 (1948-1950), 262-267.

93 P.J. and R.V. Wallis, *Eighteenth Century Medics* (Newcastle upon Tyne: Project for Historic Bibliography, 1988), 178 ; Personal Communication. Michelle Gait, Archivist University of Aberdeen to Martin Clagett, 26 June 2002, "However, as I emailed you yesterday, the index to the printed Records of Marischal College (whose entries are transcribed from the original register), which I have copied and enclosed, gives a few more details, Eliot, Sir John, kt. M.D. London." ; *National Biography* gives mixed information concerning John Eliot, some of the information fits Sir John Eliot and some seems to be derived from a second John Elliot in London living in Great Marlborough Street; Wallis & Wallis in *Eighteenth Century Medics* provides information for both John Elliots-one Sir John Eliot and the second John Eliot and again the information is commingled.

94 "Entry for 1764, James Hossack," in Anderson, *Fasti*, 122.

95 In 1770 John Gregory set forth his ideas about standardizing the requirements for obtaining a M.D. in his work *Observations on the Duties and Offices of a Physician*, and *On the Method of Prosecuting Enquiries in Philosophy*. "In these lectures he labored, by the most forcible arguments, to convince his pupils, that a physician who studies the principles of his profession, who has an extensive acquaintance with every branch of natural knowledge, and who properly applies his knowledge, must have an infinite advantage, as a practitioner, over one who is ignorant of the theory of medicine, and every science connected with it." "John Gregory," *The European Magazine* (June 1806), 408.

Chapter 5

The Virginia Experience

Introduction

In 1758 William Small was recruited for the post of professor of mathematics at the College of William and Mary. By a strange confluence of events, William Small was seen as the right man at the right time for this particular post, and his status as a layman was his chief qualification. By a strange confluence of events, Dr. Samuel Nicholls recruited just the right man, who by his education and inclinations, would revolutionize learning at the College of William and Mary. By a strange confluence of events, the whole administration of the philosophy school at the College of William and Mary devolved upon William Small at just that moment when the student body of the upper school included a host of future leaders of the American Revolution. By a strange confluence of events, Small took under his wing a lonely, lanky, country boy by the name of Thomas Jefferson and forever changed his life.

Small's Appointment

Inasmuch as the rest of the faculty of the College of William and Mary was comprised of Anglican ministers, educated at Oxford or Cambridge, Small was a strikingly different figure. The string of events that led to Small's

appointment is intriguing. Since William and Mary was established in 1693 as a training ground for Anglican clergy in Virginia, the professors were generally Anglican ministers who had been educated at either Oxford or Cambridge. Small was different not only because he was layman but also a Scot and a Presbyterian educated at Marischal College in Scotland. Small's colleagues were steeped in the conservative traditions of English universities and had close ties to the English establishment; William Small was a child of the Enlightenment, educated at an institution that valued experimental science, and taught by men who were leaders of new philosophical schools of thought.

The College of William and Mary

In 1685, the Bishop of London sent James Blair to Virginia as his commissary, who had been educated at Marischal College. Not long after Blair's arrival, the House of Burgesses received an endowment of £2,500 from wealthy Virginians and London merchants for the establishment of a preparatory school and college in Virginia. Blair and Governor Francis Nicholson quickly seized on the opportunity for establishing an institution. Governor Nicholson touted the plan to the House of Burgesses and James Blair sailed for England to secure a Royal Charter. Obtaining the Charter with some difficulty, Blair returned to Virginia in 1691. He devised the charter for the college in such a way as to make a very strong position for himself not only as president but also as rector of the

college. His preeminent position in the founding of the college and the longevity of his administration left an indelible stamp on the nature of the institution.

The College of William and Mary was a hybrid institution with elements of both the Scottish and English university. It was Scottish in its structure, administration, scientific emphasis, professorate, and constitution; it was English in its progression of classes, freedom in determining one's selection of classes, and the question of yearly exams.

Although it has often been said that the College of William and Mary was a direct reflection of English universities of the time, many structural elements were influenced by Scottish universities, and in some aspects, by Blair's *alma mater*, Marischal College. The first of these elements was the organization of the institution. In England the term university connoted an institution that consisted of "the Chancellor, Masters, and scholars that is one corporation, and each of the colleges distinct and independent societies with their separate codes of law." Each of the colleges legislated for itself and sent representatives to the council that legislated for the university as a whole. However, in Scotland a system of colleges as autonomous institutions never took root because, in general, Scottish institutions possessed only one college, whereas Oxford and Cambridge were comprised of a number of colleges.¹ In Scotland, the terms "college" and "university" were used synonymously. Indeed, Marishal College's elder and more distinguished sister institution at Aberdeen was known as "King's University and College."²

The second characteristic of the College of William and Mary modeled on Marischal College and responsible for much of the contentious relationships within the college during the mid eighteenth century was the creation of a dual set of controlling bodies within the institution. This duality, the “Society” (or faculty), and the Board of Visitors, were important factors leading up to the recruitment of William Small.

Another feature that was unique to William and Mary was the founders established the college with the purpose of acting as a mission school, a grammar school and a university, yet many of its organizational arrangements approximated the traditional collegiate forms of Oxford and Cambridge. The charter, in its language and regulations created an illusion of an English university. However, its mission and circumstances were so radically different from its stated purpose that it created a disjunction between function and form made disagreements and misunderstandings between the controlling bodies inevitable.³

The differences between the College of William and Mary and English universities are often credited to “colonial ingenuity,” nevertheless, “Scotland and Ireland possessed post-Reformation universities that were prototypes, in all essentials, of the colonial institutions of higher learning.”⁴

The two bodies that controlled the College of William and Mary was a corporation, comprised of the president and masters, called the “Society”, that had the power to hold and manage the properties and revenues granted to the college, elect a representative to the House of

Burgesses, and license surveyors. The second body, the Board of Visitors, was comprised of laymen who had the power to select the faculty, make statutes for the good of the governance of the college, and choose a chancellor of the college. The eighteen members of the Board of Visitors were self-perpetuating and elected their own leader, known as the rector.⁵ The creation of a lay Board of Visitors with such great power and oversight influence was not English in origin but Scottish, and James Blair may have well taken his inspiration for the administrative structure of the College of William and Mary from his Marischal College, his *alma mater*.

The Board of Visitors traditionally designated the office of chancellor to the Bishop of London, although the Archbishop of Canterbury was occasionally selected as chancellor. This tradition began according to Thomas Sherlock, Bishop of London, at the founding of the colony when the then Bishop of London “was a great Promoter of the Plantations and had collected and paid £1,000 towards a college in Virginia, and was himself one of the Council for Virginia,”⁶ and, therefore, the honor of acting as a protector and promoter of the College devolved upon him. Among the duties of the Bishop of London, as chancellor of William and Mary, was the nomination of suitable candidates for academic posts, selecting a commissary, and adjudicating internal disputes within the college. It was necessary for the candidates, upon nomination, to journey to Virginia to be approved by the Board of Visitors. Once approved, the candidates took the oaths⁷ and were sworn into office. In return for performing these offices, the Bishop of London received a moiety, but from the beginning Sherlock did not reckon the

prize to be worth the chase. Shortly after taking office in September 1748, he tried to completely divest himself of that colonial obligation, and failing in that attempt he tried to enlist the Archbishop of Canterbury's in managing the odious duty, but the Archbishop would have none of that. Finally, in August of 1749, Sherlock accepted the inevitable, "I find nobody willing to take any share of the burden and therefore the Plantations will probably remain with the Bishop of London."⁸ Reluctantly assuming his colonial obligations, Bishop Sherlock was soon inundated with waves of complaints, first by members of the faculty, next by members of the Board of Visitors, the governor, private citizens, and anonymous parties. The complaints were often trivial and biased, and the authors incredibly petty and immature. By the early 1750s Sherlock, increasingly debilitated by poor health, transmitted the unprofitable onus to his assistant and friend, the Prebend of St. Paul's, Dr. Samuel Nicholls. By the mid 1750s Sherlock could barely speak and Nicholls took over most of the duties of the Bishop.⁹

Events Preceding Small's Appointment

Two distinct sets of circumstances brought Small to Williamsburg in the fall of 1758: the first concerned a series of confrontations between members of the English establishment in Virginia and local authorities; the second concerned a lack of educated English clergymen willing to accept a post far away from home, with few opportunities for advancement, and under

the control of the self important and interfering colonials who comprised the Board of Visitors of the College of William and Mary.

From the middle of the eighteenth century a nascent struggle for political and social power developed in the colony of Virginia. The three major players in this tug of war were the clergy, the local plantocracy, and the governor. The clergy represented the English colonial establishment and fought fiercely for the rights and prerogatives of the crown, while the local plantocracy represented the views of the emerging power elite in the colony who thought that local authorities should have the greatest say in local matters. The odd man out was the governor who supported whichever group was most closely aligned with his own agenda or political philosophy.

The most vocal members of the establishment clergy were also members of the faculty of the College of William and Mary. Their ties to England were philosophical, emotional, and pragmatic. They viewed themselves as Englishmen performing a duty for their government on a temporary basis. All fraternized together and usually spoke with one voice on the major issues affecting the governance of the college and their own positions. The clergy in general, and the faculty of William and Mary in particular, believed themselves to be more moral, more sophisticated and more erudite than their colonial cousins. As such, they were better equipped to know what course of action should be taken than the bumptious and naive Virginia gentry. The four greatest areas of contention involved the clergy's rights versus the rights of the vestry, the usurpation of the power of the church to commission or dismiss its own members, the struggle

between the Board of Visitors and the faculty over control of the College of William and Mary, and disputes concerning local taxation.

The local plantocracy was interconnected by familial and political ties. A member of the House of Burgesses might also be a member of the Board of Visitors. By the middle of the eighteenth century the first families of Virginia influenced the passage of laws that reflected both their own personal needs and those of their community. The more influential the local authorities became, the more jealous they were of any infringement on their newly acquired power.

Virginia at the time was an uncertain place for an Englishman. Although Virginians considered themselves Englishmen, Englishmen considered the colonists as something less than Englishmen, and the Virginians thereby suffered from inferiority complexes. Injuries, either real or imagined, were fanned from embers into wildfires, and a visitor could easily stir up a conflagration unwittingly. To make matters worse, many local luminaries were often related to each other by complex ties of multiple marriages, and to offend one gentleman was to offend an extended family. Since the clergy and the faculty of William and Mary were advocates of the *status quo*, and since members of the Virginian aristocracy were agents for change, there were inherent conflicts between the two groups. The adjudicator in these matters was often the governor. He decided which side to take in these conflicts according to either his own religious, political, or economic interests.

Why this time period proved to be such a fertile ground for dissention is that by the late 1740s the British government was dominated by a new, tough-

minded group of political leaders, more concerned with regulating the commerce and political administration of an increasingly valuable empire than with providing cultural or educational benefits to the colonists. These objectives often conflicted with those of an entrenched and frequently united Virginia elite increasingly determined to resist the demands of the new imperialistic policies. At the same time as demands from the British government were increasing, Virginians were undergoing a series of crop failures, the emergence of dissenting religious groups, the "New Lights", who were directly challenging the Anglican establishment, and a rapidly growing population concentrated in the western areas populated by frequently hostile Indians.¹⁰

Four incidents highlighting the struggle between the Anglican clergy and local authorities that eventually led to the Board of Visitor's determination to break up the Oxford-Cambridge monopoly that dominated the faculty of the College of William and Mary were: the Case of the Reverend Mr. Kay, the Two Penny Acts, the dismissal of the ushers Matthew Hubard and Cole Digges, and the Brunskill Case. It was the dismissal of Hubard and Digges that caused the Board of Visitors to write to the Bishop of London in 1757 to ask him to find a replacement for Richard Graham, the dismissed professor of mathematics, and that the candidate be "preferrably a lay-man."

The first of these confrontations began in 1744. The Reverend William Kay, recently graduated from Cambridge University, was recommended as a suitable candidate for the vacant Lunenburg Parish. The vestry of Lunenburg Parish elected Mr. Kay as minister, but he was not long in his office when he

incurred the wrath of the most influential member of that parish, Colonel Landon Carter, who vowed to relieve Mr. Kay of his office."

With the support of six other vestrymen, Carter discharged Kay, locked up his churches, forced him to preach out in the churchyards, rented out his glebe land and attempted to have him thrown out of his glebe house. The vestrymen even seduced Kay's wife, induced her to cohabit with them and leave behind not only Kay but also a twelve month old baby. According to Kay, "She was the cause of my greatest calamity and not to be reclaimed."² Reverend Kay eventually sued Colonel Carter and the vestrymen for trespass and was awarded £200 by the Privy Council.

The second incident in the series, the Two Penny Acts, was perhaps the most central issue in the decision of the Board of Visitors to specifically request that the Bishop of London recommend a lay-man for his new candidate for the post of professor of mathematics. In 1756 and again in 1758, the House of Burgesses passed the Two Penny Acts. The French and Indian War, which was then taking place, had the normal effect of war in raising prices and taxes and inflating currency. The House of Burgesses passed the acts so that the government could pay its employees in paper script rather than in the normal currency, tobacco. With the war proceeding, transportation of goods impeded, and two seasons of drought, the price of tobacco soared. The customary pay for a clergyman was sixteen thousand pounds of tobacco per annum. As government employees, the clergymen, including the faculty of William and Mary, were paid in script rather than in tobacco. According to John Dos Passos, "No other public

servants complained, but the clergy roared to the high heavens that the acts were illegal. They brought out pamphlets. They banded together to file suits against their vestries in the courts. Three of the professors at the college became so vehement that they were removed by the Board of Visitors."¹³

Certainly the clergy were not the only public servants to complain of the hardships imposed by the Two Penny Acts, but they were undoubtedly the most vocal, particularly the professors of the College of William and Mary, who were always in the center of controversy, particularly the Reverend John Camm, a man whom Governor Fauquier described as one "whose Delight is to raise a Flame and to live in it."¹⁴ The final outcome of the Two Penny Acts was decided in the case known as the Parson's Cause, brought by James Maury, an early teacher of Thomas Jefferson and Dabney Carr. The jury, which Maury claimed had been stacked with "New Light jurors,"¹⁵ awarded Maury one penny in damages. This outcome had the practical impact of stifling any future efforts to recover lost revenues by the clergy.

The contentious relationship between the Board of Visitors of the College of William and Mary and the members of the faculty may serve as a microcosm for the much larger political and philosophical issues that existed between the home government in England and the local authorities in Virginia. The Board of Visitors perceived their role in the governance of the College of William and Mary as one of cautious guardians. They asserted their right to control the hiring and dismissal of professors and the policies of the institution. The faculty, who were appointed upon the recommendation of the Bishop of London but confirmed

by the Board of Visitors, wished to be under the jurisdiction and protection of the Bishop of London. The members of the faculty were Anglican ministers, the majority educated at Oxford, who voted as a block and acted as a unit. The authorities in Williamsburg were exasperated with the constant demands and unrelenting complaints of the clergy, the most vocal of whom were the faculty of William and Mary; the faculty bristled under the Board of Visitors' perpetual interference in the management of the College and their condescending attitude. The two sides continually jockeyed for power in their ongoing skirmishes, but the two following events convinced the Board of Visitors that the time had come to break up the Oxford hegemony that existed in the faculty.

The third incident involved a parson, John Brunskill, who, according to Governor Dinwiddie, committed every sin except murder and "this last he had very nearly perpetrated on his own wife by ty'g her up by the legge to the Bed Post and cut'g her in a cruel man'r with knives."¹⁶ Although the Bishop of London had not yet appointed a commissary to deal with ecclesiastical problems, Governor Dinwiddie thought this situation so serious that he dismissed the unrepentant minister from his post.

Unfortunately, in the eyes of the faculty of the College of William and Mary, who were also clergymen, it was no longer Brunskill who should be on trial, but the governor and the council for usurping the ecclesiastical prerogative. "The college clerics expressed their resentment in the most extraordinary manner: one after the other they invited Brunskill to preach in their respective parishes."¹⁷

Jack Morpurgo describes the hectic and combative political atmosphere in Williamsburg at this juncture in time as follows:

So the Williamsburg factions flailed away at each other - the Governor, the Burgesses, the Commissary, the President, the Visitors, the Faculty ... the political boxing matches spilled out from the central arena and developed into three, or even four-sided brawls in which every contestant hit out at whoever was in sight, eager for effect but unconsidering of cause. The melee was so continuous and so chaotic that it is not easy to mark the moment when a contestant turned from pummeling one opponent and took to battering another...¹⁸

The final incident was of a more personal nature for it directly pitted several of the professors of the college against members of the Board of Visitors. In May of 1756 the faculty decided to expel Matthew Hubard and Cole Digges, two ushers, from the college. The socially prominent families of these two young men sought to exact their revenge on the accusing faculty member. An opportunity presented itself when Thomas Robinson, the very grammar master who brought charges against Hubard and Digges, took ill in 1757. The Board of Visitors immediately sought to replace him for neglecting his duties at the college. The Board explained that "because the Visitors have observed that the appointing of a clergyman to be Master of the Grammar school, has often proved a means of the School's being neglected, in regard of the frequent Avocations of a

Minister, That therefore his Lordship will be pleased that the person to be sent over be a lay-man.”¹⁹

The desire of the Board of Visitors to have the Bishop of London find a “lay-man” to fill this position probably had more to do with finding a professor who was more malleable to the will of the Board of Visitors than one that was more diligent in his attention to his duties. The necessity of weakening the solidarity and obstinacy of the faculty who had opposed their wishes on almost every issue was of first importance to the members of the Board of Visitors. To this end the Board and Governor Dinwiddie asked the Bishop of London’s subordinate, Dr. Samuel Nicholls,²⁰ to seek out a suitable candidate for a replacement as the professor of mathematics with William Small’s qualifications.

The governor, having borne the opposition and the insults of the faculty of the College of William and Mary in the matters of the Two Penny Acts and the dismissal of the Rev. Brunskill, quickly spearheaded the effort to recruit a new professor to drive a wedge into the unity of the masters. In a letter to Thomas Dawson in March of 1758, barely two months after John Camm, Richard Graham, and Thomas Robinson were unceremoniously locked out of their rooms, Dinwiddie wrote, “Doct: Nicholls says he will soon endeavor to get a proper person for the Professor of Mathematicks.”²¹ Dinwiddie reported three months later that Dr. Nicholls was having a difficult time finding a suitable candidate “as soon as the college is properly supplied with [goo]d professors &ct I shall be might [glad to] hear it [su]ceeds & increases with students; & Nicholls has had a great deal of trouble [finding a replacement.]”²²

Dr. Nicholls' recruitment problems were many: an appointment to a post in the colonies was tantamount to academic exile, the candidate was far away from home and potential opportunities for advancement, the attitude toward academics in the colonies was that of servants rather than masters, professors were always carefully scrutinized and often criticized, an extra-collegiate body frequently dictated terms of academic policies and mandates of behavior and piety, and professors were often burdened with duties and obligations outside of the classroom.

Many of the problems that arose within the faculty were due to the professors' perception of their place at the college and the reality of the situation, and their expectations and the expectations that were placed upon them. The faculty, or the "Society", as they styled themselves, understood its goal to be the establishment of a university community in Williamsburg. "But since most of the students were unlettered and immature, life at William and Mary took on the air of a grammar school." The public expected the professors to be bachelors who would reside in college alongside their students, and be responsible for the student's behavior both outside of the classroom as well as within, and, particularly at mealtime. Little distinction was drawn between a schoolmaster and a professor.

All this was very different "from the port-mellowed traditions of Oxford and Cambridge". Eighteenth century English university life was centered in residential colleges "where wit and indolence were more characteristic than purpose and industry. For the professors, life at William and Mary rarely had the

somnolent atmosphere so cherished in English college halls". The College of William and Mary, in contrast to the self-regulating English university, lay exposed to full public view in the provincial capital and self-conscious local gentry concerned itself with every facet of the daily business and the activities of its faculty and students.²³

Richard Graham, one of the dismissed professors, expressed his opinion concerning the Board of Visitors in a letter written to the authorities at Queen's College, Oxford, in 1760, "Pray send no more of your young gentlemen into this wretched land of Tyrants & Slaves." He continued, "I am sorry to inform you of the death of poor Mr. Robinson, who died in the 4th instant ... it is generally thought that he died of a broken heart. The treatment he received at the hands of the Board of Visitors was truly savage."²⁴

The Recruitment of William Small

In addition to the stigma attached to such an assignment, the ambiguity of authority, the relative severity of terms of employment, the separation from friends, family, and opportunity, the absence of accustomed comforts and sights, the persistent rumors of bad treatment, there was also the perceived difficulty of receiving a comparable salary and extracting required fees. The enticement to apply for such a position was not enhanced by these aggregate factors. Indeed, contrary to previous assumptions, it is unlikely that William Small hustled down

from Aberdeen to London to apply for the post. Several pieces of evidence indicate that William Small was recruited for the post rather than seeking it out.

Three letters give evidence that the Bishop of London's assistant, Dr. Samuel Nicholls, was the agent who personally recruited William Small. The first letter was from Stephen Hawtrey who sought out William Small, recently arrived in London from Virginia, to obtain information about the school for his brother. In this portion of the letter Stephen related Small's account of how he obtained the post of professor of mathematics:

Now I must tell you a little of his History--in the year 1758 the President of the College wrote to the then Bishop of London to send over a person qualified to be a Professor of Mathematicks, as there was then a vacancy in that Office--Mr. Small was applied to on this occasion, & went over thinking he was in full possession of his office from the time of his Nomination by the Bishop--but on coming there he found that he was to wait on the Visitors--& after taking the oaths, they elected him into that office & from that time his Salary commenced and not before..."²⁵

This version of events seems to be verified by a second letter written by Dudley Digges, the Rector of the Board of Visitors, to the Bishop of London:

By a subsequent letter, he [Small] almost upbraids us [the Board of Visitors] with doing him Injustice, mentions his being disappointed in the Assurances Dr Nicholls gave him by our Direction before he came over; this seems to be a Piece of the Rest of his Conduct; what pass'd between him and Dr Nicholls we can't pretend to say, but this we are sure of, that Dr Nicholls had no Authority to promise him more than £80...²⁶

The third letter, which for two centuries has been mistakenly attributed to Dudley Digges, was written to William Small himself. During the course of the current investigation, handwriting analysis indicated that this letter was not written by Dudley Digges, but instead by Robert Carter Nicholas. Why Nicholas sent the invective message under Digges' title of Rector is not yet known, but an excerpt from that letter confirms Small's recruitment by Samuel Nicholls:

Your Salary was increased, soon after you came over from £80 to £100 stg, whether this occasioned any Disappointment in the Expectations Dr Nichols might have raised in you in Consequence of the express Instructions you say he received from us, we cannot tell, but surely the increased Sum was more than the Dr could flatter you with, as he knew of no other than the former establish'd Salary & therefore we presume he would not venture to engage any Thing further, beside Let what would have passed between you, we as

Visitors had Nothing to do with Dr Nichols, the Bishop was our
Chancellor & not the Doct.r.²⁷

The excerpts have a common theme and seem to corroborate one another in the following ways; William Small was recruited for the position at the College of William and Mary, Dr. Nicholls was the agent for recruitment, and Small believed that the office of the Bishop of London controlled the terms of his employment. It is implicit that Small more likely resided in London rather than being summoned from Aberdeen. These tentative conclusions bring about some interesting questions: Who brought Small to the attention of Dr. Nicholls? If Small were in London, what was he doing there? and Why would Small have accepted such a dubious post?

In regard to the way William Small came to the attention of Samuel Nicholls, a plausible case may be made as follows: William Small's mentor in Aberdeen was the famous Dr. John Gregory, who married Elizabeth Montagu, the daughter of Lord Forbes, and the couple moved to London so that Gregory could obtain a hospital position. While in London, John Gregory and his bride resided with Elizabeth Montagu, his wife's aunt, who was a great social force in London and founder of the Bluestockings Club. The Montagu house was the frequent meeting place of London society and the Gregorys mingled with many important political and literary figures of the day. Among those who frequently visited the Montagu home was Dr. Friend, the uncle of Elizabeth Montagu and Prebend of St. Paul's. Dr. Samuel Nicholls was Prebend of St. Paul's, and with the two

churches being less than a mile apart, it is almost certain that the two prebends knew one another. Thus, it is not an unlikely scenario that Small came to the attention of Dr. Nicholls through Dr. Friend and to Dr. Friend's attention through John Gregory.²⁸

The second question concerns the location of Small's medical studies. Although it has been assumed that Small took an apprenticeship in Aberdeen with John Gregory, it seems that an equally substantial case can be made that Small actually received medical training in London.²⁹ Several factors support this conclusion. First, both physicians who recommended Small for his medical diploma worked in London during this time. John Gregory was in London, at least until 1756, and John Eliot, for the entire period. The second factor was Small's seeming familiarity with topographical intricacies of London. A third factor was his relationship with Alexander Small, a possible relative, who was practicing medicine in London during this time. And, finally, it is more likely that Dr. Nicholls recruited Small in London rather than journeying to remote Aberdeen to ferret him out.

The final question, why did Small accept such a dismal post, may have its answer in both ignorance and hope. It probably seemed a heady circumstance for the youthful Small to be recruited for a university post, even one in a far off colony; £80 per annum seemed a substantial salary; and the inconveniences of the expedition were likely not articulated.

The Journey to Virginia

Three references in letters point to a likely date for Small's recruitment. Two of the clues are in letters from Governor Dinwiddie to the President Dawson, and the third is the date of Small's induction into the faculty of the College. The journey from England to Virginia was approximately ten weeks,³⁰ therefore letters sent from England were likely written at least ten weeks previous to their transatlantic arrival. As early as March 1758, Governor Dinwiddie was writing to Dr. Nicholls to see if he had found a new professor of mathematics. Dinwiddie received a letter from Nicholls in June saying that he was having trouble finding a suitable candidate for the office, which indicates as late as the end of April the position was still unfilled. William Small took his oaths of office on October 18, 1758.³¹ In order for Small to be present in Williamsburg by the middle of October, he had to leave London by early August. It seems likely that he was recruited in the second half of July 1758.

Small also revealed details of the voyage in his conversation with Hawtrey. In respect to the cost of the voyage, Hawtrey wrote his brother, "Your passage at the outside won't Cost you thirty pounds [to] defray which expense, the Visitors have or will order some Merch[ants in] London to pay you twenty pound, the same as was paid to Mr Sm[all]".³² Small also advised Hawtrey against taking his own provisions for the voyage, "as you will find it troublesome, only agree with the Captain to give him a certain Sum for your passage and board

that is breakfast dinner & Supper & Wine twice a day, for [which he] says you won't pay above twenty guineas".³³

Small probably left at the end of July or beginning of August and after a "tedious and disagreeable voyage" of ten weeks arrived at Yorktown, some twelve miles distant from Williamsburg. His first view of Virginia may have been similar to that of Andrew Burnaby, who came to Virginia seven months later. Burnaby wrote that after his ship docked at Yorktown, "The next morning, having hired a chaise from York, I went to Williamsburg, about twelve miles distant. The road is exceeding pleasant, through some of the finest tobacco plantations in North-America, with a beautiful view of the river and woods of great extent." Williamsburg was located "between two creeks; one falling into the James, the other into the York; and is built nearly due east and west." Burnaby described the physical outlay of the city as "regularly laid out in parallel streets, intersected by others at right angles."³⁴ A later visitor wrote, "the main street is about a mile long, terminated at one end by the old capitol and at the other by the college. All the streets are very wide, and handsomely paved with grass; which, indeed, is more agreeable anywhere than in a street."³⁵

Reverend Burnaby estimated that Williamsburg did "not contain more than one thousand souls, whites and Negroes,"³⁶ except in times of courts and general assemblies when "it is crowded with the gentry of the country: on those occasions there are balls and other amusements; but as soon as the business is finished, they return to their plantations; and the town is in a manner deserted. The inhabitants, despite the lack of cosmopolitan surroundings, had something by

particularly courteous and engaging in their manners.” He described the appearance of Williamsburg, “although the houses are of wood, covered with shingles, and but indifferently built, the whole makes a handsome appearance.” According to Burnaby, the only buildings of any consequence were the Capitol, the College, and the Governor’s Palace. The Governor’s Palace was the only edifice of any magnificence “one of the best upon the continent; but the church, the prison, and the other buildings, are all of them extremely indifferent.”³⁷

Small was greeted on his arrival in the fall of 1758 with Virginian hospitality. Even a detractor admitted that Small, “being sensible and entertaining in his conversation and of a most winning address...soon ingratiated himself with some of the principal Gentlemen of the Colony.”³⁸ Indeed, Small fraternized very little with his own colleagues but developed deep and long lasting associations with many “Gentlemen of the Colony” and several of his students. Small voted his conscience on matters dealing with the College, sometimes taking the side of the Visitors and sometimes the faculty.

On Thursday, October 18, 1758, William Small was formally approved by the Board of Visitors and took his oaths of office.³⁹ The swearing in was the culmination of the efforts of the Board of Visitors to break up the solidarity of the rebellious coalition of Oxford trained ministers who had been frustrating their plans for so long and involving themselves in local politics. As a “man of the Enlightenment, Small certainly had little interest in promoting the influence of the church on William and Mary.”⁴⁰

Daily Life in Williamsburg

At the opposite end of the Duke of Gloucester Street from the Capitol sat the College of William and Mary. The College Yard was comprised of three buildings; the Wren Building, flanked on the left by the Bafferton Building, and on the right by the President's House. In Small's time cows grazed on the lawn in front of the buildings. Jefferson, in his *Notes on Virginia*, described the buildings of William and Mary as "rude, mis-shapen piles, which, but that they have roofs, would be taken for brick-kilns."⁴¹ The grounds around the buildings were well kept and there was "a large botanleaf garden in the rear of the buildings, apparently well stocked with cabbages, and other plants equally rare and curious, which Professors no doubt find very useful upon occasion."⁴² Each professor was entitled to two rooms in the main building that "was then two stories high, with dormer windows."⁴³ It seems that the initial impression of the interior of this building was not particularly positive. In *Letters From Virginia* the author stated, "The Professor now led me thro' the different private rooms, which I found so dark and forbidding, that I didn't wonder the tenants were not at home."⁴⁴ As Small relayed to Stephen Hawtrey, "You have two rooms---by no means elegant tho' equal in goodness to any in the College---unfurnished---& will salute your Eyes in your Entrance with bare plaister Walls---however Mr Small assures me they are what the rest of the professors have & are very well satisfied with their Appearance tho' at first rather disgusting." Small advised Hawtrey "not to lay out any money on them." In the matter of furnishings Small reported that "his

furniture consists of 6 chairs, a table, Grate Bed & Bedstead & that is as much as you'll want." Small recommended that Hawtreay buy his furniture in Virginia "all except bedding and blankets of which you must carry over---Chairs and Tables rather cheaper than in England."⁴⁵

The faculty also were "founded" their meals - breakfast, dinner, and supper, by the college.⁴⁶ For most of Small's stay, the fare was probably adequate, because there was little notice of complaint. Mrs. Owen, wife of fractious Professor Gorowny Owen, was appointed housekeeper in 1753 and stayed in that position until her death in the summer of 1759, "and in all that time she had performed her duties tactfully and efficiently. From the point of view of the boys most important of all she had kept a good table."⁴⁷ Mrs. Martha Bryan was appointed after Mrs. Owen's demise, and, she too, "maintained the tradition of orderliness, quiet efficiency and adequate food."⁴⁸ At a meeting of the President and Masters of the College of William and Mary in August of 1761, the Society resolved that "Mrs. Isabella Cooke be appointed Housekeeper of the College, in the place of Mrs. Martha Bryan, who has resign'd."⁴⁹

Mrs. Cooke's reign was not as successful as her predecessors. By the admonitions Mrs. Cook received from the Society in February of 1763, it is apparent that a number of complaints were lodged against her. Among her deficiencies were: allowing the help to neglect their duties, losing the laundry, not darning socks and linens, allowing the slaves to steal from the larder, neglecting the sick, drinking the wine, using sugar, wood and candles for her own purposes, playing favorites among the students, ignoring the requests of the faculty to send

victuals to their rooms, lending out College property, hoarding for personal use “rich Cakes, Preserves, &c”, and intriguingly, “Lastly, you are desir’d to have no Boys at Breakfast with you, or to invite particular ones to Tea in the Afternoon, as it causes Disturbances.”⁵⁰ In a letter written to his brother around 1763, Walter Jones made the following statement concerning the unfortunate Mrs. Cook:

I wish I had something amusing to entertain you with but it is not [to be had] at this great Mitorpolis (sic). There is Nothing worth relating only her Aunt [Isabella Cooke?] Being so unjustly hated by Yates & the Boys tho their Dislike proceeds from some Foundation, which is an excessive Stint in Victuals & that of the worst Sort; but Yate’s hatred arises from this, One Bland [William] who you have heard of sufficiently, wrote her a very insolent note & drew an image of a Head upon it & wrote underneath it Venus, which that Woman resenting in a very proper Manner, has made the sly President [Yates] Sett his Witts to work to turn her out of the College & since that is the Case it is to be feared the poor old Lady will be again sent to her Shifts.”⁵¹

Thus, Jones confirmed that Mrs. Cook kept a poor table, and there seems to have been other transgressions as well. The expected standard for the meals at the College can be inferred from the directions that the President and Master gave to the unsatisfactory Mrs. Cook in a meeting in February of 1763. They ordered the berated but not subdued Mrs. Cook to always provide both fresh and salt meat

for dinner, to provide pies or puddings twice a week and particularly on Sundays, and to make sure that “there always be Plenty of Victuals; that Breakfast, Dinner, and Supper be serv’d up in the cleanest, and neatest manner possible.” In addition, she was to prepare fresh meals “that the Boys Suppers be not as usual made up of different Scraps,” serve the same meal to every table, and, the final insult, to make certain that these things came to pass, “the Society not only allow, but desire you to get a Cook.”⁵² Although Walter Jones was to some degree sympathetic towards the incompetent housekeeper, the Society directions to her affirm Jones’ account that she had “excessive Stint in Victual & that of the worst Sort.”⁵³

The masters had special dining privileges. They ate separately from the students and probably had better and more ample fare. For, as a mark of their high regard for him, the Society granted Mr. Hatton, an usher, the right to sit at the masters’ table.⁵⁴ Faculty could also take their meals in their own quarters, although the fare might be of a lesser quality. Since Small was at odds with some of his colleagues, he probably availed himself of this option frequently. The following provision may also have targeted Small as well as Mrs. Cook, “that if any Master should chance to miss attending the Hall, or Common-Room he may send for what Victuals he pleases that is left.”⁵⁵

The lack of proper “victuals” may have induced Small to take most of his meals elsewhere, but it is more likely the company than the fare was responsible for Small’s peripatetic dining habits. There are mentions of dinners at the Governor’s Palace, he was likely a frequent guest at the Page family home, Rosewell,⁵⁶ and he likely dined frequently with his close friends George Wythe,

Peyton Randolph, and the printer, William Hunter. The accounts of the college ledger indicate that, during the course of Small's tenure at the College of William and Mary, the Board of Visitors paid him £833. During the same period the bursar paid out of these funds, on Small's behalf, over £475 to merchants for wine and food.⁵⁷ Thus, Small used more than half of his fixed salary on food and wine, spent a substantial portion of his time away from the confines of his quarters, and socialized more with the local gentry than with his own colleagues.

The climate was the most important factor to consider in respect to clothing. Reverend Burnaby wrote that the climate was exceedingly fine, but subject to extreme heats in the summer when for three months the temperature generally ranged from 85 to 95 degrees. However, he thought that the autumns and springs were delightful and the winters are so mild as to scarcely require a fire.⁵⁸ Likewise, William Small took the climate into account when he advised Hawtrey about necessary clothing. For summer, he recommended that garments "must be as thin & light as possible for the heat is beyond your conception...your cloth Suit unlined may do for the Month of May, but after that time you must wear the thinnest Stuffs that can be made without Lining." He also suggested, "You must carry with you a Stock of Linnen Waistcoats made very large and loose, that they mayn't stick to your Hide when you perspire. It would have been much better if you had, had Callico Shirts, as they suck up the Moisture & don't stick to your Skin." Small specifically recommended taking along a suit of "handsome full dressed Silk Cloathes" to wear at the Governor's Ball on the King's Birthday, "the only time you will have occasion to appear fine in the

whole year” and “as to the rest of your Wearing Apparel you may dress as you please for the fashions don’t change & you may wear the same Coat (3 years).” Small warned, “Shoes and Stockings are very dear Articles---thread Stockings are worn chiefly.”⁵⁹ The instructions given to Isabella Cook confirm the price of stockings. The masters were so concerned about the loss of their stockings under Mrs. Cook’s supervision that they ordered her to procure a “proper Stocking-mender”, and to pay close attention to the laundry “both at the Delivery and the Return of them.”⁶⁰ The bursar ledger noted that washing was fifty shillings per annum, and that Small’s total laundry fee for his stay was fourteen pounds, seventeen shillings and three pence, giving the length of Small’s stay “–5 years & 345 days.”⁶¹ Using these figure, and assuming that Small took possessions of his rooms and began laundry service near to the time he took the oaths of office, October 18, 1758, it can be gauged that he left the College of William and Mary for England around the middle to end of September 1764.

The records also indicate that the bursar made payments for “Servant’s board 2 years.”⁶² There is no indication whether the servant was indentured, or, more likely, a slave lent to Small for his stay at William and Mary by one of his plantation friends. Nevertheless, Small’s personal details probably were attended to by his servant; letters delivered, clothes pressed, boots cleaned and polished, packages fetched, meals brought up to his room, firewood split and toted, dishes cleaned and laid out, bed made and room tidied up, horses and carriage brought around and put away.

Academic Affairs

For almost twenty years after the founding of the College of William and Mary, the faculty consisted of the president and a grammar master, assisted by an usher and a writing master. The first collegiate post created was a professor of mathematics in 1712. In 1727 the Board of Visitors drew up a new plan that restructured the college to include a president and six masters. In 1759, Andrew Burnaby wrote that the faculty was composed of a president and six professors. Burnaby said that the duties of the president were “to superintend the whole, and to read four theological lectures annually.” He described the faculty as the master of the Indian school, the professor of humanities, or master of the grammar school, and the “four other professors teach moral philosophy, metaphysics, mathematics, and divinity.”⁶³ The professor of mathematics also taught the sciences, moral philosophy encompassed rhetoric, logic, ethics, and belles-lettres, and there were also two professors of divinity.

The removal of most of the faculty in 1758 came to a head with the expulsion of Matthew Hubbard and Cole Digges, who were ushers, or assistants, in the grammar school. The offending ushers, were expelled “not only for their remarkable Idleness & bad Behavior in general, but particularly for whipping the little Boys in the Grammar School.”⁶⁴ Both ushers had connections to families that sat on the Board of Visitors and their relatives were determined to exact revenge. Thomas Robinson, who had originally brought the charges against Digges and Hubbard, was the main target. The Visitors contended that “by Reason

of his bodily I[n]firmities, [Robinson] is incapable of discharging the Duty of his Office.” Rev. Robinson, however, was not so ill that the Visitors did not direct that until a replacement could be sent over “Mr. Robinson is to be continued Master, six Months longer, and his Salary go on to the End of the Year.”⁶⁵

The dismissal of Thomas Robinson provoked immediate dissent among the remaining faculty, who argued that the Board was determined to hire a submissive faculty. When the Board of Visitors set up a committee to investigate the dismissal of Hubbard and Digges, the remaining faculty absolutely refused to cooperate. The Reverend John Camm, the faculty firebrand, claimed that the dismissal of Ushers Digges and Hubbard by the masters was in complete accord with the charter of the college, and that the masters denied the Board’s authority in the matter. The rest of the masters concurred:

Mr. Camm refused to give any Reasons for it: alleging that he was sworn to observe the Statutes by which the sole Power of appointing or removing an Usher, is in the President and Masters, and therefore he thought himself not at Liberty to give any Reasons, lest thereby he might give up that Power which they claim as a Right... Whereupon all the other Masters said, They were of the same Opinion.⁶⁶

Fours days later, the Board of Visitors met again to consider whether the charter specifically gave them the authority to enquire into the behavior of the

faculty in the matter of dismissing ushers and it “was determined in the Affirmative.”⁶⁷ At the same meeting it was resolved that “Mr. Camm, Mr. Graham, and Mr. Jones be removed, on Wednesday the 14th of next Month; and that other Masters be provided in their Room, who will submit the Reasons of their Conduct, to the Consideration of this Visitation.” To add insult to injury the Visitors also at this same meeting decided to increase “the Salary of the Usher to £75 Sterling per Annum.”⁶⁸

Emmanuel Jones had second thoughts about giving up his position. He recanted his former belligerence and swore that “he was willing to submit his Conduct in Matters relating to the ordinary Government of the College to the Enquiry of the Visitors.”⁶⁹ The Board thereupon ordered that he be continued as “Master of that School.” The Board at the same time ordered the president to write the chancellor, who was the Bishop of London, “to send over Masters to supply the Places of Mr. Camm and Mr. Graham late Masters of the Divinity and Mathematick Schools.”⁷⁰

The dismissed professors, Camm, Graham, and Robinson, refused to acknowledge the authority of the Board and continued to occupy their rooms and to maintain the keys to their classes. In February of 1758, the Visitors ordered President Dawson “to use all proper Methods for their Removal, by directing the Housekeeper not to supply them with any Provisions, the Servants not to obey their Orders, and demand the Keys of their Schools and Apartments.”⁷¹

William Preston, Robinson’s colleague and professor of moral philosophy, resigned in protest of Robinson’s removal. The minutes of the meeting of the

president and masters record, "Mr. President is likewise desired to request the Chancellor, to provide a Master for the Philosophy School, in the Room of Mr. Preston who has informed the Meeting that he intends to leave the Colony."⁷² With Preston's resignation, only Thomas Dawson and Emmanuel Jones remained as faculty members.

After several months the new professors arrived and took over the quarters from the rebels. Jacob Rowe, in place of Graham as professor of moral philosophy, took his oaths on June 17, 1758. As master of the grammar school was an essential position, William Davis, a local clergyman, was appointed interim master early in 1758; however, Goronwy Owen must have been recruited quickly for he was already present at the swearing in of Rowe on June 17, 1758. William Small took his *de Fidele Administratione* on October 18, 1758. The Board decided to leave the divinity chair vacant, so the faculty in late 1758 consisted of President William Dawson, Indian School Master Emmanuel Jones, Professor of Moral Philosophy Jacob Rowe, Master of the Grammar School Goronwy Owen, and Professor of Mathematics William Small.

Goronwy Owen's wife died on the voyage over and Owen married the school housekeeper, Mrs. Clayton, who was also President Dawson's sister and distantly related to the Randolphs and, thereby, almost anyone else of note in the colony. Owen's sons enrolled in the College of William and Mary. It seemed for a time that the Board of Visitors had won a complete victory over the fractious faculty, but it turned out that the cure was worse than the ailment.

Jacob Rowe almost immediately assumed a combative role in regard to the

inequities of the Two Penny Acts. Barely two months after he took the oaths of office he publicly railed against members of the House of Burgesses, some of whom were also members of the Board of Visitors. Rowe fulminated that “every Member who should vote for the settling of the Parsons Salaries in Money, would be Scoundrels, and that, if any Member wanting to receive the Sacrament, was to apply to him, he would refuse to administer it.”⁷³

The House of Burgesses immediately responded by ordering the Sergeant at Arms to take Rowe into custody. Rowe reluctantly explained that he assumed that he was in private company when he made the offending remarks, but that he, in any case, had been provoked by inflammatory statements against the clergy. Owen also complained about the unfairness of the Acts and was soon collaborating with Rowe not only in political rebellion but also in public infamy.

The Board of Visitors met on March 31, 1760, to review the reports made against Jacob Rowe. On April 25, 1760, they met again to look into reports of “Misbehavior” not only against Rowe but also Owen. The Board called in Rowe and Owen the next day to answer the charges. They were charged with being seen often “scandalously drunk in College, and in the public Streets of Williamsburgh and York,” that they were frequently heard to “utter horrid Oaths and Execrations in their common Conversation,” and by such actions were destroying the authority and influences of the masters.⁷⁴ The Board accused Rowe of trying to cause disruptions in the College and undermine the authority of the President by “a contentious, turbulent, contumacious, and strange Madness of Behavior.” Owen, almost as an after thought, was charged with being “lately

guilty of the same Behavior.” When recalled on April 30th to respond to the charges, Jacob Rowe admitted that “he has sometimes been overtaken in Company” by drink, and that “through his Infirmary in the Heat of Passion, he has sometimes been guilty of uttering Oaths in Company,”⁷⁵ but he strenuously denied the accusation of attempting to destroy the authority of the President and Board of Visitors. The repenting Rowe promised the Board of Visitors that he would amend his behavior, erase the bad impressions that he had made, and he assured the members that he had not “stept so far beyond the Line which divides Virtue and Vice” as to be unable to draw his “Foot back again.”⁷⁶

Jacob Rowe did not keep his promises for long, because three months later he had even more serious charges laid against him by the Board of Visitors:

Mr. Rowe notwithstanding the strong admonitions he received here at the last Meeting for his Misbehaviors of various Kinds, and his solemn promise of good Behavior thereupon, did lately lead the Boys out against the Town Apprentices to a pitched Battle with Pistols and other Weapons, instead of restraining and keeping them in, as was the Duty of his Office to have done: That he at the same Time insulted Mr. John Campbell by presenting a Pistol to his Breast, and also Peyton Randolph Esqr. One of the Visitors, who was interposing as a Magistrate and endeavouring to disperse the Combatants: That the next Day he also insulted the President [Thomas Dawson] for enquiring of the Boys the Particulars of the

Affair without a Convention of the Masters: And upon the Rector's [Francis Fauquier] sending to him to take Care to keep the Boys in that Night upon Apprehension of a second Affray, he also grossly insulted him.⁷⁷

On this occasion Rowe was not the least contrite, but admitted to all the charges except insulting the President, "whom he said he had not used ill, as he did not deserve any better Treatment."⁷⁸ The Board dismissed Rowe not only for these charges but also for "Mr. Rowe's indecent and contumacious Behavior before the Visitors, and particularly his insulting them, and contemning their Authority."⁷⁹ Rowe must have known that no amount of false contrition would save him this time, for he had offended the two most powerful men in the colony; Peyton Randolph, the Attorney-General of Virginia, and Francis Fauquier, the Rector of the Board of Visitors and Governor of Virginia.

Although Goronwy Owen was not charged, it is likely that he participated in the famous fracas. Another student later recalled that, "he (Owen) and Mr. Rowe ...headed the Collegians in a fray which they had with the young men of the town."⁸⁰ Shortly thereafter, Jacob Rowe was ordered to "remove himself and his effects from the College by 29th instant,"⁸¹ and Goronwy Owen resigned and accepted a parish in a distant part of the colony.⁸² The more lenient treatment accorded to Owen may have had less to do with his diminished guilt than his marriage to President Dawson's sister. Thus, by the fall of 1760 both Rowe and Owen, having become obnoxious enough to the Board of Visitors, were relieved

of their offices. The Board replaced Goronwy Owen as Master of the Grammar School with William Webb, but he only remained long enough to attend one meeting of the president and masters.

In the winter session, William Yates was recruited to replace Webb as master of the grammar school. Yates was the rector of Abingdon Parish in Gloucester County, the son of the former revered professor Bartholomew Yates, and a graduate of William and Mary. Although of meager recommendations, his family connections and alumnus status probably endeared him to the Board of Visitors. In a letter probably written in the spring of 1763, Walter Jones identifies William Yates as the former Master of the Grammar School:

Dr. Pitt ... has paid me very honourably in fifteen Ten shilling Bills, the greatest part of which I have been obliged to use in paying for the last 2 Years at College, The Fees for one year to Yates while he was Grammar Master & use [illegible] Horrocks [illegible].⁸³

The importance of this chronology of events is that it put William Small in charge of the curriculum and a position from which he exerted a strong influence on a number of students who would be instrumental in the formation of the United States. It was this chronology of events, and the incapacity of President Thomas Dawson caused by “consolation [of] spirituous liquors”, that enabled Small to initiate substantial changes in teaching methods and the foci of learning at the College of William and Mary.

The most renowned of Small's students at William and Mary was, of course, Thomas Jefferson. J.E. Morpurgo summed up this coincidence thusly:

That a polymath of such rare quality [Small] should have appeared at William and Mary at just the right moment to teach the outstanding polymath of them all is one of the happiest coincidences in educational history. That Wythe was available to take over Jefferson from Small is enough to make an agnostic believe in Divine Providence.⁸⁴

Terms, Schools, and Salaries

The College of William and Mary had a tri-semester organization in colonial times. The first semester, or Hillary Term, began the first Monday after Epiphany, January the sixth, until the week before Palm Sunday, in late March or early April. The second semester, Easter Term, began a week and a day after Easter, usually in mid April, until Whit Sunday, in late May or early June. And, the third semester, Trinity Term, began the day after Trinity Sunday, in late August, and lasted until the sixteenth of December. During Trinity Term there was a week vacation in mid October between St. Luke's Day and St. James' Day.⁸⁵ The length of terms varied. Hillary Term lasted approximately thirteen weeks, Easter Term about seven weeks, and Trinity Term lasted almost twenty weeks.

The Charter of 1727 established four schools for the college: the Indian

School, the Grammar School, the Philosophy School, and the Divinity School. By the time that William Hunter reprinted the statutes in 1758, the emphasis of the institution may have changed but the format remained the same. In the Indian school there was one master who taught his charges to read, write, and do vulgar arithmetic. In addition, the master instructed his students in the “true religion”. This school was sponsored by Sir Robert Boyle, who left an endowment in his will to provide the school with funds derived from rents from his estate, known as Bafferton, in Yorkshire, England. It was probably the easiest post at William and Mary in that there were usually no more than eight to ten boys in attendance.

In the grammar school, the master instructed the students in the “Latin and Greek Tongues” and the “Rudiments and Grammars” of those languages. The charter ordered the master to keep a watchful eye over the habits and morals of the boys. After a scholar completed grammar school, the master of the grammar school was to examine his charge and to “let no Blockhead or lazy Fellow” progress into the philosophical school.⁸⁶

The philosophy school was divided between moral philosophy and natural philosophy. Natural philosophy encompassed “Physicks, Metaphysicks, and Mathematicks”, while moral philosophy consisted of “Rhetorick, Logick, and Ethicks.” Lyon Tyler, in the late nineteenth century, defined ethics to include natural and civil law and students were exercised not only in debate but also in declamation.⁸⁷

The divinity school had two professors, the first was to teach the “Hebrew Tongue and critically expound the literal Sense of the Holy Scripture” and the

second was to explain the “common Places of Divinity, and the Controversies with Hereticks” and conduct “Prelections and Disputations” in those subjects. Although initially one of the primary purposes for establishing the College of William and Mary was to provide the colony of Virginia with a native-born clergy, by 1758, this purpose may have become diminished, since the maintenance of the divinity chairs and the usher in the grammar school was left up to the “Discretion of the Governors.”⁸⁸ Perhaps this was due to a lack of applicants or a move by the Board of Visitors to exclude problematic members of the clergy from the faculty.

The salaries and other “prerequisites” of the various members of the faculty may suggest their relative importance to the Board of Visitors. The Board of Visitors elected the president of the college and his duties were primarily administrative. The charter required that he must be over thirty years of age, keep “a watchful Eye” over the rest of the faculty, communicate with the chancellor, when necessary, and give four lectures on theological subjects during the year. His remuneration consisted of a salary of £200, along with the use of a handsome house and garden, and often he served as the Bishop of London’s Commissary and the Rector of Bruton Parish, both of which paid substantial salaries.

In 1758, a master of the divinity school received £150 per annum and had no other fees; a master of the philosophy school received £80 per annum and an entrance fee of a pistole from each boy; the master of the grammar school was paid £150 a year, and received a twenty-shilling entrance fee from each boy, and also was provided a house instead of a set of apartments; the Indian master was

paid £40 to £50 and could collect two shillings “from other scholars from the town.”⁸⁹

By the description of the salaries it seems the president enjoyed the greatest salary and the greatest prestige with the least amount of work. This may have been a legacy from the time of the first president of the College of William and Mary, James Blair, who made certain that he was so well compensated for his small troubles that an early professor, Mungo Inglis, resigned over the disparity in wages.⁹⁰ The president was also more obliged to the Board of Visitors and the governor than the other members of the faculty, and often, during disputes, he was biased in the Board’s favor. The masters of the divinity school were next in the social pecking order, although the Statutes of 1752 make their positions optional. The grammar master was the only member of the faculty (other than the president) to have a house rather than an apartment, and was actually paid more than the divinity masters. Even the grammar school ushers were paid well, in 1758 they were paid £75 and five shillings entrance fee from each student, almost as much as professors of the philosophy school. This surprising disparity may stem from the fact that the ushers were often relatives of members of the Board of Visitors, and it may have been another source of discontent among the faculty. It would seem, according to the Statutes, that the professor of moral philosophy and the professor of natural philosophy were least well paid, but William Small related to Ned Hawtrey that by 1764, “your Salary is £150 Sterling paid as regular as if at the Bank of England—every Boy pays his pistole Entrance Money & £20 Sterling per annum out of which you pay the first Usher, there being two, at 5

s[hillings]---tho' I say that every Boy pays this sum, it would be speaking more properly to say---they ought to pay it for they are very irregular in their payment of that, & unless you look sharp after it & insist upon your right you may not stand a Chance of receiving above one fourth."⁹¹ In a letter to his brother, Walter Jones, one of Jefferson's classmates, confirmed Small's dilemma in the matter of collecting fees, he wrote, " I am sorry to acquaint you that I have made no Progress in Mathematics since I saw you; which indeed has not proceeded from any Negligence of mine, but from a Want of Money to pay Mr. Small's Entrance Fee."⁹² If Small's statement to Hawtrey was accurate, the total income for a philosophy master was generous.⁹³ Small may have made in excess of £350 in some years, and possibly a great deal more. Therefore, the financial incentives to go to Virginia and to stay were substantial. Over a period of almost six years Small received from the college's bursar payments amounting to just over £833, and this does not include fees collected directly from the students. His salary increased from £80 in the first few years, to £100 for just over a year, then was augmented to £150.⁹⁴ If Small's statement referred specifically to his own salary, he could have earned from £200 to £400 per annum, on the other hand, if Small's statement was referring to Hawtrey's post as grammar master and its attendant fees, Hawtrey, having sixty-four students in 1765, would have made as much as £1280 in his first year as grammar master.⁹⁵ It seems more likely that this statement referred to the salary and fees of the philosophy professor rather than the grammar master, for two reasons. The first is that the grammar master, by these calculations, would have been earning twice as much as the president of the

college, and the second is that the specific salary for the grammar master was £150 plus a 20 shillings entrance fee, not a pistole, as was the case in the philosophy school. Therefore, Small was more likely giving his own salary.⁹⁶ Lyon G. Tyler, President of the college in the twentieth century, noted that the colonial professors at the College of William and Mary “were probably better paid than professors at any other college in North America.”⁹⁷

Curriculum in the Philosophical School

If the pay was good, the amount of work was substantial, even with the help of ushers. Small’s bailiwick, the philosophy school, was divided between natural philosophy and moral philosophy. The Board of Visitors entrusted the content of the curriculum up to the Masters, as was stated in the Statutes of the College, “We leave it to the President and Masters ...to teach what Systems of Logick, Ethicks, and Mathematicks, they think fit in their schools.”⁹⁸ It is likely that Small taught the substance and in the style in which he was trained at Marischal College, where natural philosophy included both theoretical and practical branches. The theoretical subjects, which were taught in the second year, included: “Classics, Natural and Civic History, Geography, Chronology, Arithmetic, Algebra, Geometry, and plain Trigonometry.”⁹⁹ The practical branch included: natural philosophy, general physics, mechanics, pneumatics,¹⁰⁰ optics, and astronomy.¹⁰¹ Subjects specified in the minutes of the Aberdeen Philosophical Society included: spherical trigonometry, spherical geometry,

higher algebra, quadrature of curves, fluxions, and Newton's principals of philosophy.¹⁰²

The progression in mathematics was carefully articulated in four courses. The following description comes from a letter written by Thomas Gwatney, Professor of Mathematics, to the *Gazette* in 1770, but may well have derived from Small's practice, which revolutionized pedagogical practice in at least three areas at William and Mary. Small introduced the lecture-discussion method in place of the traditional rote and recitation method, he also initiated the study of belles-lettres, and demonstrations in experimental philosophy, or scientific experiments and observations.

First the student worked through the six books of Euclid, hearing propositions explained on one day and demonstrating them at the next meeting. Then he studied plane trigonometry, including work in surveying and the use of logarithms; next came algebra. The third course stressed the properties of mechanical powers and the use of globes. It involved those aspects of physics that could be comprehended without a previous knowledge of solid geometry, conics, the elements of fractions and physical astronomy.¹⁰³

Moral philosophy generally covered ethics, rhetoric, logic, criticism and belles-lettres, and "the philosophy of the human mind and the sciences that depend on it – which includes politics and law, and what we now call

psychology.”¹⁰⁴ Ancient authors, both Greek and Latin, were the common grist for the moral philosophy mill and students exercised their knowledge of these authors in debates and declamations. In these exercises students demonstrated their ability in logical persuasion and also in voice inflection, facial expression, and gesticulation.

Classes met six days a week, with each day being devoted to a certain set of lectures. Natural philosophy and moral philosophy alternated, and under Small’s guidance, it is likely that classes were conducted along the lines of those at Marishal; the mornings devoted to lectures and the afternoons reserved for experiments and question- and-answer sessions. According to Thomson, “each week college students received two days’ instruction in mathematics, one in natural philosophy, and three in the various phases of rhetoric, logic, and moral philosophy.”¹⁰⁵ Thus, the coursework of natural philosophy and moral philosophy was evenly divided.

At William and Mary, students were not grouped into classes or given yearly examinations, but “attended lectures and pursued studies as far as their abilities and diligence permitted.”¹⁰⁶ With the exception of Benjamin Franklin’s honorary degree, granted in 1756, no documented record exists of a degree being awarded at the College of William and Mary before 1770. It is thought that the Botetourt medals awarded in 1770 may have been the first diplomas awarded at the college from the colonial era.¹⁰⁷ The students took whatever courses they deemed practicable and interesting, without concern for obtaining a degree, and there was no predetermined and circumscribed course of studies. Although

instruction seems to have been linear and sequential, a specific sequence or curriculum was not mandated, students did not actively seek degrees, and “professors did not seem to have encouraged them to do so.”¹⁰⁸ William and Mary’s “free marketplace of ideas” may have been the prototype for Jefferson’s philosophical foundation for the University of Virginia.

Small’s Educational Innovations

Some scholars credit the influence of Small for the pedagogical changes that took place at the College of William and Mary in the mid-eighteenth century. Among the significant contributions made by Small was the introduction of the lecture-discussion-demonstration method, the teaching of belles-lettres, an emphasis on the scientific and practical aspects of natural philosophy, the introduction of scientific demonstrations and observations, the introduction of the Scottish Common Sense School of Philosophy, and a more republican view of government and more secular view of religion.

Thomas Jefferson stated in his *Autobiography* that Small “was the first who ever gave in that college regular lectures in Ethics, Rhetoric, & Belles letters.” Previous to Small, students were instructed by the rote and recitation method, in which they learned a lesson then repeated it. In the lecture-discussion-demonstration method used by Small, professors provided formal lectures in the morning, followed by afternoon sessions of commentary, questions and answers, and possibly a series of experimental demonstrations. Small introduced this

practice at the College of William and Mary, but it soon appeared in other institutions in British North America, perhaps by Small's example but also an indication of the growing influence of Scottish educational practices in the colleges of North America.

Belles-lettres was a relatively new subject area at this time, a nebulous concept that combined an interest in style, taste, and criticism in the areas of rhetoric, poetry, history, art, philology, and literature. The belletristic tradition concerned itself mainly with the art of speaking and writing well, combined with the study of the faculties of the human mind by which nature is perceived. The founders of the belletristic tradition were Hugh Blair, whose work *Lectures on Rhetoric and Belles-Lettres* had a major impact on eighteenth century intellectual life, and Alexander Gerard, whose "Essay on Taste" won a major award in 1756. Hugh Blair's *Lectures* was standard fare in rhetoric classes in American colleges and universities for many years. Blair frequently lectured at the University of Edinburgh and was well known to Alexander Gerard. Gerard was in the vanguard of academics pioneering this field, and both Blair and Gerard had a philosophical base in Thomas Reid's Common Sense School of Philosophy. A common theme between the study of belles-lettres and the Common Sense Philosophy was the investigation of the human mind and the objective means by which it perceived truth and beauty. However, belles-lettres was more concerned with the aesthetics of art and literature, while Common Sense Philosophy was concerned with practical matters and the imperatives of a moral life.

Known for its progressive and scientifically inclined philosophy and

faculty, Marischal College placed such importance on the scientific aspects of natural philosophy that the course was extended over two years. In the second year at Marischal College, history, geography, chronology, and special physics or natural history were taught. The third year was almost entirely devoted to scientific study and topics covered likely included: general physics, mechanics, hydrostatics, pneumatics, optics, magnetism, electricity, and astronomy. It is evident that William Small translated the emphasis on advanced scientific requirements promoted at Marishal College to the College of William and Mary. For example, John Page claimed that early in his academic career he was fond of military history, but once he was under Mr. Small's instruction he became devoted to "Natural and Experimental Philosophy, Mechanics, Mathematics, ... and Astronomy."¹⁰⁹

Under Small's supervision the scientific curriculum changed radically from rote memorization to lectures, demonstrations, and experiments. It is rumored that Small founded a society in Williamsburg in 1759 "for promoting scientific experiments."¹¹⁰ He not only popularized scientific experiments and demonstrations at the College of William and Mary but also among the "distinguished gentlemen" of the colony. The branches of science that most interested Small and the areas in which he conducted his experiments can be inferred from the type of scientific instruments he purchased for the College when he returned to England in 1764. Small was accused by Dudley Digges and Robert Carter Nicholas of departing from Virginia with no intention to ever returning,¹¹¹ but Stephen Hawtrey informed his brother, as late as March 1765, that Small "is

thinking of returning to Williamsburgh in mid May.”¹¹² Digges wrote to the Bishop of London that Small was in Hampton, Virginia,¹¹³ ready to depart for England, when he heard of President Yate’s death and canvassed for the Presidency. This does not seem to be the act of a man resolute on returning to Britain permanently, or one with a predetermined plan of escape. It can be plausibly argued that Small was not only planning to return to Virginia but also to use many of these instruments himself.

A partial listing of equipment that Small bought for the College of William and Mary included many instruments for experiments in the various branches of science; for electricity, an electrical machine and a glass jar (Leyden jar); for statics and hydrostatics, a glass jar for hydrostatic balance, and a mahogany inclined plane with a quadrature that sets to any angle with scale and nest of weights; for optics, an object glass for showing the rings of colors to be used with a glass plane, and a square mahogany tube with an object glass and a number of eye glasses to show the direction of the rays of light in eye glasses; for meteorology, the fountain experiment in vacuo in open air with a bason, the barometer experiment, and a standard barometer; for pneumatics, a machine for the resistance of air; for magnetism, six pounds of quicksilver, a dipping needle compass, a nine inch diameter with needles for dip variation; for general physics, a cone dissected, and an instrument to try the force of falling bodies; for astronomy, an acromatic telescope, a double microscope, and a reflecting mirror with parallel glass; and for botany, optics, and medical subjects, a solar microscope with apparatus.¹¹⁴ These instruments are indicative of the varied

experiments that Small either was already carrying out or intended to carry out. For instance, solar microscopes were “constructed in all sizes from those mounted on a tripod to instruments of a larger size which were fitted to the shutter of the room and served to project images.”¹¹⁵ Various materials such as flies wings or mineral samples could be fitted to the lens for amplification, so this particular instrument, which was used primarily for optical studies, could also be used for observations of botanical, mineral, or zoological materials.¹¹⁶

Once again, Small’s training at Marishal College directed his interests and abilities. Marischal College, an early leader in the exploration of a number of emerging scientific fields, was distinguished by the scientific nature of its faculty and by its ambitious and energetic programs. As early as 1717 Marischal began to build up a collection of experimental instruments, and by 1733 the college had an “Instrument Room”, and, even as Small was teaching in Williamsburg, his old mentor, Dr. John Gregory, was busy attempting to set up a Department of Medicine in Aberdeen complete with a proper dissecting room and chemical laboratory.

Astronomy and meteorology may have been of special interest to Small while he was in Williamsburg, for a substantial portion of the purchased inventory was devoted to astronomical instruments, including those made by Peter Dollard, reputed to be one of the finest makers of telescopic lens in Europe. It has also been a longtime legend that Small, Jefferson, and John Page ascended to the cupola on the roof of Rosewell, the Page family estate, to conduct astronomical observations. Page attributed his interest in the sciences to the influence of

William Small and was especially taken with astronomy, “Natural and Experimental Philosophy, Mechanics, and in short every branch of Mathematics, particularly Algebra and Geometry, warmly engaged my attention, till they led me to astronomy, to which after I left College till some time after I married, I devoted my time.”¹¹⁷ During his time in Virginia, Governor Fauquier, wrote a monograph on an observation of a hail storm in Williamsburg for which he was invited to become a member of the Royal Society. Thomas Jefferson, throughout his life, kept a daybook with precise recordings of daily meteorological events.

Although little has been written concerning Small’s political inclinations and teachings, inference may be drawn from statements made by his former students. John Page wrote that his father determined at an early age to send him to school in England but that his cousin, Robert Carter of Nomini Hall, had returned from England “so inconceivably illiterate and also corrupted and vicious” that his father vowed that no son of his would ever go to that place for an education. Robert Carter, however, soon became friends with Fauquier and Small. After Small tutored Carter, continued Page, “his understanding was so enlarged, that he discovered the cruel tyrannical designs of the British government, and when I found him at the Council Board in the time of Lord Dunmore he was a pure and steady patriot.”¹¹⁸

Small’s Colleagues and Friends

When Small arrived in Williamsburg, he became a part of a faculty

expunged of its dissident members. The rump of the faculty consisted of President Thomas Dawson, who was always in harmony with the Board of Visitors, and Emmanuel Jones, the Judas of the rebel faculty, cowed into submitting to the will of the Visitors and renouncing his former views and associations. Goronwy Owen, the grammar master, and Jacob Rowe, the professor of moral philosophy, were, like Small, replacements. So, at first, all the members of the faculty acted cordially to one another. Small, since he was the layman that the Visitors requested, and "Being sensible and entertaining in his Conversation and of a most winning Address, he soon ingratiated himself with some of the principal Gentlemen of the Colony."¹¹⁹ In the eyes of the Board of Visitors, William Small must have shone more brightly in comparison with his colleagues. Thomas Robinson was dismissed for neglect of duty; John Camm and Richard Graham were fired for insubordination; William Preston resigned in protest; Thomas Dawson was frequently intoxicated, and Rowe and Owen were not only considered rebellious and disruptive but also embarrassments to their posts, while Emmanuel Jones, who betrayed Camm and Robinson, was a pariah in the academic community. Even Dudley Digges, one of Small's most vehement detractors, wrote the Bishop of London, "His Behaviour in College appeared unexceptionable, and the Visitors for his farther Encouragement after some Time, increased his Salary to £100 per Annum."¹²⁰ Small spent time socializing with the local gentry and government officials and had little to do with his peers at the college. From his expenditures at Chowning's Tavern and Mrs. Sheild's, from the payments made for wine to Col. Tucker and others,¹²¹ from the reports of the

dinners at the Governor's Palace, the Page family seat at Rosewell, and the homes of other friends, it may be deduced that Small spent little time fraternizing with his colleagues at the master's table in the common hall. In matters relating to the college, Small was either non-committal or, even occasionally, at loggerheads with the rest of the faculty. For example, at a faculty meeting in March 1762, Small was the only dissenting voice in a vote regarding the corporal punishment of the scholars.

Resol: that this Society is of the Opinion that by the said Order every Master has the Right to inflict such Punishment on a Scholar behaving in an indecent and irregular Manner as he shall think Proper.

N.B. One of the Society was of a different Opinion, Vizt: Wm. Small.
William Yates, Presidt.¹²²

Yates' addendum to this resolution connoted a certain amount of displeasure with Small. Before he was elevated to president, Yates was the grammar school master,¹²³ and the resolution specifically referred to the discipline of grammar school students. Therefore, he may have viewed Small's opposition as a criticism of his own administration. It seems that Yates had a disposition that showed signs of little patience for those who resisted his authority. According to John Page, "when I was nine years old, my father put me into a grammar school at the glebehouse of our parish, where the Rev. Mr. Yates had undertaken the tuition of twelve scholars ... but in a short time his passionate disposition induced L.

Willis and Edward Carter to leave him.”¹²⁴ In addition to Page’s statement, Walter Jones characterized Yates as having “unfair hatred” towards the housekeeper, Isabella Cook, and that our “sly President has Sett his Witts to turning the poor old Lady out of the College.”¹²⁵ Jones’ statement indicates vindictive streak in Yates toward any who opposed his authority.

Thomas Jefferson later held a viewpoint similar to Small’s in respect to punishment. Jefferson argued, “Hardening them [the students] to disgrace, to corporal punishments, and servile humiliations cannot be the best process for producing erect character.”¹²⁶ The statement reflects both something about Small’s influence on Jefferson’s views, and Small’s enlightened views on student discipline during his sojourn at the College of William and Mary.

The Board of Visitors offered Richard Graham the professorship of moral philosophy in the winter of 1761 and, despite his protests to the bursar of Queen’s College concerning the wretched conditions in Virginia,¹²⁷ he quickly returned to take up his post. Walter Jones, who was a student both of Small and Graham, gave the following evaluation of Graham, “As to the Languages I must depend on myself for all improvement I shall make hereafter in them, As Mr Graham is altogether unqualified to instruct in either.”¹²⁸ The combined statements say something about the anxious state of the Board of Visitors, the profitability of academic posts at William and Mary, and the growing student population at the college. The Board of Visitors was so desperate to find an available professor of moral philosophy that they were willing to offer the position to a man who was not only minimally qualified but whom they had formerly fired for

insubordination. Richard Graham must have found the post so lucrative, despite his vehement denunciations of Virginians in general and the Board of Visitors specifically, that he hastened back to the colony to take up his post. It may be that a sudden increase in students was responsible for the urgency of the situation. Graham may not have felt kindly towards Small because Small had replaced him in the school of natural philosophy, still held that post, and apparently was considered more effective in that office.

Since an air of suspicion, or, at least indifference, prevailed on campus, and since an atmosphere of fellowship and admiration existed in the city and surrounding countryside, it is little wonder that Small sought solace in the latter. Small's circle of friends soon included some of the most substantial citizens of the colony: Governor Francis Fauquier, George Wythe, Mann Page, and William Hunter. Jefferson, recalling after many years, wrote:

He [Small] procured for me the patronage of Mr. Wythe, and the both of them, the attentions of Governor Fauquier, the ablest man who ever filled the chair of government here. They were inseparable friends, and at their frequent dinners with the Governor, (after his family had returned to England,) he admitted me always, to make it a *partie quarrae*.¹²⁹

Fauquier, more urbane than his predecessor Dinwiddie,¹³⁰ was credited with securing a post for Small at William and Mary. Morpurgo wrote, "It has been suggested that Small owed his place at William and Mary to the Visitors'

intention to break up the clerical domination of the College, but that this particular layman was chosen was more likely the work of Governor Fauquier, himself a man dedicated to the new skepticism, an energetic amateur scientist, who ‘discussed philosophical matters at his generous table’ in the Palace.”¹³¹ This is an unlikely scenario. Fauquier arrived in Williamsburg in June 1758,¹³² and one of his first acts as governor was the acceptance of a welcoming address from the masters and president of the College of William and Mary on June 12, 1758.¹³³ Even had Fauquier immediately recommended William Small for the vacant post (and there is no known evidence that he knew Small previously), it would have taken ten weeks for that recommendation to reach London, the end of August. Even had Dr. Nicholls immediately acted upon the recommendation of Fauquier and quickly located Small, interviewed him, and decided to engage him, Small would not have reached Virginia before the middle of November. However, Small was sworn in on October 18, 1758, as the professor of mathematics.

But, even if Fauquier did not recommend Small for the position they, nevertheless, had many similar interests and became good friends early on. In particular, Small and Fauquier shared an interest in natural philosophy, meteorology, and astronomy.¹³⁴ Fauquier became a member of the Royal Society in 1753 on the recommendation of his own brother William and the famous physician, William Heberden.¹³⁵ One observer described Fauquier as “A Gentleman of great merit, well versed in Philosophical and Mathematical inquires, and a great promoter of usefull Learning, & the Advancement of Natural Knowledge.” In 1758 Fauquier was elected a corresponding member of the Royal

Society of Arts, which was established for the encouragement of arts, manufacture, and commerce. The article he wrote on a hail storm which he observed in Williamsburg on July 9, 1758, was read by his brother William before the Royal Society shortly after his death.¹³⁶ Fauquier's will also showed a strong belief in the utility of science, for he ordered that if he died by any "latent disease" that his body be turned over to physicians for dissection to improve the condition of his fellow man.¹³⁷

Fauquier's weekly dinners were not only forums for discussion but also occasions of musical entertainment. Jefferson recalled, "The Governor was musical also, and a good performer, and associated me with two or three other amateurs in his weekly concerts."¹³⁸

George Wythe also likely greeted Small on his arrival. Although Wythe did not have the sophisticated background, the gregarious personality, or the profound involvement in the sciences of Fauquier, he was a kindred spirit to Small. Both shared a love of classical literature and the law. Jefferson wrote of Wythe that, "Dr. Small was his bosom friend."¹³⁹ It was through Small's influence that Wythe took on Thomas Jefferson as an apprentice in the practice of law. As it proved in a number of cases, Small was both a social glue and an intellectual catalyst to this amazing group of diverse individuals. Jefferson wrote:

He returned to Europe in 1762 (sic), having previously filled up the measure of his goodness in me, by procuring for me, from his most intimate friend G. Wythe, a reception as a student of law, under his

direction, and introduced me to the acquaintance and familiar of Governor Fauquier, the ablest man who had ever filled that office.¹⁴⁰

Another friend was William Hunter, who succeeded his old boss, William Parks, as proprietor of the print shop, when Parks died on a return voyage from England in 1750. William Parks was also the postmaster, public printer, and editor of the local newspaper, *The Gazette*. Hunter was the high bidder for the Print Shop, and its sundry materials. Public records show that Park's estate received over £500 from him.¹⁴¹ As public printer for the colony of Virginia, Hunter received £300 per annum. In 1753, the British Postmasters-General appointed "Benjamin Franklin, in Pennsylvania, and Mr. William Hunter of Williamsburg in Virginia, their Deputy Postmaster and Manager of all his Majesty's Provinces and Dominions on the Continent of North America in the stead of Elliot Benger, Esq., deceased, to commence this day at an allowance or salary of £600 per annum."¹⁴² Hunter wrote a letter recommending an honorary degree for Benjamin Franklin in 1755.¹⁴³ When Hunter died Small was among a select group who received a mourning ring.

I bequeath the Sum of One Hundred Pounds to be laid out by my Executors in the Purchase of Mourning Rings, and presented as a Token of my Friendship to John Hunter, Esqr, Mrs Emelia Hunter, Benjamin Franklin, George Wythe, Nathaniel Walthoe, Robert Carter Nicholas, William Small, Benjamin Waller, Thomas Everard, James

Tarpley.¹⁴⁴

Beside family members, only two out of this circle of friends also received a cash settlement in Hunter's will. The first was Benjamin Franklin, who received £1806.16.8 "to be paid to his account." In as much as it had a "60 per cent on D[itt]o", this may have been a repayment on a loan or it may have been for the care and education of the deceased's "natural son", William Hunter. The second was William Small, who received £100 as a legacy. The directions of the will instructed the executors to "pay to Mr William Small the sum of one hundred pounds Current Money which he desired the said William Small would receive as a Token of his Friendship."¹⁴⁵

The nature of Hunter's request may indicate the special relationship that existed between William Hunter and William Small may have been that of a physician and a patient. Another possibility is that, as the only professor in the philosophy school for some time, Small sent a substantial amount of business to the primary bookseller in town and Hunter was showing his gratitude. Of course, it may be that Small was just a likeable fellow.

Among the executors of Hunter's will were Robert Carter, Peyton Randolph, William Nelson, George Wythe, and Benjamin Franklin. It is likely that William Small counted all these gentlemen and their extended relations as members of his circle, although he may have later incurred the anger of some of these men, at least as far as Robert Carter Nicholas was concerned:

[I]t must be confessed that you were Master of Art enough to insinuate yourself into the favr of some of the principal Gentlemen of the Country, most of whom, tho' they had not the Penetration enough to see thro' your Disguise at first, are now thoroughly convinced of the Delusion."¹⁴⁶

Although Small's relationships with his colleagues seem distant, he led an active social life. The Bursar's ledger indicated that Small spent over half of his salary from the Board of Visitors on food and wine. The outlays made by the bursar did not include expenditures attributed to "Cash", nor do the records reflect the money Small collected as fees from his students. There is a suspicion that Small may have used a portion of his income gambling, as his good friend and constant companion, Governor Fauquier, was known to be addicted to cards.¹⁴⁷ This part of Small's income may have been more substantial than his salary from the college. While Small had not behaved in an "exceptional" manner as far as the Board of Visitors was concerned, it seems that he led a far more robust social life in Virginia than he did in England.

One of Small's more unusual acquaintances was Selim the Algerian. It was reported that Selim was the son of wealthy Algerian parents who sent him to Constantinople to study. On the return voyage home, pirates captured his ship, and Selim was transported to New Orleans, sent up the Mississippi River, and sold to the Mingo Indians. After some time in captivity he made his escape, and having been told that freedom lay towards the rising sun, he made his way to the

fringes of Virginia. Torn by brambles, nearly starved, he was found naked in a tree by a hunting party, who turned the weary traveler over to a local Samaritan, Colonel Dickenson, who fed, clothed, and nursed him back to health. While shopping in Staunton with his benefactor Selim came upon a preacher, the Reverend John Craig, whom Selim recognized as the savior that he had seen in his dreams. Selim begged Dickenson to let him go with the preacher and, after he received instruction from Reverend Craig, the "New Light" preacher, he converted to Christianity. Meanwhile, Selim's benefactor sent him to Williamsburg where John Blair was arranging a passage home. When Selim arrived in the capital he presented a strange figure, for he refused to sleep indoors or wear any clothes except "cast off regimentals." At first a subject of derision or pity, he became a great favorite of the gentlemen of the town when it was discovered he could read Greek. It was related that, "one of his greatest pleasures, when in Williamsburg, was to read Greek with Professor Small and President Horrocks of William and Mary, and at Rosewell with Mr. Page, and his youngest son, who read Greek and Hebrew at a very early age; but it was always out of doors."¹⁴⁸

Eventually sufficient funds were raised and Selim was sent home, but steadfast in his new religion and refusing to convert back to Islam, he was disowned by his family and returned to Virginia. There he lived out the rest of his life as a guest of many families, but primarily the Pages. It is said that John Page took Selim to Philadelphia for the first Continental Congress and had Selim's picture painted there by Charles Wilson Peale. The portrait hung at Rosewell for

many years and after the death of John Page was inherited by his youngest daughter, who married President Robert Saunders of William and Mary. The portrait hung at the Saunders' home in Williamsburg until the end of the War between the States when it disappeared along with the souvenir-seeking Northern troops.¹⁴⁹

Of the friends that he made while in Virginia, Small's relationship with Benjamin Franklin has generated the most interest. Some sources maintain that Small and Franklin did not meet until Small returned to England, while other sources claim that Franklin and Small met in Williamsburg in 1756 when Franklin came to the College of William and Mary to receive his honorary degree (Small was still in Britain at that time), and one source stated that Small journeyed to Philadelphia to meet Franklin (no indication has been uncovered that Small ever journeyed outside of Virginia). But a strong case can be made that they met in the spring of 1763 when Franklin came to Williamsburg to execute the will of his friend, William Hunter.

The movements of Franklin, a prolific letter writer, can be traced with a fair degree of accuracy by the dates and the places of the letters that he posted. The only time when Franklin and Small can be contemporaneously placed in Williamsburg is in the spring of 1763. Franklin wrote to Antony Todd from Philadelphia on April 14, 1763, "I am setting out on a Journey to Virginia to settle the accounts of my late Colleague Mr. Hunter...",¹⁵⁰ and on April 17, "I am just setting out for Virginia."¹⁵¹ Franklin left on the 17th, it was a four day journey to Williamsburg,¹⁵² and he probably arrived there on April 21st. While there,

Franklin both settled the estate of William Hunter and met his new Co-Postmaster General, John Foxcroft. Interestingly, John Foxcroft had been Francis Fauquier's personal secretary during the years when the governor held the philosophical feasts attended by Small, Wythe, Jefferson, and others.¹⁵³ Franklin wrote to William Strahan on May 9, 1763, "I have been from Philadelphia about 3 weeks on a Journey hither upon the Business of the Post Office, but am now returning home."¹⁵⁴ It is very probable that Franklin and Small met during this three-week time frame. As principals in the Hunter will, Small and Franklin were likely in the same place at the same time. Franklin did not return to Williamsburg while Small remained at the College of William and Mary, and Small departed Williamsburg no later than the middle of September 1764. With the average voyage from Virginia to London being ten weeks, he arrived in London around the beginning of December. A letter was sent to Benjamin Franklin by Alexander Small, a close friend of Franklin and possible relative of William Small, on December 1, 1764, with the following:

My namesake the Virginia Professor is here; and desires to be most particularly remembered to you. I mentioned to him your Idea, of pulling down by a force applied to a straight Rope. He says it will certainly do, and spoke of it as a new Mechanical Power not attended to by Mathematicians. I told him of your Clock weight. The first thing that made him attend to it was, the practice of Sea Men, who when they have a very great weight to raise, or a great force to exert,

do not pull the Rope down, as in common, but pull it to them out of the right line, and thus keeping what they have got, convey the ropes to others who secure it.¹⁵⁵

This portion of Alexander Small's letter reveals several things. The first is that William Small and Benjamin Franklin met before Small left Virginia for London, and the discussion about weights and counter weights and their connection to mechanisms for clocks was a part of an ongoing scientific conversation. The second is that both Franklin and Alexander Small had a high opinion of William Small's expertise in scientific matters. The third, and most striking, is that William Small and Alexander Small seem to have had a longstanding relationship. Considering the nautical timetable, William Small probably came straight from the ship to the home of Alexander Small, which indicates a previous knowledge on William Small's part of both London and Alexander Small.

Small and his Students

From 1757 until 1764, the chairs of the divinity school were left vacant by the Board of Visitors; from 1758 through 1764, Emmanuel Jones was the chastised master of the Indian school; from 1758 until March of 1761, Thomas Dawson was the dipsomaniacal and ineffective president of the college; and from June of 1760 until June 26, 1761, William Small was the only recorded master of

the philosophical school.¹⁵⁶ This absence of alternative authority left Small in virtual control of the curriculum for the upper school at the College of William and Mary for almost a complete year, and, given Jacob Rowe's precarious position with the Board of Visitors and preoccupation with politics and pubs, Small probably had great influence in the administration of the upper school from late 1759, when Rowe's troubles began, until the summer of 1761. Small's abilities as the professor of both natural philosophy and moral philosophy were highly praised. He excelled in both, but favored natural philosophy in particular. Just as natural and experimental sciences were stressed at Marishal College, so Small began scientific demonstrations at the College of William and Mary shortly after his arrival. His devotion to natural science is indicated by his club for experimental philosophy, the astronomical observations at Rosewell, and the care, attention, and precision he used to select scientific equipment for the college. At least three students, Thomas Jefferson, John Page, and Walter Jones, left behind their impressions of their professor. John Page also described the impact Small had on Robert Carter. Of all these students Jefferson is the most famous and probably was the greatest beneficiary of Small's attention. Jefferson recounted in his *Autobiography* the important role Small played in his life:

It was my great good Fortune, and what probably fixed the destinies of my life that Dr. Wm. Small of Scotland was then professor of Mathematics, a man profound in the most useful branches of science, with a happy talent of communication, correct and gentlemanly

manners, & an enlarged & liberal mind. He most happily for me, became soon attached to me & made me his daily companion when not engaged in school; and from his conversations I got my first views of the expansion of science & of the system of things in which we are placed. Fortunately the Philosophical chair became vacant soon after my arrival at college, and he was appointed to fill it per interim....¹⁵⁷

Throughout his life William Small was drawn to people of innate talent, and his great talent was developing the potential in others, the gift of a true teacher. In Jefferson he must have realized something special. On a personal level, having lost his father three years earlier, Jefferson seems to have been looking for an appropriate substitute. Years later he recalled:

When I recollect that at the age of fourteen, the whole care and direction of myself was thrown on myself entirely, without a relation or friend qualified to advise or guide me, and recollect the various sorts of bad company with which I associated from time to time, I am astonished that I did not turn off with some of them, and become as worthless to society as they were.¹⁵⁸

Small included Jefferson in many of his activities and engaged him on an intellectual level. Concerning their personal relationship, Jefferson was to write, "Dr. Small was ...to me as a father."¹⁵⁹ Jefferson was likely thinking of Small

when he made the following recommendation against corporal punishment in his *Report of the Commissioners for the University of Virginia*, “The affectionate deportment between father and son, offers in truth the best example for that of tutor and pupil.”¹⁶⁰

On an educational and philosophical level Small established foundations that would reverberate throughout Jefferson’s life. Jefferson benefited not only from his conversations by which he got his “first views of the expansion of science & of the system of things in which we are placed” but also from his classroom instruction. Jefferson wrote, “To his enlightened and affectionate guidance of my studies while at college, I am indebted for everything.” He described Small’s instruction as follows:

He was Professor of Mathematics at William and Mary, and for some time, was in the philosophical chair. He introduced into both schools rational and elevated courses of study, and, from an extraordinary conjunction of eloquence and logic, was able to communicate them to the students with great effect.¹⁶¹

One does not have to look deeply to perceive Small’s influence in Jefferson’s later philosophical viewpoints. Indeed, Garry Wills maintains that many of Jefferson’s ideas about government, religion, and education were derived from the Scottish Enlightenment.¹⁶² Particularly important was the Common Sense School of Philosophy founded by Thomas Reid, cousin of John Gregory,

the mentor of William Small. Thomas Reid and John Gregory established the Aberdeen Philosophical Society, among whose members were numbered many of Small's intimates and professors. Wilber Samuel Howell maintains that elements of the Declaration of Independence are directly derived for William Duncan's *Elements of Logick*: "Not only does the Declaration of Independence conform to the structure recommended by Duncan, but also contains an important verbal echo of the *Logick*." ¹⁶³

The first steps of the laying out of a convincing argument, according to Duncan, is defining one's terms and "fixing the Signification" of the terms. The next step is "to lay down some self-evident Truths, which may serve as a Foundation for their future Reasonings."¹⁶⁴

William Duncan was William Small's professor of natural philosophy at Marischal College, and it is likely that Small brought along with him the convictions of his mentors. Scientific exploration, the just rationale of reason, the belief in the aristocracy of talent, and the tenets of the Common Sense School of Philosophy, which rejected the relativism of Skepticism, were all elements of Small's education and Jefferson's character. An analysis of the Declaration of Independence for indications of Small's influence on Jefferson is only a microscopic extrapolation from the larger picture, but a convincing and persuasive one. Again, in Howell's words:

Thus if the Declaration of Independence carries out the directions laid down by Duncan for discourse that would compel the assent of

mankind, and if its cadences, in an outstanding instance, match one of Duncan's most important logical terms, there is every reason to believe that the influence of Duncan's *Logick*, upon Jefferson is involved, and that his admired teacher, William Small, is the key figure in the transmission of that influence.¹⁶⁵

Duncan's *Elements of Logick* was a part of a larger work entitled *The Preceptor* published by Robert Dodsley in 1748. Sowerby's *Catalogue V* indicates that Jefferson owned a copy of the second edition, and that title was, as early as 1752, among the inventory of William Hunter's print shop, a major supplier of books to the College of William and Mary.¹⁶⁶

Small established important connections in Virginia for Jefferson, particularly to his future patron in the study of law, George Wythe, and to Francis Fauquier, the "ablest man ever to fill a chair of government here." According to Jefferson, Small introduced him to "his bosom friend" George Wythe, and together, the two of them brought Jefferson to the attention of the governor. Fauquier had regular and frequent dinners at the Governor's Palace and among the regular guests were Small, Wythe, and Jefferson. Fauquier likely initiated these symposia early in his residency, for it is rumored that Goronwy Owen was invited to the soirees before his political oppositions and social indiscretions excluded him from the governor's social circle. Although Fauquier had a reputation as being addicted to gambling (some said that he made it fashionable in Virginia) his dinners were dedicated to discussions of science, philosophy, and an

appreciation of music. Jefferson recalled, "With him, and at his table, Dr. Small & Mr. Wythe, his amici omnium horarum, & myself, formed a partie quarree, & to the habitual conversations on those occasions I owed much instruction."¹⁶⁷ In the beginning, it was reported, Jefferson was brought along to play the fiddle. Eventually, Jefferson was valued more for the contributions he made to conversations than to acoustics. He was delighted and flattered to be a part of such an enlightened group, and reminisced fondly about them:

They were inseparable friends, and at their frequent dinners with the Governor, (after his family had returned to England,) he admitted me always, to make it a partie quarrae. At those dinners I have heard more good sense, more rational and philosophic conversations, than all my life besides. They were truly Attic societies.¹⁶⁸

This triumvirate of Small, Wythe and Fauquier influenced Jefferson in ways more profound than mere intellectual attainments; they went to the core of his character. Jefferson himself saw their influence upon him as paramount. His statement that Small had "probably fix'd the destinies of my life" was not made without conviction. Later in his life he wrote to his grandson about the impact of this group:

I had the good fortune to become acquainted very early with some characters of very high standing, and to feel the incessant wish that I

could ever become what they were. Under temptations and difficulties, I would ask myself what would Dr. Small, Mr. Wythe, Peyton Randolph do in this situation? What course in it will assure me their approbation? I am certain that this mode of deciding my conduct, tended more to correctness than any reasoning powers I possessed. Knowing the even and dignified line they pursued, I could never doubt for a moment which of the two courses would be in character for them. Whereas, seeking the same object through a process of moral reasoning, and with the jaundiced eye of youth, I should have often erred. From the circumstances of my position, I was often thrown into the society of horse racers, card players, fox hunters, scientific and professional men, and of dignified men; and many a time have I asked myself, in the enthusiastic moment of the death of a fox, the victory of a favorite horse, the issue of a question eloquently argued at the bar, or in the great council of the nation, well, which kinds of reputation should I prefer? That of a horse jockey? A fox hunter? An orator? Or an honest advocate of my country's rights. Be assured, my dear Jefferson, that these little returns into ourselves, this self-catechising habit, is not trifling or useless, but leads to prudent selection and a steady pursuit of what is right.¹⁶⁹

Thomas Jefferson kept in contact with his old mentor from his college days until Small's death in 1775. The last letter that Jefferson sent to Small was

written in May of 1775. Jefferson, unaware that Small had died two months earlier, sent him six bottles of Madeira wine and an expressed wish that the turbulent politics of the day and the revolution that Jefferson knew would come soon, would not damage their longstanding relationship. Jefferson closed his letter with the following:

But I am getting into politics tho' I sat down only to ask your acceptance of the wine, and express my constant wishes for your happiness. This however seems secured by your philosophy and peaceful vocation. I shall still hope that amidst public dissension private friendship may be preserved inviolate.¹⁷⁰

In February of 1770, Shadwell, the Jefferson plantation burnt down and with it Jefferson's books and papers. Shortly after the fire Jefferson wrote to his old friend John Page:

My late loss may perhaps have reac[hed y]ou by this time, I mean the loss of my mother's house by fire, and in it, of every pa[per I] had in the world, and almost every book. On a reasonable estimate I calculate the[e cost o]f t[he b]ooks burned to have been £200 sterling. Would to god it had been the money [;then] had it never cost me a sigh! To make the loss more sensible it fell principally on m[y books] of common law, of which I have but one left, at that time lent out. Of

papers too of every kind I am destitute. All of these, whether public or private, of business or of amusement have perished in the flames.¹⁷¹

How many of William Small's letters were consumed by those flames will never be known, but in all probability there were more than several. That Jefferson knew where Small lived, what occupations he held, and what his current views were, indicate at least sporadic communication between them.

John Page was also a former student of Small's. Although they do not seem to have had as close a relationship as Small and Jefferson, nevertheless the impression that Small made on John Page was indelible. In response to a series of questions posed by Skelton Jones, who was in the process of completing John Daly Burk's *History of Virginia*,¹⁷² Page revealed much about the educational and personal influence of William Small. In these notes he refers to Small as "my ever to be beloved professor."¹⁷³

To Skelton Jone's query, "What studies most engrossed your attention?" Page responded,

Before I had the benefit of a Philosophical education at the College with Mr. Jefferson, Mr. Walker, Dabney Carr and others, under the illustrious Professor of Mathematics, Wm. Small, Esquire, and afterwards well known as the great Dr. Small of Birmingham, the darling friend of Darwin, history and particularly military and naval history, attracted my attention. But afterwards, natural and

experimental Philosophy. Mechanics, and in short every branch of Mathematics, particularly Algebra and Geometry, warmly engaged my attention, till they led me to Astronomy, to which after I had left college till sometime after I was married, I devoted all my time.¹⁷⁴

Page also claimed that he was a poor student: "I never thought that I had made any great proficiency in any study, for I was too sociable and fond of conversation."¹⁷⁵ Nevertheless, as late as 1771, he was still consumed with astronomy, for which Jefferson chided him, "Am I never more to have a letter from you? Why the devil don't you write? But I suppose you are always on the moon, or some of the planetary regions....If your spirit is too elevated to advert to sublunary subjects, depute my friend Mrs. Page to support your correspondencies."¹⁷⁶

Much information concerning Small and the College of William and Mary can be found in a series of letters by Walter Jones, a classmate of Page and Jefferson. After being a scholar at grammar school, Jones entered into the philosophy school, where he studied with Small and later also with Small and Richard Graham. His letters revealed his impressions of Small as a teacher and provided details of his studies and even his texts. In the following extract, Jones described the progress in his classes and compared the teaching effectiveness of William Small and Richard Graham:

I can with the greatest Satisfaction Acquaint you that I have been

under Mr Small's Tuition ever since I saw you, without losing any considerable Time by whose Methods & my own Diligence I have made tolerable Progress in Algebra. I expect by Christmas to be very well acquainted with Surveying, and all the Arts which will be serviceable in Life; tho it is impossible I should advance to the most Learned Branches in that Time.~ As to the Languages I must depend on myself for all improvement I shall make hereafter in them, As Mr Graham is altogether unqualified to instruct in either. ¹⁷⁷

Walter Jones arrived at William and Mary on February 12, 1760.¹⁷⁸ Grammar Master William Webb probably resigned before Jones began classes, and it is likely that William Yates was recruited for the position of grammar master for the Easter Term of 1760.¹⁷⁹ After the return of Richard Graham for the Trinity Term in 1761, Walter Jones still turned to Small for guidance and assistance in progressing with his studies. He wrote to his brother Thomas, "nor are [there] any other Books which I have purchased [since], only such as Mr Small said there was an immediate Necessity of getting immediately."¹⁸⁰ Jones wrote of several of the books that he was buying at Small's direction and there is an extant bill for some of the books he purchased in 1760 and 1761. One of the books, *Martial's Epigrams*¹⁸¹, was purchased on April 29, 1760, and was likely used for the Easter Term of William Yate's class. Three books purchased during the Trinity Session (probably at William Small's direction) were: *Caesar*, *Crosiet Figures Constructed*, and *Sententiae Graeciae*.¹⁸² In the Hillary Term of 1761

Xenophon was being read; for the Easter Session, *Cicero*; and for Trinity Term, *Anacreon*.¹⁸³ No references have been found for the first two sessions of 1762, but Jones wrote his brother in June he was working on *Juvenal*¹⁸⁴ and, in July, he recommended to his brother a gardening book called *Millar's Abridgement* and mentioned the purchase of *Ainsworth's Dictionary*.¹⁸⁵ The importance in these books lies not only in the partial glimpse they give into the subjects that Small was teaching at this time, but also the possible identity of some of the books that Jefferson lost in a 1770 fire at the family homestead, Shadwell, for Jefferson also was Small's student during this time and was likely studying the same subjects and purchasing the same books. *Millar's Abridgement* shows up on several lists of books recommended by Jefferson.

Jones' letters also give an insight to the lessons themselves. Here he describes an exercise he had to prepare for class:

I proceeded about six o'clock to the College where I found my Task to be a Latin Theme two sides of Paper in length. [A set] of twelve hexameters and pentameter verses & forty Lines to get in Juvenal by heart which the rest of the class did with great difficulty tho' they had Saturday & Sunday more to do it than I, which proceeded from our getting double Lessons in Juvenal that we might get out before the Holidays.¹⁸⁶

The lessons in Latin and Greek progressed in a logical sequence according

to degree of difficulty. The Latin lessons progressed from *Epigrams* in 1760, to *Caesar* in 1761, to *Cicero* in 1762, and finally poetry and *Juvenal* in 1763. The Greek lessons proceeded in like fashion, in 1761 *Sententiae Graeciae*, which was likely a progressive compendium of extracts from Greek literature used to demonstrate grammatical constructions, in the Hillary Term of 1762 moderately difficult prose, *Xenaphon*, and for the long Trinity Session, poetry, *Anacreon*. Finally, by the spring of 1763, Walter Jones was sufficiently versed in Greek to forsake the clumsy efforts of an inept teacher and to tackle Homer with only the help of Pope's *Translation* and a *Classis Homerica*.

If Small proceeded in other subjects with the same degree of competence and logical progression, the praise he received from his students, and even from some of his detractors, regarding his instructional abilities, was well deserved.

Other connections to Marischal College and the Aberdeen Philosophical Society may include the poetry of Ossian and of Ogilvie. Jefferson owned copies of both works, and he considered Ossian the finest poet that ever lived, "more sublime" than Homer.¹⁸⁷ The poetry of Ossian was represented as a collection of ancient manuscripts written by a Gaelic chieftain who resisted the foreign occupation of North Britain by the Romans. Jefferson seems to have been charmed by its meter and imagery and drawn in by its philosophy. He wrote to Charles MacPherson, a kinsman of James MacPherson, the true author of the poems,¹⁸⁸ "I am not ashamed to own that I think this rude bard of the North the greatest poet that has ever existed."¹⁸⁹ MacPherson collected snatches of old Gaelic poetry and, in time, fashioned them into a cohesive set of epic poems that

stretched out into eight volumes. Charles MacPherson, resided in Virginia for some time where he met Jefferson.¹⁹⁰ Since the first edition of Ossian's poetry was not published until 1765,¹⁹¹ it is possible that Jefferson was introduced to the poems through his old mentor William Small, who, by this time, was back in London and *au courant* with the latest works of literature.

In 1773 Jefferson wrote to Charles MacPherson to obtain a copy of the original manuscripts: "I would choose it in a fair, round hand, on fine paper, with a good margin, bound in parchment as elegantly as possible, lettered on the back, and marbled or gilt on the edges of the leaves."¹⁹² Jefferson was also desirous of learning the original Gaelic in which the poems were sung. Charles MacPherson wrote back in August that he applied to James MacPherson for copies of the originals but he had been rebuffed by James MacPherson, who claimed he could not, "having refused them to so many, give a copy of the Gaelic poems with any decency out of my hands."¹⁹³ Charles enclosed the letter that James sent from London, perhaps because it contained a reference to a mutual friend. James MacPherson wrote in his letter, "I have heard from your friend William once. I suppose he has, now, dived behind his hills." The William may have been Small, and the hills, Scotland.

Jefferson was not the only one to be taken in by this literary fraud, even the great Samuel Johnson was a believer. This was not the first time, for Johnson had been duped by an earlier and more infamous fraud, William Lauder. In 1749, William Lauder published an attack on the poet Milton, accusing him of plagiarizing the works of ancient Romans and Greeks, and persuaded Johnson to

endorse his claims. Coincidentally, Lauder taught at Dundee Grammar School while William Small was in attendance and may have been one of his teachers for several years.

Jefferson also relentlessly petitioned a variety of sources to obtain a parish for a Scot by the name of James Ogilvie. Ogilvie's father, William, was not only a poet admired by Jefferson, but also hailed from Aberdeen and was a professor of natural philosophy at King's College, Marishal's sister institution. He likely was also a member of the Aberdeen Philosophical Society. It is not improbable that James Ogilvie came to know Jefferson through a connection with Small.

Small's Medical Practice

Several studies previously addressed Small's medical career in Virginia, but in rather amorphous ways.¹⁹⁴ Many elements of Small's medical training still remain inconclusive, and little is known at this point about Small's medical practice while in Virginia, although there are several references to it in documents from that period. One reference came in a letter from Robert Carter Nicholas, who wrote that when Small first came to Virginia he seemed pleased with his situation, but:

you were at this Time only Mr. Small & had not assumed the Title of Dr. which soon after magnified your Importance, chiefly in your own Eyes, tho', it must be confessed that you were Master of the Art

enough to insinuate yourself into the favr. of some of the principal Gentlemen of the Country, most of whom, tho' they had not the Penetration enough to see thro' your Disguise at first, are now thoroughly convinced of the Delusion.¹⁹⁵

Several interesting statements in this letter include: Small did not begin to practice medicine until some time after his arrival in Virginia, he numbered among his patients many of the wealthier and more influential of the citizens, he was generally well regarded in relation to the medical profession, and that he had “practiced for a while.”

The second letter from Dudley Digges complained that Small had not returned to his post after eight months as promised, and reiterated the claim that Small was practicing medicine:

He sometime afterwards took it into his Head to commence Physician, and not only practiced in the City of Williamsburgh, but also in many distant Parts of the Country; how consistent this was with his Duty, your Lordship may judge; it was however connived at for a While.¹⁹⁶

This letter indicates that Small had taken it into his head “to commence Physician” and that he practiced not only in town but also “in many distant Parts of the Country.” This indicates that Small established a substantial reputation within the colony and maintained a sizeable clientele.

A letter from Nathaniel Jeffreys confirmed that Small had maintained a medical practice in Virginia for some time and had great success, “Dr. Wm. Small who has been settled some years at Virginia as a Phisician, and with great success & was the same time proffesser of Mathematicks in the Colledge of Williamsburgh...”¹⁹⁷

In the will of William Hunter, Small is left a mourning ring as a symbol of Hunter’s friendship, and he was also left a special bequest that seems to indicate that Small was his attending physician during the last days of his life. The bequest noted that Hunter expressed a desire that his executors should pay William Small £100 in “Current Money” as a token of friendship and the esteem “Which Directions were given by the Said [to] William Hunter during his last Sickness.”¹⁹⁸

The statement may be interpreted in two ways; the first, “Which Directions were given by the Said [to] William Hunter during his last Illness,” indicates that Small provided medical advice for Hunter in his dying days; the second, “Which Directions were given by the Said William Hunter during his last Illness,” indicates that William Hunter was giving the directions himself. It should be noted, however, that Nathaniel Jeffreys comments about Small’s abilities as a doctor may be supported by Hunter’s will. It may be concluded that William Hunter left Small a mourning ring as a legacy of their friendship, as he did his nine other closest friends and left £100 to him as a bonus for his medical services. Franklin was the only other non-relation to receive a legacy of cash and he was a co-executor of the will and guardian of Hunter’s natural son.

Small Departs for England

In December 1762, the House of Burgesses appropriated £450 for the purpose of purchasing “a proper Apparatus for the Instruction of the Students of the College in Natural and Experimental Philosophy.”¹⁹⁹ This was a considerable sum, and the evidence suggests that it was Small, with the influence of Governor Fauquier, who provided the impetus for this grant.²⁰⁰ The Burgesses may have been encouraged by the enthusiasm of their sons for Small’s demonstrations and exercises in experimental philosophy, and some members may have participated in the scientific club Small reportedly fostered during his years at Williamsburg. Small quickly volunteered to select the equipment, and was probably elated at the prospect of such a trip. He applied to the Board of Visitors for a leave of absence, but was refused. As Dudley Digges was to relate at a later date:

Our Assembly some Years ago gave the Visitors £450 sterl. To purchase an Apparatus for the use of the College; Mr Small, judging this a favourable Opportunity, proposed to the Visitors to go to England to purchase it, and presuming upon his Interest with them, informed the Visitors that he had a Prospect of doing Some thing advantageous for himself; if he succeeded, he should remain in England, and would desire Nothing for his Trouble in buying this Apparatus, but if not, he expected a Continuance of his Salary, til his

Return, his Absence we were given to understand would not exceed eighteen Months.²⁰¹

Either because eighteen months was too long a period for Small to be gone, or because of the imprudence of leaving the administration of the upper school in the hands of Richard Graham, a professor who was in the process of litigating against the Board of Visitors and whose academic reputation was anemic, the Board denied Small's generous but self-serving offer. Undeterred Small again approached the Board with a written petition, and again with the same result. Dudley Digges wrote to the Bishop of London:

This Gentleman much displeas'd that we did not close with his Proposal, at a succeeding Visitation regarding the Application in a written Paper, pen'd more with an Air of Remonstrance than any Thing else, and taxing us with Ingratitude and Inattention to his past Services. The Matter concluded as before.²⁰²

The second refusal likely came in the spring of 1763, about the same time that Benjamin Franklin journeyed to Williamsburg to act as an executor for William Hunter's will. Small persevered, as evidenced when Robert Carter Nicholas wrote to Small in 1767, "you had repeatedly asked Leave of the Visitors in several of their Meetings to go to England, under the Pretense of buying the Apparatus; but chiefly to try yr Fortune else where."²⁰³ Despite numerous

attempts the request was still denied. Finally, Small took another approach, according to Nicholas, "You then made a different Attack, applied to such of the Visitors as you thought fit, pretended that some very urgent Business required your immediate Presence in England & promised to return to the College in 8 Months at all Events."²⁰⁴ Nicholas then accused Small of plotting to seek other opportunities in England with the College paying him a salary, and if he could find nothing more agreeable then he would return to Virginia:

This can be proved, tho' to some of your Cronies it was very well known at the very Time that you had no Design of returning if you could fall into any other Way more agreeable; thus you obtain'd the End proposed in your fruitless Applications to the Visitation, by a Piece of Art which every honest Man would despise; you gain'd an Opportunity of seeking your Fortune in England & if nothing better turn'd up poor William & Mary was once more to be bless'd with your Company.²⁰⁵

In spite of the assertions both by Dudley Digges and Robert Carter Nicholas, it seems as if Small was indeed contemplating a return to Virginia. In March of 1765, Small informed Stephen Hawtrej, an acquaintance, that he was planning a return to "Williamsburg the Middle of May."²⁰⁶

Still, Robert Carter Nicholas wrote to Small excoriating him for not returning to William and Mary as promised and for excusing his actions on false

pretences of “frustrated ambition.”

You seem to arrogate some Merit to yourself for being inclined to give as little Trouble as possible by accepting the first vacant Professorship though not agreeable to you after you had lost the only one which you say would originally have brt you from England; provided you could have been admitted without swearing to comply with a Regulation you never can think conformable either to the Rights given by the Charter to the Professors or to the Good of the College.²⁰⁷

Although Small had officiated in both natural and moral philosophy before the return of Richard Graham, there can hardly be any doubt that his true love was natural philosophy. There is also little doubt that Small would have viewed a switch from natural philosophy to moral philosophy with anything other than disappointment. All of Small’s actions during his time at William and Mary indicated that he approached natural philosophy with much greater interest than any other subject. This is borne out in the excitement he transmitted to his students, in the attempts to encourage extracurricular involvement in the sciences among both his students and his friends, and in his repeated efforts to obtain the finest scientific equipment available for the college.

Near the end of September 1765 Small was set to embark for England when news came of the death of President Yates. Digges reported:

Just before he embarked, Mr. Yates died; from Hampton where he [Small] proposed to take shipping, he wrote circular Letters to the Visitors, desiring to succeed to the Presidency, he knew that a Statute coeval with the College, and which was intended by the Founders the corner Stone and Pillar of her Orthodoxy, stood in his way, we mean that Statute which declares that the President should be a Minister in the Church of England; but this he had the Confidence to hope might be repealed.²⁰⁸

When Nicholas wrote to Small he insisted that Small's aversion to the Visitors' Statute arose not from any philosophical basis but from the provision which forbade professors from exercising "any Employment out of the College, which for some Time had been the principal Object of your Attention, & the Affairs of your School [being] regarded only in a secondary View." Nicholas continued his point, "We must consider your Dislike to the Statute as taking its Rise chiefly from this Source; or else how can you reconcile your soliciting the Presidentship upon the death of Mr. Yates, just before you embarked for England, to so settled an Aversion to a Statute, which you must have sworn Obedience to, before you exercised that Office."²⁰⁹

Small likely departed from Hampton around September 20, 1764. Several factors indicate this date; President Yates died around the middle of September; an entry in the ledger of the Bursar of the College of William and Mary indicated a payment to William Small's laundress, "To Washing 5 years & 345 days at 50s

per Annum”; and Small’s date of arrival in England. Small took his oaths of office upon arrival in Virginia, being already well into the Trinity term, October 18, 1758. Assuming that Small, on arrival, took a week to get situated, and packed up a week before departure, laundry service would have stopped in the middle of September. Finally, Benjamin Franklin received a letter in Philadelphia from his old friend Alexander Small in London dated December 1, 1764. In this letter Alexander Small wrote, “My Namesake the Virginia Professor is here; and desires to be most particularly remembered to you.”²¹⁰ Since the voyage was ten weeks from Virginia to London, and assuming that the home of Alexander Small was William Small’s first stop, the latest Small could have departed from Hampton was the end of September.

Summary

Important issues that arise in connection with this segment of Small’s life are: the circumstances that were in place to make Small’s recruitment for a post at the College of William and Mary feasible, how Small’s educational background prepared him to direct the entire curriculum of the upper school at William and Mary, and Small’s impact and influence on his students.

Circumstances that made the recruitment of William Small viable stem from two separate, but not unrelated sources. The first set of circumstances was the inherent conflict between the faculty and the Board of Visitors that was implicit in the constitution of the college, which called for a dual set of controls.

Each faction was jealous of its prerogatives and domains of responsibility, and since the Board of Visitors controlled the internal governance of the college and status of employment, they usually had the upper hand. The second set of circumstances pertained to the increasing demands of local authorities to control local affairs and the resistance to these demands by elements of the English establishment, which was represented primarily by the Anglican clergy.

In regard to the first set of circumstances, the conflicts between local authorities and the establishment clergy, there were several incidents that increased the tensions between the two sides; the case of the Reverend Mr. Kay, the Two Penny Acts, and the Brunskill case. In the first instance, the Reverend Mr. Kay was illegally discharge from his church by the powerful vestryman Colonel Landon Carter and it took several years and the ultimate authority of the Privy Council to exact restitution. In the second incident, the House of Burgesses passed the Two Penny Acts to allow the government to pay its employees in script rather than in the normal fashion, with tobacco. Since the French and Indian War caused the price of tobacco to soar, and since the clergy were government employees, they, and particularly the faculty of William and Mary, complained loudly. This action decreased the clergy's popularity with the local population and infuriated members of the House of Burgesses, some of whom also sat on the Board of Visitors. In the third incident, John Brunskill was appointed minister to Varina parish, but had proved himself of such a depraved character that the vestry petitioned the governor to remove him. Normally this would have been the function of the Bishop of London's commissary, but, as the Bishop of London

had not yet appointed a replacement to the commissary and the governor thought the situation so serious, he removed the offending minister himself. The clergy insisted that the governor was the real culprit for usurping the ecclesiastical rights of the church and, one by one, invited the dismissed cleric to preach from their pulpits. Particularly supportive of Brunskill were faculty of William and Mary.

The second set of circumstances centered around the desire of the faculty of the College of William and Mary to be under the direct supervision of the Bishop of London, who was usually sympathetic to their needs, rather than to members the Board of Visitors, who were consistently antagonistic. Letters to the Bishop of London from both sides during this era attest to the puerile, personal, and petty nature of this conflict. The constitution of the college set up a dual set of controls which gave the faculty power over academic affairs and most of the college revenues and the Board of Visitors power over the internal governance and mission of the school and the employment status of the faculty. This duality led to a disjunction between form and function that made disagreements inevitable. The faculty, all clergy from either Oxford or Cambridge, supported one another and spoke with a unified voice against the demands of the Board of Visitors. After many instances of their intransigence and rebellious attitudes, the Board determined to break up their hegemony.

The culminating event that presented an opportunity to the Board of Visitors was the dismissal of two ushers from the grammar school. The master of the grammar school, Thomas Robinson, dismissed the two ushers for negligence of duty and for bullying the younger students. However, the ushers, Matthew

Hubard and Cole Digges, had family connections to the Board of Visitors, and those relations were determined to exact revenge. When Robinson took ill in the summer of 1757, the Board fired him for negligence of duty and asked the Bishop of London to send over a replacement and that the replacement be a lay-man. So incandescent were the other members of the faculty over the inequity of this matter that they refused to accept the Board's authority in regard to this situation and one professor resigned in protest. Although one belligerent member of the faculty recanted his former views and associations, the rest of the faculty was dismissed. The Bishop of London's subordinate, Dr. Nicholls, was charged with finding a replacement for the professor of mathematics with the appropriate prerequisites, namely that he was a layman, and thus, Small was recruited.

It was a more fortunate selection than Dr. Nicholls or the Board of Visitors could have imagined, for Small had received a rigorous and progressive education at two institutions, Dundee Grammar School and Marischal College, which emphasized a scientific and rational approach to studies. The two other replacements, Goronwy Owen and Jacob Rowe, however, were not such wonderful finds. In less than two years, by strident opposition to the Two Penny Acts and incredibly adolescent behavior, they had made themselves so obnoxious to the Board of Visitors that they were dismissed, leaving only a perpetually intoxicated president, a disgraced Indian master, and William Small to manage the college. Fortunately, Small's instruction at Marischal had well prepared him for such an eventuality. Having a free hand in the management of the upper school, he introduced the new lecture system, the study of belles-lettres,

demonstrations in experimental philosophy, and astronomical observations to the curriculum.

Testimony from former students and suggestions gleaned from the inventory of the scientific apparatus that Small purchased for the college give an indication of the emphasis on science and the diversity of subjects which Small pursued during his administration of the philosophy school. Letters from Thomas Jefferson, John Page and Walter Jones attest to Small's efficiency as a teacher and influence as a friend. Small's impact on Jefferson can also be seen in the logic, philosophy, and words of the Declaration of Independence and in the curriculum of an incipient University of Virginia, in John Page's obsession with astronomy, and in Walter Jones' medical training at the University of Edinburgh under the tutelage of Small's old mentor, John Gregory.

The friendships that Small made while he was in Williamsburg would reappear at critical junctures throughout the rest of his life. Especially important was his relationship with Benjamin Franklin, whom he met in Williamsburg in the spring of 1763. Franklin would repeatedly appear in Small's life in the role of a mentor and advocate. Franklin's influence, if not person, was ubiquitous in the later story of Small's life.

Small's departure from Virginia in September of 1764 was seen by some as a clever plot to escape the torments of the Board of Visitors and by others as the beginning of the most productive and important stage of Small's life.

Endnotes Chapter 5

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- 1 A. Bailey Cutts, "The Educational Influence of Aberdeen in Seventeenth Century Virginia," *William and Mary Quarterly*, Vol. 15, Issue 3 (July 1935), 229.
 - 2 *Ibid.*, 231.
 - 3 Robert Polk Thomson, "The Reform of the College of William and Mary," *Proceedings of the American Philosophical Society*, Vol. 115, No. 3 (June, 1971), 188.
 - 4 Cutts, 229.
 - 5 Thomson, 188.
 - 6 William Carpenter, *Thomas Sherlock, 1678-1761* (London: The Society for the Promotion of Christian Knowledge, 1936), 191.
 - 7 The oaths included the Assent to the Articles of the Church of England, the oath de fidei Administratione, and three articles from the 36th Canon. "Journal of the Meetings of the President and Masters of William and Mary College. 17 June 1758," *William and Mary Quarterly* No.3 (July 1894), 60.
 - 8 Carpenter, 195; 199.
 - 9 *Ibid.*, 148. Richard Cumberland writing in his memoirs related that he visited Sherlock in 1754 and found that he "looks shockingly stupid, is so vastly deaf, and so feeble that he cannot rise from his chair without assistance."
 - 10 Susan Godson, Ludwell Johnson, Richard Sherman, Thad Tate, and Helen Walker, *The College of William and Mary* (Williamsburg: King and Queen Press, 1998), 85
 - 11 William S. Perry, *Historical Collections Relating to the American Church* (New York: AMS Press, 1870), 389.
 - 12 *Ibid.*, 392.
 - 13 John Dos Passos, *The Heart and Head of Jefferson* (Garden City: Doubleday & Co., 1954), 83-84.
 - 14 Letter Francis Fauquier to Sam Nicholls. 29 July 1761, in *The Official Paper of Francis Fauquier*, Vol. II, ed. by George Reese (Charlottesville: University of Virginia Press, 1983), 552.
 - 15 "New Light" was a perjorative term that colonial Anglican clergy used to describe emerging Protestant sects such as Baptists and Methodists.
 - 16 J.E. Morpurgo, *Their Majesties Royal Collidge : the College of William and Mary in the Seventeenth and Eighteenth Centuries* (Washington D.C.: Hennage Creative Printers, 1976), 121.
 - 17 *Ibid.*, 122.
 - 18 *Ibid.*, 122.
 - 19 "Meeting of the Board of Visitors," 20 May 1757, Ganter Collection, Box III, Folder 20, Archives, Swem Library, College of William and Mary.
 - 20 Samuel Nicholls (ca.1713-1763) was at the time chaplain to the king, a prebend of St. Paul's, and master of the Temple, and apparently active in the business of the Society for the Propagation of the Gospel. George Reese (ed.) *The Official Papers of Francis Fauquier: 1758-1768*, Vol. II (Charlottesville: The University Press of Virginia, 1981), 521; Personal Correspondence. S.J.C. Taylor to Martin Clagett, 5 September 1998. "I think the explanation for Nicholl's involvement (in recruiting and

- recommending candidates for faculty positions at the College of William and Mary) is fairly simple. Nicholls was also chaplain to Thomas Sherlock, the Bishop of London and his successor as master of the Temple. By the mid- 1750s it seems that Nicholls was conducting most of Sherlock's correspondence with the colonies--Sherlock was, by this time, old and increasingly disabled." ; *vide quoque* - Edward Carpenter, *Thomas Sherlock:1658-1761* (New York : The MacMillan Company, 1936).
- 21 Robert Dinwiddie to Thomas Dawson, 14 March 1758, Dawson Papers, Box III, Folder 9, Library of Congress.
- 22 Robert Dinwiddie to Thomas Dawson, 24 June 1758, Dawson Papers, Box III, Folder 9, Library of Congress.
- 23 Thomson,189.
- 24 Richard Graham to the Bursar of Queen's College Oxford, 16 September 1760, Ganter Collection, Box III, Folder 17, Archives, Swem Library, College of William and Mary .
- 25 Stephen Hawtrey to Edward Hawtrey, 26 March 1765, Faculty-Alumni File, Archives, Swem Library, College of William and Mary.
- 26 Dudley Digges to the Bishop of London, 15 July 1767, Fulham Palace Papers, Box II, No.23, Lambeth Palace Library, London.
- 27 Dudley Digges [Robert Carter Nicholas] to William Small, 25 June 1767, Edgehill-Randolph Collection, Alderman Library, University of Virginia.
- 28 See. Agnes Stewart, *The Academic Gregories* (New York: Charles Scribner's Sons, 1902); Emily Climenson, *Elizabeth Montagu: The Queen of the Blue-Stockings* (London, John Murray, 1906); Courtesy Dr. Andrew Doig. G.A.G. Mitchell. "The Medical History of Aberdeen and Its Universities," *The Aberdeen University Review*, Vol. XXXVII, No. 118 (Spring, 1958).
- 29 At a meeting at the University of Birmingham on 17 November 2002, Dame Rachel Waterhouse Ph.D in Medical History raised a question regarding Small's medical training. She maintained that a medical degree in that era was not a guarantee of medical expertise. Dr Andrew Doig, a Gregory expert, in a subsequent interview, maintained that several factors almost certainly attested to Small's training 1) he began a successful medical career while in Virginia, 2) upon return to England he established, almost immediately a successful practice in Birmingham, and 3) John Gregory was vocal advocate for professionalism in the medical profession and would not have recommended an unqualified candidate for a medical degree.
- 30 "And at eight in the evening we came to anchor in the York river, after a tedious and disagreeable voyage of almost ten weeks." - Andrew Burnaby, *Travels Through the Middle Settlements in North-America* (Ithaca: Great Seal Books, 1960), 4 [originally published London: T. Payne, 1775]; "I arrived here the 5th Instant after a Passage of Ten Weeks from London." - William Hunter to Mrs. Benjamin Franklin. Williamsburg, Virginia, 22 July 1759, Archives, American Philosophical Society, Philadelphia, Pennsylvania.
- 31 "Journal of the Meetings of the President and Masters of William and Mary College," 18 October 1758, *William and Mary Quarterly*, Vol. 3, Issue 1 (July 1894) 60.
- 32 Stephen Hawtrey to Ned Hawtrey, 26 March 1765.
- 33 *Ibid.*
- 34 Burnaby, 4.
- 35 Anonymous. Translated by George Tucker. Letters From Virginia. (Baltimore: Fielding Lewis, 1816), Letter XIV.
- 36 Burnaby,4.

37 *Ibid.*,5.

38 Digges to the Bishop of London, 15 July 1767.

39 "Journal of the Meetings of the President and Masters of William and Mary College," 18 October 1758, *William and Mary Quarterly*, Vol. 3, Issue 1 (July 1894), 60.

40 Godson, 100.

41 Dumas Malone, *Jefferson the Virginian* (Boston: Little and Company, 1948), 51. In a work entitled [Letters from Virginia. Trans. by George Tucker. Baltimore: Fielding Lucas, 1816] which is said to have been written by an unnamed Frenchman in the first decade of the eighteenth century and translated into the English by George Tucker. In Letter XIV it is written "Then for the College, and the Hospital, the same writer, with more than his usual accuracy, describes them as being "wide, misshapen piles which, but that they have roofs, would be taken for brick-kilns." The resemblance between the quotes is striking and a suggestion might be made that Jefferson himself had a hand in the work. George Tucker, handpicked by Jefferson for Moral Philosophy, was an original member of the faculty of the University of Virginia serving from 1819 to 1859. The copy used in this study had a University of Virginia library seal dated 1819, identical to the seal in the Rockfish Gap Report, the first year that the University had students and books.

42 George Tucker, Letter XV.

43 Lyon G. Tyler, "Early Courses and Professors at William and Mary College," *William and Mary Quarterly*, Vol.14, Issue 2 (October 1905), 73.

44 George Tucker, Letter XV.

45 Stephen Hawtrey to Ned Hawtrey, 26 March 1765.

46 Edward Hawtrey, who came to the College of William and Mary shortly after Small left wrote his benefactor, the Bishop of London "Mr. Horrocks telis me that I may expect to receive £180 Sterling per Ann: besides what I shall save by having my rooms to live in & breakfast & dinner & supper found me by the College." Edward Hawtrey to the Bishop of London, 2 October 1765, Fulham Palace Papers, Virginia, Box 13, No. 161, Library of Congress, Washington, D.C.

47 Morpurgo,132.

48 *Ibid.*, 133.

49 "Journal of the Meetings,"18 October 1758, 60.

50 *Ibid.*, 60.

51 Walter Jones to Thomas Jones. Williamsburg. (No Date). Jones Family Papers. Library of Congress.

52 "Journal of the Meetings of the President and Masters of William and Mary College," 9 February 1763, *William and Mary Quarterly*, Vol. 3, No. 4 (April 1895), 263.

53 *Ibid.*,264.

54 "Journal of the Meetings of the President and Masters of William and Mary College," 30 March 1759, *William and Mary Quarterly*, Vol. 3, No. 1 (July 1894), 63.

55 "Journal of the Meetings," 9 February 1763, 264.

56 Records indicate that the Pages frequently hosted favored professors for dinner at their estate Rosewell. In a response to questions posed by Skelton Jones concerning his history, John Page wrote late in his life, "At College, I lived with the President [Thomas Dawson] who my father had feed (sic) handsomely."- William Allen. (ed.) *American Biographical Dictionary*. 1809. s.v. "Letter of Questions Posed to John Page from Skelton Jones." Tipped in between pages 464-465. Originally pages 3 -

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12. Special Collections. The College of William and Mary. Williamsburg, Virginia. There are reports that John Page, Thomas Jefferson and William Small conducted observations at Rosewell.
- 57 £66 to Colonel Tucker for wine, over £201 to James Blair for wine, to Joseph Chowning, tavern owner £13, and to Mrs. Shields, who is said to have served the finest meals in town, over £195. "Papers Relating to the College". *William and Mary Quarterly*, Vol. 16, Issue 3 (January 1908), 164.
- 58 Burnaby, 6.
- 59 Stephen Hawtrey to Ned Hatrey, 26 March 1765.
- 60 Journal of the Meetings," 9 February 1763 , 263.
- 61 "Papers Relating to the College", 164.
- 62 *Ibid.*,164.
- 63 Burnaby, 21-22.
- 64 Journal of the Meeting of the President and Masters, 13 May 1756.
- 65 "Journal of the Meeting of the Visitors and Governors of the College of William and Mary," 20 May 1757, Fulham Manuscripts, Virginia, Box 2, No. 58, Library of Congress.
- 66 "Meeting of the Visitors and Governors of the College of William and Mary," 4 November 1757, Fulham Manuscripts, Box 1, No. 178, Library of Congress, 8.
- 67 *Ibid.*
- 68 *Ibid.*
- 69 *Ibid.*
- 70 *Ibid.*
- 71 Morpurgo,124.
- 72 "Meeting of the Board of Visitors," 20 May 1757; See also Gov. Dinwiddie to the Bishop of London, 12 September 1757, in Perry, Vol. 1, 456.
- 73 Morpurgo,120.
- 74 "Journal of the Meetings of the Governors and Board of Visitors of the College of William and Mary," 26 April 1760, Fulham MSS, Virginia, Box 2, No. 36, Library of Congress, Washington, D.C.
- 75 "Journal of the Meetings of the Governors and Board of Visitors of the College of William and Mary," 30 April 1760, Fulham MSS, Virginia, Box 2, No. 36, Library of Congress. Washington, D.C.
- 76 "Journal of the Meetings of the Governors and Board of Visitors of the College of William and Mary," 2 May 1760, Fulham MSS, Virginia, Box 2, No. 36, Library of Congress. Washington, D.C.
- 77 "Journal of the Meetings of the Governors and Board of Visitors of the College of William and Mary," 14 August 1760, Fulham MSS, Virginia, Box 2, No. 36, Library of Congress. Washington, D.C.. It is possible that Thomas Jefferson himself may have participated in this affair.
- 78 *Ibid.*
- 79 *Ibid.*
- 80 Morpurgo,125; It is likely that his only professor besides William Small was Jacob Rowe. Jefferson arrived at college in March of 1760 and is thought to have had Jacob Rowe for one semester. Jefferson writes in several letters how easily he could have developed bad habits but was saved by the influences of William Small, George Wythe, and Francis Fauquier. In a letter to Joseph Campbell he wrote, "And, certainly, in no country is such a provision [strict supervision of adolescents] more called for than in this, as been proved from times of old, from the regular annual riots and battles between the students of William and Mary with the town boys,

before the Revolution, quorum pars fui [of whom I have been a part]. Thomas Jefferson to Joseph Cabell. 24 January 1816, in ed. by Albert Bergh, *The Writings of Thomas Jefferson*, Vol. XIV (Washington, D.C.: The Thomas Jefferson Memorial Association, 1903), 413.

81 Morpurgo, 125.

82 "Fauquier found a place for him as rector of St. Andrew's Parish, Brunswick County, a remote area south of the James River, where he remained until his death in 1769." Godson. 97.

83 Walter Jones to Thomas Jones. [No Date]. Jones Family Papers. In this letter Jones mentions Small, Graham, Yates, and Horrocks. Horrocks began teaching in the Grammar School in February of 1762 and took his oaths March 30th. The letter also references the housekeeper, known for her "Stint of Victuals & that of the very worst Sort", whom Yates had "Sett his Witts to turning out of the College." Miss Cook was dismissed July 23, 1763.

84 Morpurgo, 138.

85 "The Statutes of the College of William and Mary in Virginia," *William and Mary Quarterly*, Vol. 16, No. 4 (April 1908), 254.

86 *Ibid.*, 247.

87 "Early Courses and Professors at William and Mary College," *William and Mary Quarterly*, Vol. 14, No.2 (October 1905), 72.

88 "The Statutes", 248.

89 *Ibid.*, 248.

90 "Early Courses and Professors", 71.

91 Stephen Hawtrey to Ned Hatrey, 26 March 1765.

92 Walter Jones to Thomas Jones, 31 June 1762, Jones Family Papers, Library of Congress, Washington, D.C.

93 For the year 1763 William and Mary's Alumni Roster lists nine students that have been verified by other sources to have been Small's students [William Bland, Walter Jones, James McClurg, John Page, Edmund Pendleton, Edmund Ruffin, Brathurst Skelton, John Waller, and Lewis Burwell]. There are also 23 students who likely would have been in Small's classes and another 19 who were probably in Grammar School but may also have been among Small's students. Also some students known to have studied with Small do not appear on the roster. Collecting fees from only ten students would have provided Small with an annual income of more than £350; from twenty students more than £550. In addition his room and board was provided and he had two ushers to help with the work.

94 "Papers Relating to the College", 165.

95 Hawtrey informed the Bishop of London shortly after his arrival that there were 64 boys in the Grammar School. 64 times £20 equals £1280, plus £150 salary, plus 15 shillings per student, plus free room and board. Ned Hawtrey (Williamsburg) to the Bishop of London (London). 2 October 1765. Fulham Palace Papers, Box I, No. 101, Lambeth Palace Library, London.

96 "The Statutes", 248.

97 "Early Courses and Professors", 74.

98 "The Statutes", 248.

99 H. Lewis Ulman (ed.). *The Minutes of the Aberdeen Philosophical Society* (Aberdeen: Aberdeen University Press, 1990), 22.

100 Jefferson described Pneumatics as "the theory of air, its weight, motion, condensation, rarefaction, &c", "Report of the Commissioners for the University of Virginia." 4 August 1818. in *The Writings of Thomas Jefferson*, ed. by Merrill

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- Peterson (New York: Literary Classics of the United States, 1984), 463.
- 101 *Scot's Magazine*, Vol. XIV (December 1753), 606.
- 102 Ullman, 22.
- 103 Thomson, 202; a single errant book was left behind at William and Mary by William Small. It was entitled *The Description and Use of Globes and the Orrery* by John Harris (London: Thomas Wright, 1731), it contains notations and corrections in William Small's hand.
- 104 Jennifer E. Carter and Colin McLaren, *Crown and Gown : 1495-1995* (Aberdeen: Aberdeen University Press, 1995), 59.
- 105 Thomson, 202.
- 106 *Ibid.*, 202.
- 107 Personal Communication. Thad Tate to Martin Clagett. 8 November 2002. "The hoop-la that surrounded the ceremony awarding the medals suggests that this was the first time degrees had been granted." In 1769 the Board of Visitors had appropriated money for the casting of the medals.
- 108 Thomson, 202.
- 109 Skelton Jones Letter.
- 110 Ned Landsman, *From Colonials to Provincials: American Thought and Culture, 1680-1760* (New York: Twayne Publishers, 1997), 82.
- 111 Dudley Digges to the Bishop of London. 15 July 1767; and Dudley Digges to William Small. 25 June 1767. The second letter to William Small has been attributed to Dudley Digges but is almost certainly in the hand of Robert Carter Nicholas.
- 112 Stephen Hawtrey to Ned Hatrey, 26 March 1765.
- 115 Dudley Digges to the Bishop of London, 15 July 1767.
- 114 "Papers Relating to the College", 166-168.
- 115 Maurice Daumas. *Scientific Instruments of the Seventeenth and Eighteenth Centuries*. (New York: Praeger Publishers, 1972), 167.
- 116 *Ibid.*, 142 .
- 117 John Page to Skelton Jones in *American Biographical Dictionary*.
- 118 *Ibid.*
- 119 Dudley Digges to the Bishop of London. 15 July 1767.
- 120 *Ibid.*
- 121 "Papers Relating to the College", 164.
- 122 "Journal of the Meetings of the College of William and Mary College.". The College of William and Mary Quarterly. Vol. 3, no. 1. (1895), 196.
- 123 Walter Jones to Thomas Jones. No Date.
- 124 John Page to Skelton Jones in *American Biographical Dictionary*.
- 125 Walter Jones to Thomas Jones. No Date.
- 126 Peterson, 469.
- 127 Graham wrote the Bursar in 1760, "Pray send no more of your young Gentlemen into this wretched Land of Tyrants & Slaves." Richard Graham to Bursar of Queen's College, Oxford. 16 September 1760. Faculty and Alumni Records. Archives. Swem Library. The College of William and Mary. Williamsburg, Virginia.
- 128 Walter Jones to Thomas Jones. No Date.
- 129 Thomas Jefferson to L.H. Girardin, 15 January 1815, in Bergh, 231.
- 130 John Page compared Fauquier to Dinwiddie as being a man of "much greater judgment and learning." John Page to Skelton Jones in *American Biographical Dictionary*; Fauquier was described by John Burk in the third volume of his *History of Virginia* published in 1805 as "generous, liberal, elegant in his manner and acquirements, whose example left an impression of taste, refinement and erudition."

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- 131 Morpurgo, 136.
- 132 Francis Fauquier to William Lyttelton, 8 June 1758, in Reese, Vol. I, 20.
- 133 Address to Francis Fauquier, 12 June 1758, in Reese, Vol. I, 27.
- 134 In his will Fauquier left behind a telescope, a microscope, a solar microscope, a perambulator, a measuring wheel, a pedometer, a level, a quadrant, a plumb, and other scientific equipment. in Reese, Vol. I, xlili.
- 135 Heberden co-wrote a pamphlet on Small-Pox Inoculation with Benjamin Franklin in 1759 and consulted with William Small on medical matters 1765-1775. Benjamin Franklin and William Heberden, *Some Account of the Success of Inoculation for the Small-Pox in England and America* (London: W. Strahan, 1759).
- 136 Reese, Vol.1, xxxvi.
- 137 "Francis Fauquier's Will," *William and Mary Quarterly*, Vol. 8, No. 3 (January 1900), 174.
- 138 Thomas Jefferson to L.H. Girardin, 15 January 1815, *Writings of Thomas Jefferson*, Vol. 14 (Washington, D.C.: Thomas Jefferson Memorial Association, 1903), 232; In the inventory of his will, Francis Fauquier left to his son William "two violins, a tenor violin or viola, two violoncellos, nine bows, strings, two French horn mouthpieces...and all his musick books in Virginia and in England." Reese, Vol.1, xlviii.
- 139 Thomas Jefferson to L.H. Girardin, 15 January 1815, 231.
- 140 Peterson, 4.
- 141 York County Records, Deeds, Book V, 439-442; York County Records. Wills, Inventories, Book XX, 325-326.
- 142 Mary Goodwin, "Printing Office and Post Office Historical Report," (Williamsburg: Colonial Williamsburg Foundation, 1958), XVII.
- 143 "William Hunter to Thomas Dawson," *William and Mary Quarterly*, 2nd Series, Vol. 1, No. 1 (January 1921), 54
- 144 York Country Records, Wills and Inventories, Book XXI, 79-82. Virginia State Library. Richmond, Virginia
- 145 *Ibid.*
- 146 Robert Carter Nicholas to William Small. 25 June 1767.
- 147 It was rumored that Fauquier had obtained his Virginia post by the influence of a sympathetic Lord Anson, to whom he had lost a substantial portion of his patrimony at cards in a single night. Anson impressed by Fauquier's good sportsmanship procured for him the lucrative post of Lieutenant Governor of Virginia. See. John Daly Burk. *The History of Virginia*, Vol.3 (Petersburg: Dickson & Pescud, 1805) 233, 333-34; and George Tucker, *Life of Thomas Jefferson*, Vol. 1 (Philadelphia: Carey, Lea and Blanchard, 1837), 41-42; Sir John Barrow, *The Life of George Lord Anson* (London: 1839).
- 148 Bishop William Mead, *Old Churches, Ministers, and Families of Virginia* (Philadelphia: J.B. Lippincott Co., 1898), 348.
- 149 See. Mead, 341-348; Andrew Price, *Selim the Algerine* (Marlington: Times Book Co., 1924); "Selim the Algerine," *The West Virginia Historical Magazine* (November, 1903), 56-61; "Selim the Algerine and the People of Bath," *Times Past* (17 April 1997), 17; *West Virginia Historical Encyclopedia* (Richwood: Jim Comstock, 1976), 4282-4283; Robert Doares, "But for the Savior, I could not bear it," *Colonial Williamsburg Magazine* (Summer 2002); Hezekiah Butterworth *In the Days of Jefferson* (New York: Appleton, 1900); John Blair to Lord Hillsborough, 12 July 1768, Ganter Collection, Swem Library, Archives, College of William and Mary, Williamsburg, Virginia.

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- 150 Benjamin Franklin to Anthony Todd. 14 April 1763. Leonard Labaree (ed.) . *The Papers of Benjamin Franklin*. Vol.10 (New Haven: Yale University Press, 1966), 252;
- 151 Benjamin Franklin to Richard Jackson. 17 April 1763. in Labaree, 254.
- 152 "Being but four days from Philadelphia to Col. Hunter's [William Hunter's brother]." Benjamin Franklin to Deborah Franklin. 30 March 1756. in Albert Henry Smith, 332-333.
- 153 See Reese, Vol. II, 673, n.4.
- 154 Benjamin Franklin to William Strahan. 9 May 1763. Labaree, 254.
- 155 Alexander Small to Benjamin Franklin, 1 December 1764, Franklin Papers, 1/110, Archives of the American Philosophical Society, Philadelphia, Pennsylvania.
- 156 See appendices Figure 5 for a listing of the masters of the College of William and Mary 1756-1765.
- 157 Peterson, 4.
- 158 Thomas Jefferson to Thomas Jefferson Randolph, 25 November 1808, in *The Life and Selected Writings of Thomas Jefferson*, ed. by Adrienne Koch and William Peden (New York: Random House, 1944), 540-541.
- 159 Thomas Jefferson to L.H. Girardin, 15 January 1815, in Bergh, 231.
- 160 "Report of the Commissioners for the University of Virginia," 4 August 1818, in Peterson, 469.
- 161 Thomas Jefferson to L.H. Girardin, 15 January 1815, in Bergh, 231.
- 162 Gary Wills, *Inventing America : Jefferson's Declaration of Independence* (Garden City: Doubleday, 1978)
- 163 Wilber S Howell, "The Declaration of Independence and Eighteenth-Century Logic." *William and Mary Quarterly*, 3rd Series, Vol. 18, No. 4 (October 1961), 471.
- 164 *Ibid.*, 475.
- 165 *Ibid.*, 472.
- 166 Personal Communication. Del Moore to Martin Clagett. 16 October 2002. Dr. Moore is an archivist with the Colonial Williamsburg Foundation, Rockefeller Library. Sowerby's Catalogue is listed as Catalogue of the Library of Thomas Jefferson (Washington: Library of Congress, 1952).
- 167 Peterson, 4.
- 168 Thomas Jefferson to L.H. Girardin, 15 January 1815, in Bergh, 231. Jefferson's memory may be faulty on the date of the return to England of Fauquier's wife and sons. "His [Fauquier's] wife and their elder son, Francis, accompanied him to Virginia, where they stayed until they sailed for England toward the end of May 1766." Reese, Vol. 1, xxxviii. When William Small sailed for London in September of 1764, Fauquier's wife and eldest son were still in Williamsburg.
- 169 Thomas Jefferson to Thomas Jefferson Randolph, 25 November 1808, in Adrienne Koch and William Peden, 540-541.
- 170 Thomas Jefferson to William Small, 7 May 1775, Julian Boyd (ed.) *The Papers of Thomas Jefferson*, Vol. 1 (Princeton: Princeton University Press, 1950), 166.
- 171 Thomas Jefferson to John Page, 21 February 1771, in Boyd, 34-35.
- 172 Burk's History of Virginia appeared in 1804, 1805. The author was killed in a duel in 1808. The fourth volume was begun by Skelton Jones, who was also killed in a duel after finishing 63 pages. The fourth volume was completed by L.H. Girardin.- *William and Mary Quarterly*, Vol. 2, No. 2 (April 1925), 98, fn.
- 173 John Page to Skelton Jones in *American Biographical Dictionary*.
- 174 *Ibid.*, 11.
- 175 *Ibid.*
- 176 Thomas Jefferson to John Page. 21 February 1771, in Boyd, Vol.1, 35

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- 177 Walter Jones to Thomas Jones. No Date.
- 178 "Notes Relating to Some of the Students who Attended the College of William and Mary 1753-1770," *William and Mary Quarterly*, 2nd Series, Vol. 1, No.1 (January 1921), 34.
- 179 Walter Jones to Thomas Jones, No Date. "The Fees for one year to Yates while he was Grammar Master."
- 180 *Ibid.*
- 181 Bill for Books 1760-1761, Jones Family Papers, Library of Congress, Washington, D.C.
- 182 *Ibid.*
- 183 *Ibid.*
- 184 Walter Jones to Thomas Jones, 7 June 1762, Jones Family Papers, Library of Congress. Washington, D.C.
- 185 Walter Jones to Thomas Jones, 31 July 1762, Jones Family Papers. Library of Congress, Washington, D.C
- 186 Walter Jones to Thomas Jones, 7 June 1762.
- 187 Thomas Jefferson to Robert Skipwith. 3 August 1771, in Peterson, 743-744.
- 188 Anderson, *Fasti*, 323.
- 189 Thomas Jefferson to Charles MacPherson. 25 February 1773. in Peterson, 746.
- 190 *Ibid.*, 745.
- 191 Ossian. Trans. by James MacPherson. The Works of Ossian. (London: Becket and Dehondt, 1765)
- 192 Thomas Jefferson to Charles MacPherson. 25 February 1773. in Peterson, 746.
- 193 James MacPherson to Charles MacPherson. 7 August 1773. in Boyd, Vol. I, 100.
- 194 See. Morpurgo; Gillian Hull, "William Small, 1734-1775," *Journal of the Royal Society of Medicine*, Vol. 90 (February 1997), 102-105.
- 195 Robert Carter Nicholas to William Small, 25 June 1767.
- 196 Dudley Digges to the Bishop of London, 15 July 1767.
- 197 Nathaniel Jeffreys to Matthew Boulton, 5 July 1765. Matthew Boulton Papers, 340, Archives, Birmingham Public Library, Birmingham, England.
- 198 William Hunter's Will, 17 August 1761, York County Records, Wills and Inventories, Book XXI, 79-82, Virginia State Library, Richmond, Virginia; Cited Mary Goodwin, "The Printing Shop: Block 18, Colonial Lot #48" (Williamsburg: Colonial Williamsburg Foundation, 1952), XXIV.
- 199 H.R. McIlwaine (ed.) *The Journals of the House of Burgesses of Virginia, 1761-1765* (Richmond: The Colonial Press, E. Waddey Co., 1908), 151.
- 200 See Godson, 100; Morpurgo, 138.
- 201 Dudley Digges to the Bishop of London, 15 July 1767.
- 202 *Ibid.*
- 203 Robert Carter Nicholas to William Small. 25 June 1767.
- 204 *Ibid.*
- 205 *Ibid.*
- 206 Stephen Hawtrey to Ned Hawtrey, 26 March 1765,
- 207 Robert Carter Nicholas to William Small, 25 June 1767.
- 208 Dudley Digges to the Bishop of London, 15 July 1767.
- 209 Robert Carter Nicholas to William Small, 25 June 1767.
- 210 Alexander Small to Benjamin Franklin, 1 December 1764.

Chapter 6

The Birmingham Years

Introduction

Small left the sureties of Virginia bound for London late September, 1764. Perhaps buoyed by the prospects of the future and a longing to return to his native land, Small was enthusiastic about the journey. He left behind him not only the petty jealousies of colleagues and unappreciative employers, but also a host of devoted friends and students and the certainty of a comfortable life. Across the waves lay potential wealth and the promise of unfulfilled ambition.

Return to England

With the voyage from Virginia to London approximately ten weeks, Small arrived in London around the beginning of December. William Small's arrival in London was announced in a letter to Benjamin Franklin, dated December 1, 1764. The letter was sent by Alexander Small, Franklin's intimate friend and possibly a relation of William Small. William Small may have gone straight from his ship to the home of Alexander Small in Villiers Street, which was conveniently located near the Adelphi Wharfs, the Hungerford Stairs, the York Building Stairs, and Charing Cross. Alexander Small's family was from

Perthshire, which borders Angus, the county of William Small's family.¹ An extract from Alexander Small's letter indicates Small's prior relationship with Franklin and may indicate a family connection between William and Alexander, "My Namesake the Virginian Professor is here; and desires to be most particularly remembered to you."²

The proximity of the residences of William Small, Alexander Small, and Benjamin Franklin also suggests close association. William Small resided at Mr. Banner's, Suffolk Street³, Alexander Small dwelled in Villiers Street, and Benjamin Franklin lived in Craven St., all three were near Charing Cross and within walking distance of each other.

In March of 1765, Stephen Hawtrey hoping to obtain information about the College of William and Mary sought out Small at the Virginia Coffee Shop, located two doors down from the George & Vulture, the home to one of Franklin's favorite societies, the Honest Whigs Club.⁴ Not finding Small there, he caught up with him at his lodgings, Mr. Banner's in Suffolk Street. Small informed Hawtrey that he would "be gone these three weeks."⁵ During this interval Small may have journeyed to Scotland to obtain his M.D. from Marishal College.

The most common method of obtaining a medical degree at that time was by the recommendation of two physicians.⁶ Small's recommenders were John Gregory, Mediciner at the University of Edinburgh, and John Elliot, King's physician. Small may have first obtained a recommendation from John Elliot,

who had a successful practice in London, and then proceeded to Edinburgh for Gregory's recommendation. Some scholars maintain that Small merely purchased his degree for a trivial sum, but several factors seem to indicate otherwise. First, his experience and reputation in Virginia denote a certain degree of education and training. Second, John Gregory was in the vanguard of physicians who were calling for the standardization of the medical profession, and he advocated a prescribed course of studies and specific training to qualify for a medical degree. In 1757 Gregory and Francis Skene attempted to establish a professional medical school at Aberdeen with a "proper dissecting room and laboratory."⁷ John Eliot was a prominent physician who would become the king's personal physician and Senior Physician at Greenwich Hospital.⁸ Neither of these physicians would likely issue bogus attestations. And third, validating Small's medical knowledge, while visiting medical classes at the University of Edinburgh, Small so impressed the students with his knowledge of medicine and surgery that several followed him back to London and attempted to persuade him to conduct a medical seminar. As Small characterized this event:

Before I settled at Birmingham, I was asked at London on this account by many students in Medicine who had left Edinr to give lectures on those parts of Physics that most immediately concern Doctors & Surgeons, & truly it is easy to perceive that most of them very much wanted instruction.⁹

Small was busy from his arrival around the beginning of December until his departure in the middle of May. In January he attended the Royal Society with Benjamin Franklin and likely attended some of Franklin's other clubs with him as well.¹⁰ Perhaps the urgent desire for a medical diploma was at Franklin's suggestion, for Franklin sent Small off to Birmingham in May with a proper recommendation in hand. Franklin was probably aware of the potential for a symbiotic relationship, agreeable both to his scientific friend, William Small, and his industrialist friend, Matthew Boulton. Boulton, utilizing technological and scientific advancements to his own advantage, was becoming influential and wealthy. A man of great industry and plans, who surrounded himself with men of talent and knowledge, was looking for someone who could both attend to his ailing daughter and act as a scientific advisor. Boulton had a longstanding relationship with Erasmus Darwin, grandfather of Charles Darwin and progenitor of the theory of evolution, but Darwin was too busy with his expanding medical practice and scientific investigations to give Boulton the time and attention that he needed. Franklin's relationship with Boulton made his recommendation of Small the more compelling. In this letter, Franklin indicated that Small had obtained his M.D. and stated:

I beg leave to introduce my Friend Dr Small to your Acquaintance, and to recommend him to your Civilities.~ ~ I would not take this Freedom, if I was not sure it would be agreeable to you, and that you will thank me for adding to the Number of those who from their

Knowledge of you must respect you, one who is both an ingenious Philosopher & a most worthy honest Man. Introducing the Bearer Dr Wm: Small¹¹

In addition to receiving high recommendations as “an ingenious Philosopher” Small also garnered praise as a medical specialist later that same year from another Boulton associate, Nathaniel Jeffreys, who had connections with both the Virginia elite and well-regarded physicians in London. Jeffreys wrote to Boulton:

Dr Wm Small who has been settled some years at Virginia as a Physician, and with great success & was the same time proffesser of Mathematicks in the Colledge of Williamsburgh, but came home on acct. of his health & some buissness. & prefers a settlement at home to returning to Virginia as he never kept his health there—he is recommd to me by some of my best friends here, as a Gentm. of great Worth, Integrity & Honour, & in the way of his profession has the best recommendations of our most Eminent Phisicians here—who are the best judges of his Merit as a Physician.¹²

Small quickly established himself in Birmingham. Boulton’s daughter benefited from Small’s medical procedures and advice and he increased his medical reputation by the successful conclusions of several dangerous cases.

Within six months of arriving in Birmingham, Small established a medical practice, opened a clinic and set up an office and residence with John Ash, a well respected doctor in the region, and was one of the founding fathers of the Birmingham Public Hospital.¹³ Significantly, Small also began a close scientific collaboration with Matthew Boulton and Erasmus Darwin that was the genesis of the famous Birmingham Lunar Society. John Baskerville, a celebrated printer and close associate of the amiable Boulton, wrote the following of Small:

I have the Pleasure to inform You, that Dr Small's affairs are become greatly more extended than when we left Bir. & some dangerous Cases have offered, this greatly increased his reputation, so that I took the Liberty of saying what You had told me in Confidence in Relation to Russia; he replied he had altered his Mind, as his Practice (nearly) was as Much as his Wish, but that he Must go to London to thank Doctor Heberden for his kind Intention, which he could not well do (or at least so respectfully) by Writing.¹⁴

The Birmingham Lunar Society

The importance of the Birmingham Lunar Society was that it represented a brilliant microcosm of the forces of change in the eighteenth century that found Britain rural and agrarian and left it urban and industrial, and it collectively acted as a clearing-house for ideas that transformed the nation

materially, culturally, and socially within a generation. Its composite members were distinguished men of broad interests, whose conversations covered many areas, but whose primary interest was the sciences, practical or theoretical, particularly as they were connected with the problems of industry.¹⁵

Several important factors of the nature of the Lunar Society include; the provincial rather than urban nature of this group; the wide ranging impact this circle had on Britain and the rest of the world; that the impact was not delimited but spread over a number of sectors; and that this was a diverse group made up not only of pure scientists but also of men who could make practical use of the technological advances.

The Beginning of the Lunar Society

There is an old saying, if three Englishmen are shipwrecked on a deserted isle, two will immediately conspire to form a club with elaborate rituals in order to exclude the third. On the contrary, the Birmingham Lunar Society was inclusive rather than exclusive and devoid of any type rituals except good meals and stimulating conversations. Various scholars give different dates for the founding of the Lunar Society. One claims that the Lunar Society was not founded until 1776, a year after Small's death.¹⁶ Another asserts that it certainly was in existence by 1772,¹⁷ while a third maintains that it was founded in 1765, by Boulton, Darwin, Small, and some of their friends.¹⁸

One researcher suggested that the probable initiator of the Lunar Circle was Erasmus Darwin,¹⁹ yet several other factors indicate that William Small was more likely the true catalyst for this group. Although Darwin and Boulton associated for several years before the arrival of Small, it was not until after Small arrived that the informal circle began to meet. In December of 1765 Erasmus Darwin wrote to Boulton, urging his participation in a canal scheme in Birmingham. A significant factor in this request was that Darwin appealed not just to Boulton, but to Boulton and Small jointly.²⁰ This same letter indicates that Boulton and Small were discussing the potential for steam engines as early as December 1765, two years before Small met James Watt. The significant aspect of this letter is that it shows, even at this early date, that Small and Boulton were working as a unit and Darwin was the outsider; conversely, Darwin attempted to enlist Boulton and Small in the matter of the canals.

According to Richard Lovell Edgeworth, "Dr. Small formed a link which combined Mr. Boulton, Mr. Watt, Dr. Darwin, Mr. Wedgworth, Mr. Day, and myself together."²¹ This statement strongly suggests that Small played the central role in the founding of the Lunar Society.

Membership

From these almost unconscious beginnings the Lunar Society became the most prominent and influential of the provincial intellectual clubs. In order to attend a meeting of this distinguished group it was not necessary to present

oneself for inspection with letters of recommendation in hand, just to express an interest in the subject discussed and come with one of the members. Scientists, chemists, geologists, botanists, electricians, opticians, physicians, astronomers, horologists, educators, poets, mechanics, and, in short, anyone with a recognized expertise in any field being discussed, could be invited to contribute to the conversation. The Lunar Society hosted individuals ranging from the exalted: Catherine the Great, Benjamin Franklin, John Smeaton, Hugh Blair, James Ferguson, James Hutton, Daniel Solander, and Adam Afzelius, to the infamous and shadowy Eric Raspe and John Collins, the American rebel. Communications were maintained through correspondence, personal relationships, and the multiple club memberships that many of the circle maintained. Many came to Birmingham to meet Boulton, Watt, or Small, who were acquainted with the leading men of science and industry in both Europe and America, and its essential sociability meant that anyone might be invited to its meetings. Although little is known about what went on in the meetings, “its indirect significance in the cross fertilization of ideas is testified to by its long life and by the esteem in which it was held not only by those who were a part of it, but by a wide circle of distinguished contemporaries.”²²

Questions have arisen among scholars concerning the membership of the Birmingham Lunar Society. There has been much discussion concerning the membership of the Lunar Society and the numbers and names have varied among the researchers,²³ but the Lunar Society was far more elastic in its parameters. Particularly in its early years the Lunar Society was a living organism, expanding

or contracting depending on circumstances or necessity. Few attendees were available on a consistent basis and the main criterion for an invitation seemed to be either the friendship of one of the regulars, an expertise in a certain field being discussed, or being of use, in one way or another, to Boulton's business interests. In the period before the death of Small, a variety of philosophers, artists, political figures, and those with specific mechanical or scientific expertise, wandered in and out of meetings with regularity. Eric Robinson wrote of the Society that, "The most that can be said with certainty is that there was always a nucleus of regulars and a fairly constant flow of visitors to Lunar Society meetings. Since the transition from a member to an occasional visitor or vice versa cannot be determined accurately it is better not to dogmatize about it."²⁴

Lunar Society Meetings

In the beginning, meetings were very informal, sometimes there would be a meeting at Boulton's home, sometimes at Darwin's house in Lichfield, and sometimes in the homes of other members. Meetings were usually held on the Sunday nearest to the full moon, so that members could more easily find their respective ways home by "fair Cynthia's rays"; hence, the name Lunar Society, which did not become coined until *after* Small's death. The meetings began around two o'clock and would usually end around eight. But the meetings were informal, with no records or rules, and after a meal, discussions, demonstrations, lectures, group experimentation took place. Boulton's house was the favorite

meeting place, likely due to his affable character and generous table. Specific topics, talks, demonstrations, and experiments were probably prearranged for the “philosophical feasts”.

Small and Boulton’s Central Roles in the Lunar Society

In an age and in a country saturated by intellectual clubs, with the preeminent societies being situated in London, the Birmingham Lunar Society was exceptional. Initially the group seems to have consisted of Matthew Boulton, Erasmus Darwin, and William Small. If Small were the spark for this intellectual conflagration, Boulton was the fuel supply because his personality, enthusiasm, connections, and his money were the magnets that drew people skilled in science or industry to meetings of the Lunar Society.

Matthew Boulton was a congenial manipulator, who used the imagination and intellect and original ideas of others to his own benefit. He was also a kind and generous benefactor, willing to use his resources or his influence to help his friends or employees. It appears that Boulton saw the Lunar Society as a means to improve his business concerns or to advance his personal interests. Meetings often followed the track of Boulton’s most current business interest, and Small and Darwin often appeared instrumental in recruiting people of potential value to Boulton’s projects. If Boulton was intent on “selling what the world most wanted – power”, many of the meetings focused on steam-enginry; if Boulton wanted to make a fortune in

the pottery and vase business, aspects of the use of alkalis, clays, ormalu were discussed; if canal navigation was the business opportunity of the moment, suddenly surveying techniques, hydraulics, and improvements in the construction of locks became the topics of the day. Not all meetings were exclusively subordinated to Boulton's economic purposes, and subjects unrelated to Boulton's immediate concerns were frequently the topics of discussion. Boulton was always open to new opportunities, when archaeological excavations excited the interests of the aristocrats, Boulton and Edgeworth turned their intellectual curiosity into a profitable exercise, employing artisans who made copies or variations of ancient urns, thus transforming an interest in archaeological finds into profitable productions in the pottery business.

However, in an age of shameless self-advertisement, Small exhibited almost no interest in promoting himself. As Boulton was at his best at adapting the theoretical concepts of others into practical and profitable application, Small's special talent was coaxing the potential out of others. Francis Galton, Samuel Galton's son, was likely thinking of Small when he wrote, "Some eminently scientific men have shown their original power by little more than a continuous flow of helpful suggestions and criticisms, individually of little importance, but in their aggregate, a notable aid towards progress."²⁵ William Small was a true teacher, whose skill was nurturing the best in others. Just as he encouraged Thomas Jefferson and others in Virginia, he nurtured scientists and industrialists in England.

Profile of the Lunar Society

The religious spectrum of the members and associates of the Lunar Society was as diverse as the range of interests. The Rev. Joseph Berrington, a friend of Samuel Galton's, was a Catholic priest, James Keir and Matthew Boulton were Anglicans, Joseph Priestley a Unitarian, Erasmus Darwin a Deist, Samuel Galton a Quaker, and John Baskerville an atheist. Politically the group tended to be radical. Most members favored both the French and the American Revolutions, most were in favor of democratizing the British government, and Priestley was so radical in his support of the French Revolution that a conservative crowd burnt down his house in Birmingham and chased him out of the country. The "Lunatics," as they were sometimes called, often promoted theories of progressive education. Priestley wrote an essay advocating a liberal education, Darwin championed female education, and Edgeworth proposed a child centered pedagogy with a varied curriculum, and utilization of a didactic approach, foreshadowing Frederick Froebel and Johann Pestalozzi, the progenitors of progressive education. Edgeworth and Day were so taken with the philosophy of Jean Jacques Rousseau that they raised their children according to his precepts, and reportedly with disastrous effects.²⁶

Significance and Accomplishments of the Lunar Society

The great advantage of being a part of this group was that it served as a clearinghouse for ideas about advancements in industry, science, literature, and commerce, not only in the Midlands, but also throughout the western world. Members of the Lunar Society often also belonged to a number of other influential clubs and through the use of their collective influence, projects that might not have been undertaken, were completed; theories that might have gone unexplored and unpublished, were refined and published; patents that might have gone begging, received approval.

The accomplishments of the various associates of the Lunar Society are astonishing. Because there was so much exchange and brainstorming among the various members of the Lunar Society the credit for specific inventions, improvements, or theories is often blurry, and the work done by individuals within the Lunar Society is often difficult to separate from the work being done by the Society as a whole.

Following is a partial listing of contributions by members or associates of the Lunar Society during the lifetime of William Small. Among the inventions were clocks, engines, steam engines, horizontal windmills, barometers, pyrometers, magnets, micrometers, thermometers, chronometers, lightning conductors, speaking machines, powered vehicles, telegraphs, electrical machines, copying machines, coin presses, and hydraulic rams. Contributions to chemistry included the discoveries of oxygen, hydrogen, nitrous oxide, carbon dioxide, use of alkalis, sulphuric acid, and carbonated water. Interest in scientific classification and investigation by members of the Lunar Society led to

discoveries in mineralogy, botany, geology, paleontology, hygiene, anatomy, and medicine. Boulton, Keir, and Edgeworth used the discoveries and scientific methods to their own economic advantages. Boulton's Soho Factory used mechanical power and chemical process to manufacture goods and engines, Edgeworth's Etruria Factory combined botany, chemistry, and new industrial processes to turn out the finest pottery, and Keir's Tipton Works combined chemistry and medical theory to produce a million pounds of soap a year. All three combined scientific evaluation, division of labor, and the standardization of parts to make their factories function efficiently. Both the process and the progress were contributions to and extensions of the Industrial Revolution.

Some of the accomplishments of the collective membership of the Lunar Society are more evident than others. The collaboration accomplished during these years was not constricted to the narrow boundaries of the Midlands, but extended far beyond. Members of the Lunar Society were also often members of other organizations. Eleven members of the Lunar Society were also members of the Royal Society. Questions were examined from all sources, and advice and suggestions were offered without a need for recognition. Determination of credit for theories, inventions, and discoveries was not only separated from Birmingham by distance, but also by time. Erasmus Darwin's spelunking uncovered fossils indicating that life had a more ancient and gradual evolution that creationism suggested. The credit for the Theory of Evolution was given to Charles Darwin, his grandson, who enunciated this viewpoint with more empirical evidence and greater clarity.

Moreover, one of the most celebrated and most influential of the collaborations of the Birmingham Lunar Society was James Watt's steam engine.

William Small, James Watt, and the Steam Engine

According to J.P. Morpurgo, "That a polymath of such rare quality [Small] should have appeared at William and Mary at just the right moment to teach the outstanding polymath of them all is one of the happiest coincidences in educational history. That Wythe was available to take over Jefferson from Small is enough to make an agnostic believe in Divine Providence."²⁷ That another coincidence of like proportion and consequence should happen in the life of a single man is truly amazing. William Small settled into Birmingham nicely. He built up a substantial medical practice, was instrumental in forming one of the most highly regarded and influential intellectual clubs in Britain, was the scientific advisor to one of the most innovative and daring of the new industrialists, accumulated a circle of friends that was celebrated and well connected, was a co-founder of a hospital, a clinic, a theatre, and served a town councilman. His patron, Matthew Boulton, established Soho Factory, one of the wonders of the industrial age and a place visited by all those interested in scientific advancement, Thomas Jefferson came to see its mechanical wonders and Benjamin Franklin was a regular visitor. In the spring of 1767, James Watt, an unknown and despondent Scot stopped by to see the mechanical marvel. In the course of his life, he made musical instruments, surveyed canals, tinkered in the

instrument shop at the University of Glasgow, and was on his way to London to attend a meeting of Parliament. Watt recalled his first visit to Soho, "I was introduced at Soho by Dr Small in 1767 but Mr Boulton was then absent; Mr Fothergill his partner & Dr Small showed me the works."²⁸

As Matthew Boulton was away on business, Small showed Watt around the factory and the two likely struck up a conversation about "steam-enginry". Watt, while working as a mechanic for the scientific department at the University of Glasgow, repaired a model of an early version of the steam engine. He had specific ideas about how to improve it and he shared these with Small. Small immediately recognized a kindred spirit and great genius, and the two became fast friends. From that moment on Small was in constant contact with Watt, discussing the best ways to finance, improve, patent, and produce Watt's invention.

Financing

James Watt and Matthew Boulton had their first meeting in 1768. Watt was returning from London where he took the necessary steps for procuring a patent for his steam engine. Boulton showed moderate interest in Watt's concept but, at that time, was not ready to commit to funding the project. Urged by Small, Boulton looked into the possibility of investing in Watt's project. Convinced at last by Small's persistent arguments, Boulton wrote to Watt in the winter of 1769 that, motivated by "love of you, and love of a money-getting, ingenious project",

that he was willing to act as a midwife to “ease your Burthen” and to “introduce your Brat into the World.”²⁹

Watt’s continued experiments with the steam engine left him little time for gainful employment and he soon found himself impoverished. Dr. John Roebuck initially supported Watt in exchange for a promise of two-thirds of the profits that might evolve from the production of the engine. But, when Roebuck encountered financial setbacks, he offered the interested Boulton a proposition. Boulton described the details of the offer to Watt in a letter in February of 1769:

I note what you say in respect to your connection with Doctor Roebuck, from whom I received a letter, dated the 12th December, offering me a share of his property in your engine, as far as respects the counties of Warwick, Stafford, and Derby. I am obliged to you and him thinking of me as a partner in any degree; but the plan proposed to me is so very different from that which I conceived at the time I talked with you upon that subject, that I cannot think it a proper one for me to meddle with, as I do not intend turning engineer It would not be worth my while to make for three counties only; but I find it very well worth my while to make for the whole world.³⁰

Rejected in this offer and becoming increasingly pressed by creditors, Roebuck made a second offer in the fall of 1769:

Gentlemen,

Whereas Mr. James Watt has assigned me two-thirds of the property of the patent of the steam-engine, which he took out some time in the course of the last winter, I hereby offer you one-half of the above two-thirds, or one-third of the whole patent, on condition that you pay to me such a sum, not less than one thousand pounds, as you, after experiments of the engine shall be completed, shall think just and reasonable; and twelve months from this date you are to take your final resolution. I oblige myself to procure Mr. Watt's assent to this agreement.³¹

As enthusiastic as Small was about the prospects for the steam engine, Boulton was still not convinced. If engaged in a business venture, Boulton wanted to be in control, and one-third of a proposition did not excite him. Negotiations sputtered on for several years, Roebuck's position became weaker, further setbacks ensued, and creditors were clamoring. Finally, Watt wrote to Small pleading Roebuck's condition, "The Doctor is on the contrary too sanguine & always thinks things easier than they are, his present exigencies may also tempt him to insist upon higher terms for his property in it than it is really worth." In the same letter Watt urged Small to convince Boulton to offer Roebuck the best terms possible.

But I expect if you still think it worth while to engage in it, that you

will both give him what you judge the value of it to you, & be at some pains to convince him of it, being his interest to accept of it, I shall be content to hold a very small share in it, or none at all provided that I am to be freed from any kind of pecuniary obligation to him and have any kind of recompense for even a part of the anxiety & ruin it has involved me in. ³²

With Roebuck's financial situation deteriorating, Watt feared that Roebuck would no longer be able to support his invention. Watt despaired that, due to his own financial position, he would be forced to abandon his engine, already in the process of rusting, and the patent that he obtained in 1769 would expire before he could complete his invention. Nevertheless, he was convinced of the utility of his engine, "I this day made trial of the power of the engine, and found that, after it was clear of air, it readily lifted 620 lbs., and, I believe, would have lifted more, but I had none at hand."³³ Small warned Watt, "A linen-draper at London, one Moore, has taken out a patent for moving wheel-carriages by steam. This comes of thy delays. I dare say he has heard of your inventions. Do come to England with all possible speed. At his moment how I could scold you for negligence!"³⁴

In April of 1773 Roebuck's creditors held a meeting to discuss his deteriorating situation. When his mines at Borrowstoness were flooded, Roebuck's hopes of an economic comeback were dashed. At a meeting of Roebuck's creditors, Boulton appointed Watt to act as his agent and renounce his

own claim on Roebuck of £630, and empowered him to vote and act in his stead, certifying “that whatever you shall say, do, or sign in behalf of me or my partner, it shall be binding as effectively as if I had done it myself.”³⁵ Concurrently, Small wrote to Watt, “I am exceedingly shocked at the melancholy state of Dr. R.’s affairs. I hope you may be useful in persuading the creditors to their own good.”³⁶

Roebuck owed Boulton and John Fothergill, his partner, £1200. Boulton hesitated in taking over the shares in the patent from fear of the other creditors’ opinions of him. Boulton did not want to appear as taking advantage of the situation or to seem overanxious or opportunistic. However, the other creditors did not think the patent worth “a farthing”, and Boulton “was able to get it from the receivers into his hands.” Boulton’s partner, John Fothergill, also considered the patent of little use and took his share of the £1200 rather than a stake in the steam engine. “Afterwards when the engine became a success this led to much acrimony on Fothergill’s part although entirely without justification.”³⁷

In the spring Watt made an arrangement with Dr. Roebuck by which Watt agreed to pay out all debts owing on the steam engine and renounced any claim to monies still owed to him by Dr. Roebuck.³⁸ Three days later Watt wrote to Small.

On Monday last I concluded bargains with Dr. R. for his property in the engine, according to Mr. B.’s letter to me, which I have delivered to the Doctor, and received his missive to Mr. B., accepting the offer, that is to say, Mr. B.’s renunciation of the Doctor’s debt to him, with a

reference to you and me what part of the annual profits shall be paid to the Doctor, in case of success, during the term of the patent.³⁹

In the same letter Watt informed Small that he was taking the initial step which would lead to Watt moving to Birmingham.

As I found the engine at Kinneil perishing, and as it is from circumstances highly improper that it should continue there longer, and I have nowhere else to put it, I have this week taken it in pieces and packed up the iron works, cylinder, and pump, ready to be shipped for London in its way to Birmingham, as the only place where the experiments can be completed with propriety.⁴⁰

The Birmingham group may also have considered Watt's potential contributions as a skilled surveyor of canals. Indeed, Watt was surveying the ground between Loch Oich and Loch Lochy for a Scottish navigation concern, and developed new surveying devices, an improved micrometer and a quadrant, to enhance the accuracy of surveying techniques. Shortly after Watt and Boulton established an understanding with Dr. Roebuck, Small enticed Watt to move to Birmingham with the lure of a surveying job. "Your survey would be the first, and as things now stand, both you and it could be warmly commended to Lord Dartmouth, who is the head of the Council of Trade, to Lord Sandwich, the first Lord of the Admiralty, and to Lord North."⁴¹ Lord

Dartmouth was a fellow subscriber to the Birmingham Public Hospital and a member of the Birmingham Navigation Committee. Small and Boulton were anxious for Watt to move to Birmingham, not only to develop his steam engine at Soho, but also to keep an eye on their canal investments.

In spite of dismal prospects in Scotland, Watt did not want to move his ailing wife or leave her. Sadly she died September 24, 1773, and in an attempt to console Watt, Small gave medical advice to Watt on the necessity of preserving his own health:

I engage in no controversy with You about grief, or the indulgence of it. Only I tell You it is injurious to such health as your's, & that I should be very sorry (pardon the principal) when I died if You should grieve for me, although living I very highly value Your affection. As to your toothache, Pascal is said to have employed his attention so entirely on a cure as to be insensible to the most raging pain. Besides, there is a vast difference between a Sensation You are compelled to feel, & another which You cannot feel without exerting your memory.⁴²

With his last reason for remaining in Scotland gone, Watt finished the survey he was working on between Inverness and Fort William and followed his steam engine to Birmingham. Boulton arranged rooms for Watt in his own former quarters at Newhall Walk.⁴³ From this point onward Watt, Boulton, and

Small were firmly committed both to the project and the partnership.

Developing the Steam Engine

In his early years James Watt moved to London to work as an apprentice under Charles Clagett, a musical instrument maker, but, as Watt wrote to his father, press gangs were roaming the streets and forcing young men into the navy, particularly those of non-English backgrounds. Enjoying his work but fearing his fate, Watt returned to Scotland to work as a mathematical instrument maker for the University of Glasgow. In 1759, he opened his own shop in Glasgow at the Saltmarket and four years later moved to Trongate in the center of the city where his shop sold “all sorts of mathematical and musical instruments, with a variety of toys and other goods.” Shortly thereafter, Dr. Joseph Black of Glasgow University asked Watt to build a small organ for him.⁴⁴ Knowing little about it, Watt began to research the process and devised a superior instrument. He became interested in an instrument known as Papin’s digester, which was like a “primitive pressure cooker”. It looked like a teapot: the steam would build up and burst out of the narrow neck. Watt fitted the neck up with a piston and an escape valve so that he could either make the pressure go one way or disperse. Next he inserted an apothecary’s syringe into the neck, with a brass rod inside and a rod pointing to the top. He then placed weights on top of the rod. His contraption “worked devastatingly well. When the steam whooshed in, his tiny piston was forced up the syringe so hard that it could lift a weight of fifteen pounds.”⁴⁵

Watt now hit upon the idea of combining the power of Papin's digester with the utility of Newcomen's engine. Watt made three alterations to the Newcomen engine that drastically improved its performance; a separate condenser, a reciprocal motion or double acting engine, and a rotary function to produce motions around axes. The separate condenser allowed the steam to pass into a separate vessel, surrounded by cold water, where it could quickly cool. While the condenser stayed cool, the steam cylinder stayed hot, reducing, by as much as seventy-five percent the amount of fuel necessary to heat the steam by as much as seventy-five percent. The reciprocating engine allowed steam to be admitted to both ends of the cylinder, adding extra force and speed without the need of additional steam. The rotary engine spun around an axis instead of moving up and down, adding extra utility to the design of the engine.

As early as February of 1769, Watt and Small were consulting on these improvements.⁴⁶ Small, in many ways, acted not only as an adviser to Watt, but also as a sounding board and a cheerleader, helping Watt clarify ideas in his own mind. In a letter of February 5, 1769, Small does just this, spelling out in a sequential and linear format the improvements that Watt expressed. Small's greatest contribution to the development of the steam engine was that he clarified, crystallized, and organized the details of Watt's overview of the project. But in addition to organizing and encouraging, Small also was instrumental in working out the technical details and major flaws of the design. Small was diplomatic enough to correct and encourage at the same time:

Your detail about the engine I have considered very carefully, and am in no degree discouraged. Your cylinder is not accurately made, and I suspect its materials to be capable of compression, so as to press the piston. The quality of oil lost must be trifling after your oil-pump is of due size, if there is a groove in the bottom of the cylinder to receive it, and convey it to the pump. If you will put flour in your oil, that will stop all the crevices, and not wear your piston or your pump.⁴⁷

Until Watt moved to Birmingham, which Small was constantly urging, discussions passed through the mail. Watt often revealed important specifics and Small answered in a more reserved fashion. Both Small and Watt were concerned about sending explicit directions and details of improvements through the post, because industrial spies were everywhere. Small worried most about furtive London scoundrels, and the French particularly vexed Boulton. Nevertheless, Small's efforts and scientific contributions can be witnessed in the following:

Since I last saw you I have made, and seen made, hundreds of experiments on mixture of metals, and can recommend several for your cylinder, and an infallible method of rendering it truly circular; but I do not choose to trust to the post what may be of use to you by remaining secret.⁴⁸

Patent

The third area in which Small was indispensable to the success of Watt's steam engine was his advice and behind-the-scenes help in extending, by an Act of Parliament, the patent of 1769, establishing, in effect, a monopoly for Watt and Boulton. In 1775, the year in which the extended patent was obtained, six years on the original patent had already expired and eight were still remaining. Between Roebuck's failing financial affairs and his own need to support his family, Watt had lost much time working on his project, but the more Watt, Boulton, and Small looked into the situation, the more that they concluded that an Act of Parliament would be less expensive and offered a better chance of success. Watt wrote to Boulton, "I have taken the advice of several people whom I could trust about the patent; they all agree that an Act would be much better and cheaper, a patent being 130£; the Act, if obtainable, 110£." ⁴⁹ Although the Act of Parliament seemed the more prudent course, Small warned, "Upon the whole, an Act of Parliament would be one thing; you obliging yourself to reveal to the Commissioners, or to the Royal Society, every particular proper to be revealed. I am certain that, from such a specification as I have written, any skilful mechanic may make your engines."⁵⁰ Small, and Boulton to a greater extent, worried about piracy and Watt's naïvité. Small concluded his warning to Watt, "although it wants correction; and you are certainly not obliged to teach every blockhead in the nation to construct masterly engines. I wish we could meet before you specify. A matter of this kind cannot be managed by letters. I should have much

to say about your machinery.”⁵¹

Watt’s old friend, Dr. John Robison, from the University of Glasgow would later write about attempts by others to usurp Watt’s inventions:

I see many of Mr. Watt’s contrivances, which I know to be founded on his perfect acquaintance with the subject, copied by ignorant tradesman, merely because they are Boulton and Watt’s; and then introduced to their hurt. Such is the deference with which those persons in their conscience look to my friend’s superior skill. And yet (such is the power of avarice), those creatures will say that Boulton and Watt steal *their* wonderful inventions! ⁵²

Small and several other members of the Lunar Circle were instrumental in successfully obtaining a patent for the steam engine; Josiah Wedgwood had important connections with the London Board of Merchants, Matthew Boulton enjoyed the confidence of many members of Parliament, and members of the Lunar Circle had contacts with prominent scientists, politicians, men of society, finance, and industry. Even so, the efforts to obtain an extended patent for the steam engine were difficult and at times seemed impossible. Boulton, Watt, and Small made frequent trips to London to lobby for their project. Darwin, Franklin, and Wedgwood also used their considerable and combined influence to persuade certain members of Parliament to approve such an Act.⁵³

Fearing infringements from early in their association Small wrote Watt

important directions in 1769. Industrial spies were everywhere. Boulton particularly feared the French, and the Russians had no qualms about raiding British brain-power and talent. Catherine the Great herself made a visit to the Birmingham Lunar Society, and both Small and Watt had received offers to work in St. Petersburg. Boulton himself is thought to have had a large spy network that would improvise on industrial secrets borrowed especially from his French and German counterparts as well as from his own countrymen and even friends. Some archivists suggest, from the nature of the extant correspondence between Watt and Small, that Boulton rummaged through Small's correspondence and selected letters that could serve as evidence in the eventuality of patent litigation trials. Perhaps due to the anticipated litigation, Small gave precise instructions to Watt for writing up patent information:

...you should neither give drawings nor descriptions of any particular machinery (if such omissions would be allowed at the office), but specify in the clearest manner you can that you have discovered some principles, and thought of new applications of others, by means of which, joined together, you intend to construct steam-engines of much greater powers, and applicable to a much greater number of useful purposes, than any which hitherto have been constructed; that to effect each particular purpose, you design to employ particular machinery.⁵⁴

A concerned Small wrote Watt that a London linen-draper named Moore was applying for a patent for moving wheel-carriages by steam. He scolded Watt, "This comes of thy delays. I dare say he has heard of your inventions."⁵⁵ The intent of this letter was to prod Watt into action, for Small jokingly promised Watt, "I will be very civil, and buy a steam-chaise of you and not of Moore."⁵⁶ Nevertheless, Watt was as worried about these unscrupulous men as was Boulton, and he was so enraged that he wrote back to Small:

Of all things in life, there is nothing more foolish than inventing. Here I work five or more years contriving an engine, and Mr. Moore hears of it, is more *eveille*, gets three patents at once, publishes himself in the newspapers, hires 2000 men, set them to work for the whole world in St. George's Fields, gets a fortune at once, and prosecutes me for using my own invention!⁵⁷

Watt's pain was so obvious that Small regretted teasing him and wrote back, "After much inquiry about Moore, I can learn nothing satisfactory, only that he is no profound philosopher, and so, in all probability, unacquainted with the properties of substances of which you have availed yourself."⁵⁸

There was much groundwork to be done. Various individuals and factions worked in Watt's interest, but it was not an easy task. Some prominent politicians railed against the Act as encouraging monopolies, others advocated that the Act would promote useful inventions and increases in domestic output of goods, and

some appealed to the national pride of the members of the House of Commons. Finally, in February of 1775, matters came to a head. On February 23, 1775 the bill to extend Watt's patent for twenty-five years was drawn up, with Small's help, and presented to the House of Commons. On March 9, 1775 the bill was read before the House of Commons for the first time and was violently opposed by Edmund Burke and others, who were opposed to monopolies of any kind. After considerable wrangling and much lobbying, the bill passed all its stages and received the Royal Assent on May 22, 1775. "The Act (15 Geo. III, cap. LXI, p. 1587) extended the patent for twenty-five years from that date – a point of some importance – extended it also to include Scotland." ⁵⁰

Watt was elated by the passage of the Act. At long last he would be able to produce his engine and adapt it for multiple usages for the next twenty-five years, a sufficient time, even according to Boulton's calculations, to become well established in the business. An ebullient Watt wrote to his father shortly after the passage of the Act,

After a series of various and violent opposition, I have at last got an Act of Parliament vesting the property of my new fire-engines in me and my assigns, throughout Great Britain and the Plantations....This affair has been attended with great expense and anxiety, and without many friends of great interest I should never have been able to carry it through, as many of the most powerful people in the House of Commons opposed it. It has been in Parliament ever since the 22nd of

February, which is a very long time to be kept in suspense.⁶⁰

The triumph was mixed with sadness though, for two days after the introduction of the Act, William Small died of a fever at his home in Temple Row in Birmingham. In a final twist of fate, death snatched away Small, on the cusp of wealth, from his just reward.

Doctor Small

Since Small's medical career was not directly connected with the activities of the Birmingham Lunar Society or the development of Watt's steam engine, it has received scant attention, and consequently, little is known about this facet of his life. In addition, he was not as enthusiastic about medicine as he was other scientific interests. In 1773 he wrote Watt, "The practice of medicine is worse than a gaol."⁶¹ Of the subjects that he wished to teach, he wrote Watt, "first would be Mathematics, second Natural Philosophy, and third Theory of Medicine."⁶² Nevertheless, Small's first career path was medicine. As discussed before, Small may have either apprenticed with John and James Gregory in Aberdeen, or, perhaps, studied in London with John Gregory and John Eliot. Whatever form Small's initial medical training took, shortly after he arrived in Virginia he "took it into his Head to commence Physician," and even by his detractors' accounts had a successful practice. Shortly after Small returned to England, he obtained his M.D. from Marischal College upon the

recommendations from John Gregory and John Eliot. While visiting medical classes at the University of Edinburgh, some English students were so impressed with Small's medical expertise that they followed him back to London and requested that he "give Lectures on those part of Physics that most immediately concern Doctors & Surgeons."⁶³

In May of 1765 Small appeared at the home of Matthew Boulton bearing a letter of introduction from Benjamin Franklin. Boulton's daughter suffered from a deformity of the hip and he was looking for a doctor to attend to her medical needs and also a person to advise him in scientific and mechanical matters. The two got along brilliantly and Small spent his remaining years in Birmingham as Boulton's scientific advisor and family doctor.

By December of 1765, less than one year after he arrived in Birmingham, both Small's reputation and his medical practice had increased to such an extent that he turned down an offer of a lucrative post in St. Petersburg, and set up a medical office and took up residence at 9 Temple Row, in an elegant section of Birmingham, at the home of the area's most prominent physician, Dr. John Ash.

Also in December 1765, a committee was established for the purpose of "erecting a GENERAL HOSPITAL, for the Relief of the Sick and Lame."⁶⁴ The hospital was Dr. John Ash's concept, and William Small, Matthew Boulton, Samuel Galton, and John Ash were all on the original Board of Trustees. Small's good friend James Keir wrote at the time of his death, "He lives only in the memory of those friends who knew his worth, and of the poor, whom his humane skill was ever ready to rescue from disease and pain."⁶⁵ It is rumored that Small

spent about two hours a day performing *pro bono* medical treatments for the poor, and in his obituary it is stated, “By his Death, the Poor are deprived of a most humane and disinterested Physician.”⁶⁶

In addition to his work for the poor, William Small also attended to some of Birmingham’s more affluent citizens and engaged in consultations with some of the most distinguished physicians in Britain. When first returned to England, William Small communicated with Dr. William Heberden, Franklin’s co-author, friend, and preeminent physician. Heberden thought enough of Small to intercede for him in the matter of a lucrative post in St. Petersburg. Small, the primary physician in the case of Matthew Boulton’s daughter, consulted on a regular basis with Erasmus Darwin and other distinguished physicians such as George Fordyce and John Hunter. In a joint letter sent to Small, Hunter wrote, “Mr Boulton having consulted us on his daughter’s case and desired us to communicate our opinion to you that we may also have your sentiments with regard to it.” They concluded the letter with the provocative salutation, “We remain your brethren of the Phil. Society, G. Fordyce, J. Hunter.”⁶⁷ It is not known whether this indicates that Small was a member of a London medical fraternity or whether Fordyce and Hunter were occasional visitors to the Birmingham meetings. There are no other indications that either doctor ever attended a meeting of the Lunar Circle, and it is therefore possible that Small may have joined certain societies in London.

William Small consulted repeatedly with Alexander Small, his old friend and namesake, and also with Sir John Pringle, the noted physician. In 1767 William wrote to Alexander thanking him for a formula of Hemlock suggested by

Sir John Pringle in treating a cancer patient, “Hemlock well tolerated, pain subsided, tumour began to shrink.”⁶⁸ In that same year William again wrote to Alexander concerning the successful treatment of chronic skin diseases by a “Tincture of White Hellibore.”⁶⁹ And in the summer of 1768 Alexander Small wrote to Pringle, “Dr. [William] Small has written to state that all clinical evidence of breast cancer has now disappeared.”⁷⁰

The extensive use of herbs and concoctions that Small employed might indicate that Small studied with an apothecary, or might be a result of his association with Erasmus Darwin, a pioneering influence in the study of botany and the use of plants in modern medical treatments.

Small’s mentor and promoter, Benjamin Franklin, consulted Small on the best methods to avoid and cure the common cold. Small gave the practical advice, “*Nemo mortalium fere est sine catarrhis*. (Scarcely no man of the mortal race is without the common cold).”⁷¹ That Small associated with and was consulted by so many prominent doctors is an indication of his degree of medical knowledge and ability.

Although Small claimed that the practice of medicine was worse than a gaol, it was his principal profession. Small is remembered primarily for his contributions to science and invention, but he spent most of his time in the practice of medicine. Although he was successful in treating others, nevertheless, the doctor could not heal himself.

Small's Illness and Death

It has been suggested that William Small died of tertiary malaria, which he caught in Virginia. Nathaniel Jeffreys wrote in his letter of introduction, “[Small] came home on acct. of his health & some buissness. & prefers a settlement at home to returning to Virginia as he never kept his health there.”⁷² Indeed there is circumstantial evidence from Small's behavior that tertiary malaria may be the appropriate diagnosis. In Williamsburg, Small seemed very active, visiting friends, practicing medicine in “distant parts”, having dinners at the Governor's Palace, and spending nearly half his salary from the College on wine or in taverns, but he seemed more sedate in Birmingham, according to Erasmus Darwin, “he lived a quite recluse studious life.”⁷³ In Birmingham he was still very active, he sat on various committees, opened a clinic with Dr. Ash, attended local meetings to promote the Canal business, organized and encouraged the meetings that would develop into the Birmingham Lunar Society, provided free medical assistance to the poor, alternately chided and encouraged the frequently despondent Watt, and traveled to London to promote the prolongation of the patent for Watt's steam-engine. In between the various activities he would collaborate with others on their inventions and work on his own. Yet, he wrote to Watt.

The ennui mortel has totally ruined me for an experimental philosopher. I have now about ten capital points in philosophy,

original, important, unthought of, all capable of procuring fame, and two of procuring fortune, and yet I cannot resolve to prosecute them. I flatter myself that I shall soon be “pulvis et umbra,” and fold my arms to sleep. Who will call me projector now? ⁷⁴

Small was plagued intermittently by bouts of depression, or ennui, and it is difficult to determine whether this derived from a medical condition or a state of mind. It may have been this malaise of spirit that incapacitated Small. He recommended to Watt to take baths in “decoctions” of herbs to relieve the condition and claimed that nausea often accompanied his ennui. In the fall of 1773 he wrote to Watt concerning his condition and its attending symptoms.

However, in spite of all sects of philosophers and of all their doctrines, one maxim is infallible, -life must either be spent in labour or ennui. Which is best or which is worst of the two I cannot easily determine. Unfortunately, in my case, labour seldom alleviates and often increaseth the ennui, and almost always disorders my stomach.⁷⁵

Some researchers suggest that Small suffered from Malaria, contracted while in Virginia. Indeed, Malaria was a common cause of death among the inhabitants of that colony. The symptoms of chronic, or *falciparum malaria*, include flu-like illness, shaking chills, muscle aches, tiredness, malaise, nausea, vomiting, headache, confusion, and diarrhea. The symptoms are most evident

during a malarial paroxysm, which is a cycle when some of the parasites are destroyed by a victim's immune system while others invade new blood cells and the cycle is repeated. In *falciparum malaria*, symptoms can reoccur as much as fifty years after the initial infection.⁷⁶

Small complained about his symptoms in several letters to Watt, and Alexander Small mentioned some of the symptoms of Small's case in letters to Sir John Pringle and Dr. Heberden. Small's most common complaint was fatigue and malaise or depression. On one occasion Small wrote to Watt that his medical practice exhausted him and it paid him "but indifferently," and although he felt fine as long as he making progress in his work, "but if I am absolutely puzzled, and see no clue, my head turns me around, and I speedily become more tired than a galley slave."⁷⁷

Small complains in his letters of lethargy,⁷⁸ dizziness,⁷⁹ and nausea.⁸⁰ The impact of the disease became more profound as time passed, and Small recognized that his illness was reaching a critical stage. Muirhead wrote, "Early in 1775 he was seized with the symptoms of the ague to which he had previously been subject, and which did not at first appear to threaten an illness of more than common severity."⁸¹ Erasmus Darwin's son, a favorite of Small, wrote about Small's last outing shortly after his death:

About three weeks before his Death, when already poorly, Small had to travel to Tamworth, when called by a Patient for whom he had a great Regard. He vomited most of the Way in the Chaise and when he

arrived there he was so feeble that he was obliged to lye down as he prescribed. On his return he went to bed and was delirious above half his Illness which was a nervous fever attended with great Feebleness.⁸²

On arriving back in Birmingham, Small was immediately put to bed at his home at 9 Temple Row. At first his illness did not seem dangerous, but he suffered several relapses. However, he continued to believe that he would recover. As it became apparent that the relapses were becoming more severe, a number of Small's friends, colleagues, and acquaintances were consulted. Erasmus Darwin, Matthew Boulton, and James Keir were in constant attendance. It is assumed, although not documented, that John Ash was also tending to Small. Mrs. Boulton and Mrs. Fothergill acted as nurse attendants.⁸³ In response to Boulton's desperate plea for added medical assistance, John Fothergill tried to convince Dr. Heberden and Sir John Pringle to go to Birmingham. He was unsuccessful in this attempt and wrote back to Boulton:

Your letter which was sent express. Mr. [Alexander] Small did not arrive in time enough for me to consult Sir John Pringle that day, therefore it was agreed to send his opinion by post. Sir John Pringle calls his fever [illegible] a fever with delirium and does not think the symptoms mentioned in your first letter entitled it to be called Jail or Putrid Fever. He agrees with Dr. Heberden that it is difficult to prescribe anything with propriety.⁸⁴

James Watt wrote Boulton with the same dire predictions, "Mr. (Alexander) Small offered to go down with Dr. Heberden, but he will upon no account go from London, and said he could be of no service, as he conceived the disease to be one of the stomach and incurable."⁸⁵ Alexander Small begged off coming to Birmingham, which was a journey of two days over rough roads, because, he wrote Boulton, "I am very lame, and every hour afraid of being laid up with the Gout. If that was to happen on the Journey, it would be very embarrassing indeed." In the same letter he tells Boulton, "I hope and earnestly pray that he may recover better health; if then he continues to express a desire of seeing me, I shall certainly endeavour to comply."⁸⁶

The final day was excruciating for Small's friends. Profusely sweating with a high fever, he became delusional, confused, nauseated, and finally fell into a coma and died. On his last day, confident to the end that he would recover, Small was surrounded by his surrogate family, Matthew Boulton, James Keir, Erasmus Darwin, Mrs. Boulton, and Mrs. Fothergill.⁸⁷ Thomas Day hurried back

from Brussels when he learned the severity of Small's illness, but he arrived too late and his mind "was long in recovering."⁸⁸ James Watt was away on engine business. As their mother recently passed away William's brothers were not able to come. Robert Small wrote Boulton, "We were not without some fears for this week past about our brother imagining he was sick as we had written him of his mothers death about 4 weeks ago and received no answer. But weak as we knew his constitution to be we dreamt not of his death."⁸⁹

The night Small died an extremely distraught Boulton dashed off two letters to Watt, both reflecting the degree of his pain. Boulton's profound grief was palpable in the first letter:

You have just lost a friend, so have I. Take him all in all we shall
ne'er see his like again.
My Loss is as inexpressible as it is irreparable. I am ready to burst.
Your inconsolable and affection Friend,
Mattw Boulton
Acquaint Dr Roebuck, I can't⁹⁰

In the second letter, more composed but not less dramatic, Boulton tells Watt, "If there were not a few objects yet remaining for me to settle my affections upon, I should wish also to take up my Lodgings in the Mansions of the Dead."⁹¹

Boulton was not the only one writing on that fateful evening; Erasmus Darwin sent a puzzling epistle. It was addressed to a friend, William

Withering, in a very peculiar fashion. Darwin wrote, "A person at Birmingham desired I would acquaint you with Dr. Small's death as soon as I could, but would not permit his name to be mentioned lest he might disoblige some he did not wish to disoblige." Darwin urged Withering to come to Birmingham and apply for Small's position, he stated, "I saw by Dr. Small's papers that he had gained about £500 a year at average, taking the whole time he had been at Birmingham, and above £600 on the last year's." Darwin added that Small lived rather frugally and made a considerable income both from his medical practice and "by some other circumstance of manufacture or schemes." He encouraged Withering to apply to Matthew Boulton at Soho as soon as possible, and that the chances for procuring this position, "the most eligible of any country situation," were good only for a person who has "some philosophical acquirements, as well as medical." Darwin also cautioned Withering not to mention the letter to anyone and when he wrote back "please put private on the internal cover."⁹²

Several interesting points arise from this letter. Small was not even cold and Darwin wrote furtively to a friend to come and take his place. Darwin went through Small's papers and divulged information from them. He also evidently had an accomplice in these activities. Darwin may have wanted someone who was professionally adept and philosophically inclined to be a replacement for Small, suitable both to Birmingham's medical community and to the members of the Lunar Society. From this letter, it also appears that Small did have a cache of papers and books. The vast majority of Small's extant papers are almost

exclusively devoted to some aspect of the development of the steam engine, yet Darwin's letter indicates that there were other papers as well. It is also possible that Dr. John Ash, looking for another partner in the clinic and roommate on Temple Row, may have asked for Darwin's assistance in this matter.

On Monday February 27, 1775, the following obituary appeared in the local newspaper:

On Saturday Morning last died of a Fever, after a short Illness.
William Small, M.D. His extensive Knowledge and great Abilities
procured him universal Admiration; his eminent Virtues gained him
the Esteem and Affection of all his Acquaintance. By his Death, the
Poor are deprived of a most humane and disinterested Physician, and
his Friends have suffered an irreparable Loss.⁹³

Small died on February 25, 1775, yet burial records from St. Philip's Church indicate that he was not buried until March 15, 1775. The long delay may have been due to the efforts of Matthew Boulton and James Keir to get appropriate instructions from William Small's family in Scotland. By March 9, 1775, Boulton wrote to Watt, "None of the Smalls are arrived nor any Letter wch surprises me."⁹⁴ Rev. Robert Small wrote to Boulton, "[D]o everything as if he were a brother of your own: for it is impossible that my other brother or I can be present neither would it be of any use."⁹⁵

Boulton immediately wrote Keir that neither Rev. Small nor his brothers

could come and asked if he would attend to the details of the funeral. Boulton informed Keir, "I have wrote him an answer shewing him the impropriety, nay the impossibility of my settleing the Drs affairs which cannot be done by anybody but such as take out letters of administration & therefore I have pressed him or his other Brothers to come down."⁹⁶ The brothers Small finally left Dundee around March 22 and arrived in Birmingham on March 30. They immediately went to Soho and not finding Boulton there were "greatly disappointed," they next visited Erasmus Darwin in Lichfield. They sent a note to Boulton, "Not having met wt you, nor having seen Mr Keir although we expect him tomorrow nor having had access to our brothers papers we have hitherto been able to do nothing except cause Mr Howard at Lichfield write London for letters of administration."⁹⁷ But, by this time, two estate sales of Small's belongings had already taken place. The first sale likely contained Small's papers, books, scientific equipment, and most of his personal effects. Marie Edgeworth wrote about some items her father, Richard Lovell Edgeworth, inherited through Thomas Day, "When Dr. Small died, Day made some purchases from Small's estate, including a set of the *Memoires de l'Academie Royale des Sciences* and a Papin's digester. According to Marie Edgeworth, her father received some mathematical instruments from Day's estate which "were valuable ... to him, from recollections of former times."⁹⁸ The second sale consisted of a set of teacups, a terrestrial globe, and bed linens; the total revenue from that sale was £2:14:6. It is not unlikely that Boulton and Keir held a private sale for Small's friends, in which many of his papers and all of his books and equipment were bought up; close friends may have even been

allowed to select mementos, and at this time Boulton probably extracted all the papers concerning the steam engine. In any case, there is no evidence that Small's family ended up with any of his personal effects, although they received monetary proceeds from William's stocks. However, the personal papers may not have been considerable, for Keir wrote after his death, "Dr. Small, although possessed of various and eminent talents to instruct mankind, has left no trace behind of all that store of knowledge and observation which he had acquired and from which his friends never left him without drawing fresh information."⁹⁹ Small himself affirmed this same habit in a letter to Watt, "& my Taste having induced me to decline fellowships of Societies & publications &c &c &c."¹⁰⁰ Small's papers were probably either destroyed intentionally or through neglect, or taken away by his friends.

The sentimental Boulton seemed to have suffered the most from Small's demise. According to Fothergill, Boulton became ill from delivering a eulogy for Small,¹⁰¹ and Boulton himself wrote to Watt of his illness induced by grief. Watt in his turn tried to deflect Boulton's grief and urged him to turn himself to business:

To pretend to offer you consolation under the weight of your present sorrow, I know to be in vain. I only beg leave to repeat to you the sentiments which that dear friend we lament expressed to me on a similar occasion. It is our duty as soon as possible to drive from our minds every idea that gives us pain, particularly in cases like this,

where our grief can avail us nothing... Come, my dear Sir, and immerse yourself in this sea of business as soon as possible, and do not add to the griefs of your friends by giving way to a tide of sorrow. I again repeat that it is your duty to cheer up your mind and to pay a proper respect to your friend by obeying his precepts.¹⁰²

As Small's life had been a sequence of remarkable and serendipitous coincidences, in his death there were remarkable ironies. The patent bill, for which Small worked so hard, planned so meticulously, lobbied so fervently, was first read in Parliament a week before Small was interred; it passed less than three months after he died, and it extended the monopoly on Watt's engine for twenty-five years. It would have made him a part of a very wealthy triumvirate.

Thomas Jefferson, knowing of the upcoming conflict between his home country and Great Britain but unknowing of the death of his friend and mentor, packed up three dozen bottles of Madeira wine, and sent them along with the wish that "amid public dissension private friendship may be preserved inviolate."¹⁰³

Small never received the benefit of his hard work nor the sweet wine of genuine gratitude.

Summary

The last years that Small spent in Birmingham were the most productive and well documented segment of his life. He left Virginia with a commission to

buy scientific equipment for the College of William and Mary in late September 1764, and arrived at the home of Alexander Small, in London, on December 1, 1764. Small spent the next several months in a flurry of social, business, and intellectual activities. He accompanied Benjamin Franklin and Alexander Small to numerous meetings and dinners; he obtained recommendations for a medical degree from two eminent physicians, John Gregory and Sir John Eliot, and received his medical diploma from Marischal College; he visited medical classes at the University of Edinburgh; and he was petitioned to give lectures in those parts of physics that most immediately concerned doctors and surgeons.

In May of 1765, Small left London for provincial Birmingham to apply for a position with the wealthy and influential industrialist, Matthew Boulton, who was looking for a physician for his daughter and a scientific advisor for his business concerns. Small's extensive scientific and medical knowledge and a letter of recommendation from Benjamin Franklin secured the post for him. From the beginning Small and Boulton got along famously, different in personality but interested in many of the same subjects, they complemented one another. By the fall of 1765, Small, by successfully concluding a number of dangerous medical cases, increased his reputation as a physician to such an extent that his practice grew almost as much as he could wish. In fact, he turned down an opportunity for a lucrative post in Russia, which had been offered by Dr. William Heberden, Franklin's friend and colleague. By December, Small established a medical practice with the fashionable Dr. John Ash in Temple Row, initiated the beginnings of the celebrated Birmingham Lunar Society, and took a place on the

Board of Trustees of the Birmingham Public Hospital.

William Small, with Boulton's backing and Erasmus Darwin's participation, set up a series of informal dinners followed by scientific discussions and demonstrations. Without rules and regulations, flexible in the subjects it entertained, inclusive and welcoming, with fine food and engaging conversation, the Lunar Society grew unconsciously from Boulton, Small, and Darwin to include some of the most celebrated intellectual figures in Britain. Members of the Lunar Society often belonged to other intellectual clubs as well and within a short time the network of connections extended throughout Britain, Europe, and America. The great advantage of the Birmingham Lunar Society was that it served as a clearinghouse for ideas; members and guests contributed, advised, assisted each other without regard for reward or recognition. Although comprised of individuals of various backgrounds and interests, a composite profile of its membership reveals a non-traditionalist attitude toward religion, politics, literature, and education and a revolutionary stance in regard to advancements in science and industry. The nature of the society and the influence of its members had a profound impact on the scientific, economic, social, and cultural developments in Britain.

Small initiated the Lunar Society, and Boulton promoted and supported it. Evidence suggests that the format of the Lunar Society may have been based on the Aberdeen Philosophical Society, an organization that included Small's mentor, John Gregory, and many of his professors from Marishal College. The aggregate accomplishments of the Lunar Society are astounding; from theories of

evolution and the formation of the earth, to the discovery of oxygen, hydrogen, and carbon dioxide, to the invention of micrometers, barometers, pyrometers, and the steam engine.

As important as Small's role in the formation of the Lunar Society was, he is probably better remembered for his contributions to the evolution of Watt's steam engine. James Watt, while visiting Boulton's famous Soho Factory in the spring of 1767, met William Small and thus began a collaboration and friendship that produced an invention that played an important role in the Industrial Revolution. Small's participation was essential in the process of financing, development, and securing a patent for Watt's steam engine. For several years after the initial meeting Small, urged his patron, Matthew Boulton, to invest in Watt's project. However, Boulton refused to be involved in business ventures over which he did not have control and Watt already had a partner in Dr. John Roebuck. But due to unexpected setbacks Roebuck's financial position became increasingly precarious and eventually he sold his shares of Watt's project to Boulton. With Boulton finally in control of the business end of the process, he was prepared to commit wholeheartedly to the project. Small acted as an advisor and to a cheerleader for Watt. A constant stream of letters passed between the two discussing ways to improve the efficiency of the engine, what materials should be used in its construction, how to protect the specifics of the invention from industrial spies, potential applications for the engines, and personal information. These letters are the major primary resource for Small during this period of his life. In 1768, Watt secured a patent for his steam engine, but was

unable to work on it for substantial periods of time. When Boulton became involved in the project, he was convinced that an extended patent was necessary not only for developing the engine but also for making the process economically feasible. To that end Small advised Watt in the specifics of writing up a patent, he lobbied people connected to the patent process, and he enlisted the aid of members of the Lunar Society and their influential friends to secure its passage.

Between the Lunar Society and Watt's project, Small's life seems to have been very busy, but his primary occupation was as a physician. However, previous to this study, the interest in Small has been primarily contingent on his connections with Thomas Jefferson, the Birmingham Lunar Society and Watt's steam engine, and little investigation has been conducted concerning his medical career. Evidence concerning his medical training is still in large part conjectural, but there are several documents attesting to his medical practice in Virginia, and a more substantial record of his medical activities in England. In 1765, he obtained an M.D. from Marischal College upon the recommendation of John Gregory and John Eliot, the first king's physician in Scotland and the second king's physician in England. In May of 1765 Matthew Boulton hired Small, upon Benjamin Franklin's recommendation, to attend to his daughter who suffered from a deformity of the hip. In less than a year after arriving in Birmingham his medical practice had grown so large that he turned down a lucrative post in Russia; established a clinic with John Ash, a prominent Birmingham physician; and was among the founders of Birmingham Public Hospital. He consulted with and was consulted by some of the most celebrated physicians of his day: Erasmus Darwin,

William Heberden, Alexander Small, John Hunter, George Fordyce, and Sir John Pringle. Correspondence indicates that Small treated such disorders as skin disease, cancer, bone malformations, and internal diseases. Unfortunately, Small was unable to diagnose his own illness.

Small suffered from dizziness, depression, severe headaches, disorientation, profuse sweating, and delirium. Many suggest that Small contracted malaria while in Virginia. However, as Small certainly treated the disease while “practicing physick” in Virginia, it is unclear why he was not able to recognize the same symptoms in himself. It is curious that his physicians in England did not prescribe quinine for him, and why several eminent physicians who were consulted declared his illness as a disease of the stomach and incurable. Small died from this disease on February 25, 1775, two days before legislation to extend Watt’s patent was introduced before the House of Commons.

Small’s death at the age of forty-one saddened the many members of his surrogate family and, in particular, Matthew Boulton. Little material evidence from Small’s estate, except his letters to Watt dealing with patent matters, seems to have survived. However, his legacy to the world was the contributions that he made to the education of Thomas Jefferson, his essential role in the evolution of the Birmingham Lunar Society, and the primary part he played in the financing, development and patenting of Watt’s steam engine.

Endnotes – Chapter 6

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- 1 "Alexander Small," *European Magazine* (January 1799), 20-21; "Obituary of remarkable Persons; with Biographical Anecdotes," *Gentleman's Magazine*, Vol. LXIV (September 6, 1794), 864-865.
- 2 Alexander Small to Benjamin Franklin, 1 December 1764, *Franklin Papers* I/110, American Philosophical Society, Philadelphia, Pennsylvania.
- 3 Stephen Hawtrey (London) to Ned Hawtrey, 26 March 1765, Ganter Collection. Swem Library, College of William and Mary, Williamsburg, Virginia, Box III, Folder 21.
- 4 Vernon Crane. "The Honest Whig Society," *William and Mary Quarterly*. 3rd Series, Vol. 23, No. 2, (April 1966) 210-233.
- 5 Stephen Hawtrey to Ned Hawtrey, 26 March 1765.
- 6 Courtesy of Michelle Gait, Archivist, *Register of Medical Degrees Awarded 1765-1818*. MSM 28 f-20, Archives, University of Aberdeen, Aberdeen, Scotland.
- 7 Courtesy Dr. Andrew Doig, G.A.G. Mitchell, "The Medical History of Aberdeen and Its Universities," *The Aberdeen University Review*, Vol. XXXVII, No. 118 (Spring, 1958), 235.
- 8 P.J. and R.V. Wallis, *Eighteenth Century Medics* (Newcastle upon Tyne: Project for Historic Bibliography, 1988), 178 ; Courtesy Michelle Gait, Archivist University of Aberdeen. 26 June 2002. "However, as I emailed you yesterday, the index to the printed Records of Marischal College (whose entries are transcribed from the original register), which I have copied and enclosed, gives a few more details, Eliot, Sir John, kt. M.D. London."; National Biography gives mixed information concerning John Eliot, some of the information fits Sir John Eliot and some seems to be derived from a second John Elliot in London living in Great Marlborough Street, Wallis & Wallis in *Eighteenth Century Medics* provides information for both John Elliots-one Sir John Eliot and the second John Elliot.; Courtesy Dr. Judith Curthoys, Archivist, Christ Church College, Oxford University, J.R. Partington and Douglas McKie "Sir John Eliot and John Elliot," *Annals of Science*, Vol. 6 (1948-1950), 262-267. The physician that recommended William Small was Sir John Eliot, who was born in Edinburgh in 1736 and went to London to become an apothecary's assistant. Enticed by the lure of adventure and booty, he signed on to a privateer's ship and returned home with a substantial praemium. He then determined to become a physician, took a medical degree, and established himself in Cecil Street, London. In 1771, he married Grace Dalrymple, the 14 year old daughter of Hew Dalrymple, a prosperous Edinburgh barrister, and took her back to London. In London Grace discovered the pleasures of the flesh and ran off with Lord Valentia in 1774. Eliot obtained a divorce and £12,000 in compensation from Grace's father. Grace's brother placed her in a nunnery in France from which Valentia rescued her. Back in England she took up with the Prince of Wales and bore him a daughter. Ironically, Eliot was to become the future king's physician in 1778 and knighted for his services to his Royal Highness. He was listed in the Medical Register of 1779 as Senior Physician at Greenwich Hospital. He should not be confused with John Elliot, another London physician of the same era, who died insane in Newgate Prison.

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- 9 William Small to James Watt, 27 October 1773, Matthew Boulton Papers 125/37, Archives, Birmingham Public Library, Birmingham, England.
- 10 "Journal Book of the Royal Society: 1763-1766," XXV, Archives, Royal Society of London, 416, 426.
- 11 Benjamin Franklin to Matthew Boulton, 22 May 1765, in *The Papers of Benjamin Franklin*, Vol. 12, ed. by Lawrence Labaree (New Haven: Yale University Press, 1968), 140.
- 12 Nathaniel Jeffreys to Matthew Boulton, 5 July 1765, Matthew Boulton Papers 240, Archives, Birmingham Public Library, Birmingham, England.
- 13 "Birmingham Hospital" in *Aris's Birmingham Gazette*, 30 December 1765, Ganter Collection, Archives, Swem Library, William and Mary College, Williamsburg, Virginia.
- 14 John Baskerville to Matthew Boulton, 9 December 1765, Matthew Boulton Papers 340, Archives, Birmingham Public Library, Birmingham, England. Heberden was an associate of Benjamin Franklin and the two jointly published a pamphlet on smallpox in 1759. A microfilm copy of this work, signed by both authors, is located in the Archives of Swem Library, the College of William and Mary, Williamsburg, Virginia. Benjamin Franklin and William Heberden, *Some Account of the Success of Inoculation for the Small-Pox in England and America*, (London: W. Strahan, 1759).
- 15 Robert Schofield, *The Lunar Society of Birmingham*, (Oxford: Clarendon Press, 1963), B2.
- 16 Schofield, 17.
- 17 Courtesy of Dr. Richard Hills. Eric Robinson. "The Lunar Society: Its Membership and Organization." (London: Newcomen Society Lecture, 1963), 156.
- 18 *Ibid.*, 156.
- 19 *Ibid.*, 154.
- 20 Schofield, 41.
- 21 Robinson, 156.
- 22 Robinson, 160.
- 23 Schofield, B2.- Schofield listed : Matthew Boulton, Erasmus Darwin, Thomas Day, Richard Lovell Egeworth, Samuel Galton Jr., Robert Augustus Johnson, James Keir, Joseph Priestley, William Small, Jonathon Stokes, James Watt, Josiah Wedgwood, John Whitehurst, and William Withering; Robinson, *ad passim*; R.V. Wells. "The Lunar Society." *The School Science Magazine*, Vol. 33, No. 119, (1951-1952), 13-14
- 24 Robinson, 157.
- 25 Schofield, 36.
- 26 R.V. Wells, "The Lunar Society," *The School Science Review*, Vol. 33, No. 119 (1951-1952), 13-14, 16; G.J. Stoker, "The Lunar Society," *The Central Literary Magazine*, Vol. XIII (1897-1898), 58. See Appendix 6 - Birmingham Lunar Society Matrix.
- 27 J. E. Morpurgo, *Their Majesties Royal Colledge: the College of William and Mary in the Seventeenth and Eighteenth Centuries* (Washington, D.C.: Hennage Creative Printers, 1976), 138.
- 28 H.W. Dickinson, *Matthew Boulton* (Cambridge: University Press, 1937).
- 29 Matthew Boulton to James Watt, 7 February 1769, Muirhead Collection [43], in James P. Muirhead, *The Origin and Process of the Mechanical Inventions of James Watt*, Vol. I (London: John Murray, 1856), 41-42.
- 30 *Ibid.*, 42.
- 31 John Roebuck to William Small and Matthew Boulton, 28 November 1769, Muirhead Collection [68], in Muirhead, Vol. II, 82.

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- 32 James Watt to William Small, 30 August 1772, James Watt Papers, 4/59, Archives, Birmingham Public Library, Birmingham, England.
- 33 James Watt to John Roebuck, 14 March 1769, Muirhead Collection [49], James P. Muirhead, *The Origin and Process of the Mechanical Inventions of James Watt*, Vol. I (London: John Murray, 1856), 48.
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Chapter 7

Conclusions

The Central Issues of Small's Life

The three issues crucial to understanding the significance of the life of William Small are his educational background and how his educational background impacted his teaching style, the influence Small had on his students and colleagues, and Small's place in history.

Small's Educational Influences

Small's education consisted of his primary instruction at Dundee Grammar School, his philosophical training at Marischal College, and his medical training. Small started his formal studies at Dundee Grammar School around 1743 when he was approximately nine years of age. This school had a long and illustrious past and was well known for its academic rigor and the excellence of its masters. Grammar schools were established to prepare students for the universities and generally stressed Latin and Greek. But, instead of a five year program, as was normal for grammar schools in Scotland at the time, Dundee boasted a more robust seven year program with an emphasis not only on classical languages, but also on math and science.

Small first encountered the “lecture” system at Dundee Grammar School. By this system, students took notes in the morning, discussed the lecture and participated in a question and answer session in the afternoon. They were given assignments for the evening and were questioned about their findings the next class meeting. Even on Sundays this system was practiced, when after church, the students met with their masters, discussed the sermon and were questioned on its contents and significance. On Mondays students guilty of infractions were brought to the rector’s office to atone for their transgressions. Dundee Grammar School provided a greater variety than most other grammar schools of the day in the curriculum and placed a greater stress on the pragmatic aspects of science and math.

At Dundee Grammar School a variety of scholarships and mortifications were available and likely both William Small and his older brother, Robert, received funding. Scholarships, bursaries, and mortifications were often very detailed, specifying the institution, subjects studied, and even priority given according to a student’s first name (Bruce’s Mortification). It is likely that both William’s brother received a scholarship to St. Andrew’s University, and William, received one to the more recently established Marischal College. This, however, proved to be a fortunate coincidence in Small’s life. St. Andrews University was the *alma mater* of several earlier Smalls, and it was a traditional institution that stressed classical languages and professional studies. By contrast, Marischal College was progressive and scientific. Due to its location, clientele, and

professors, at that time Marischal had one of the most advanced programs science, mathematics, and natural philosophy in Europe.

An engraving from this era depicts Marischal College as an architecturally clumsy structure built in a ramshackled fashion, but on the upper floor of the tower one can see scientific apparatus, indicating the institution's dedication to science. Natural philosophy was such an important component of the curriculum at Marischal College that different elements of the course encompassed two entire years of instruction. Experimental philosophy or scientific demonstrations, experiments, and observations were particularly advanced at Marischal.

Two of Small's professors in particular were considered to be in the vanguard of literature and science. Alexander Gerard's *Essay on Taste* was considered a seminal work in the belltristic tradition; William Duncan was highly regarded for his demonstrations of experimental philosophy and for systematic format for studies expressed in his *Elements of Logic*. Small employed elements of both men's ideas in his classes at William and Mary.

During Small's time as a student, Marischal underwent a fundamental change in the method of instruction at the instigation of Alexander Gerard. In the traditional regenting system, one professor would lead a single class of students through all four years of instruction, teaching all the subjects. This allowed the professor to know his students thoroughly and develop a personal as well as academic relationship with them. In the revised professorial system, one professor would teach each class of students a single subject, so that each class had several professors. This allowed each professor to become an expert in his

field and instruct the students with a greater degree of sophistication and specificity. This change came in 1753, in the middle of Small's studies at Marischal College, and it provided him the benefit of both systems. This combination of organizational style was a great advantage to Small when it became necessary for him to teach all the collegiate subjects at the College of William and Mary. Small graduated with a M.A. in 1755.

One of the most enigmatic segments of Small's life was the period after he graduated from Marischal College in 1755, until he was recruited for the post of professor of mathematics at the College of William and Mary in 1758. Some sources claim that Small was apprenticing with John Gregory in Aberdeen during those years, while others claim that he did not have any formal medical training; however, evidence suggests that Small trained in London. While there is no conclusive evidence where Small underwent medical training or who his instructors were, evidence indicates that Small was well prepared for the medical profession when he received his degree in 1765.

The Aberdeen Philosophical Society was likely an important element in Small's philosophical education. The "Wise Club", as it was locally known, began after Small left Aberdeen, but he was acquainted with many of the principal players: John Gregory long mentioned as Small's mentor; Alexander Gerard, his magistrand professor of moral philosophy; Francis Skene, Small's professor of natural philosophy; and, Thomas Reid, founder of the School of Common Sense Philosophy (and John Gregory's cousin). Most significantly, although William was a family friend to numerous members of the Trails of Aberdeenshire, he is

only recorded as maintaining a correspondence with Robert, William and James Trail (all of whom happened to be members of the Aberdeen Philosophical Society). Many elements of the Society's discussions and some of the same questions recorded at their meetings may have reappeared both at meetings of the *partie quarrae* in Williamsburg and at sessions of the Birmingham Lunar Society.

Small's Educational Innovations

The influence of both Dundee Grammar School and Marishal College is reflected in Small's scientific and progressive approach to teaching and the many innovations that he instituted during his time at the College of William and Mary. Small's early education gave him a non-traditional orientation in respect to the relative importance of the contents of the curriculum. At most institutions of higher learning the emphasis was placed on preparing for the learned professions of ministry, law, or medicine. Conversely, at Marischal College it was mathematics, science, and the practical arts that were stressed. This shift in emphasis was due to Marishal's location, circumstances, clientele, and patrons. Separated by the mountainous geography and poor transportation infrastructure of eighteenth century Scotland, Aberdeen and Marischal had closer economic, cultural, and intellectual ties with France and Holland than they did with the rest of Scotland. And so, the professorate at Marishal breathing in the air of the Enlightenment in Richelieu's Paris or absorbing a rational approach to science from the pragmatic and scholarly faculty in the Dutch university town of Leyden,

taught in ways influenced by these sources while establishing new instructional traditions that they passed on to their own students. In addition, the students of Marischal were not from the aristocratic families of the Highlands but tended to come from merchantile families of New Aberdeen, who valued the pragmatic over the theoretical. The Town Council, which supplied the majority of the funds for the College, was also comprised of members of the same merchant community. Thus, a preponderance of the curriculum dealt with science, math, and the practical arts. Marischal College was more scientific in its orientation and rational and secular in its philosophy than most of its contemporaries, and Small transferred both the philosophy and the specifics of this curriculum to his post at the College of William and Mary

Among the innovations that Small introduced was a change from the traditional rote and recitation method to the new Scottish lecture system. In Small's version, lectures and demonstrations were given first, students asked questions and discussed the material, and then they were tested or gave performances demonstrating their competence, in much the same manner as Small was instructed both at Dundee Grammar School and Marischal College. This method was in stark contrast to rote method, which consisted of ingesting and regurgitating information, used at William and Mary before Small's arrival. The new lecture system not only allowed for deeper understanding of the material covered, but also allowed the students an opportunity to express and develop their own thoughts, and distinguishing them from the less evolved scholars of the grammar school. Small won much praise from his peers and students for his

scientific demonstrations and observations, which were integral features of his education at Marischal College.

There are numerous references to demonstrations and even suggestions that he established a club for experimental philosophy and astronomical observations at Williamsburg. Small's reputation, and Governor Fauquier's influence, were likely responsible for the £450 that the House of Burgesses allocated for the purchase of scientific equipment for the college. Judging from the apparatus that Small purchased in England, he was particularly interested in electrical experiments, astronomical observations, optics, mechanics, statics, and meteorological studies.

Small surely recalled the punishments that were delivered on Mondays at Dundee Grammar School, for he was the only member of the faculty to vote against the use of corporal punishment. Jefferson was likely influenced in this matter for he recommended the same humane policy to the Board of Commissioners for the University of Virginia.

Small's leadership at the College of William and Mary sparked an interest in learning among the students. It is serendipitous that during the years Small was teaching at William and Mary, and especially during that time when he was the sole instructor in the philosophical school, some of the future leaders of a new nation were under his guidance and influence.

Small's Influence on his Students

Small taught at the College of William and Mary from 1758 through 1764, a time when several of the rising leaders of the American Revolution were attending school there. For some students, Small was their only collegiate instructor, as he was in charge of the philosophical school for over a year. Small introduced many of the same educational innovations to William and Mary that he experienced at Marischal; particularly, the new lecture system, demonstrations in experimental philosophy, and the study of belles-lettres.

Small's influence was not limited to academic subjects. Robert Carter, John Page's cousin, is said to have returned from school in England so inconceivably illiterate and corrupted and vicious that Mann Page refused to send his son to that place. Indeed, Robert Carter, realizing these deficiencies, put himself under Small's tutorage. John Page recalled that, under Small's instruction, Carter learned of the tyrannical designs of the British government and was ever after a true and steady patriot. It is probable that Small met with his friends and students in the very same taverns to discuss political and scientific issues of the day, where later many of the same group met to discuss revolution. These early conversations may have infused Small's other students with the same fervor for freedom as it did Robert Carter, as several played prominent roles in the American Revolution.

Although Small's influence can be detected in the lives of John Page, John McClurg, and Walter Jones, Jefferson is the most obvious candidate to inspect for

the impact of Small's influence. Of all Small's students at William and Mary, Jefferson seemed to be his favorite. The parallels drawn between the two men are clearer than those between Small and his other students. Small's influence on Jefferson's thoughts and actions are more evident than in Small's other students; and Jefferson's thoughts and actions are more well documented than his contemporaries from William and Mary. Small made Jefferson his "constant companion" when not engaged in school and was, according to Jefferson, "as a father" to him. Years later, Jefferson wrote to his grandson that, whenever he was in a quandary as a youth as to the right course of action to take, he would often ask himself what would Dr. Small do in a like situation.

Some scholars have found tangible evidence of Small's influence on the Declaration of Independence, and that Jefferson was more influenced by elements of the Scottish Enlightenment than the French Enlightenment. In particular, the Declaration of Independence has been singled out as an example of that influence. The claim is that the format for the logical argument of the Declaration of Independence follows very closely that laid out in William Duncan's *Elements of Logick*. Especially persuasive is the argument that proponents of the Common Sense School of Philosophy found self-evident truths to be far more certain than those syllogistically argued. From this perspective it is no mere coincidence that the very term *self-evident* is a prominent feature in both Duncan's *Elements of Logic* and Jefferson's Declaration of Independence, and it is a primary feature of Thomas Reid's Common Sense School of Philosophy. Small is clearly the most likely connection between Duncan's *Elements of Logic*, Reid's Common Sense

Philosophy, and Jefferson's Declaration of Independence.

Jefferson drew from Small's concepts of education and character. The early plans for the University of Virginia had many elements common both to the curriculum of Marishal College and that of the College of William and Mary during Small's tenure. In the outline of courses that Jefferson thought appropriate for the University of Virginia, there were only four subject areas out of twenty-five that differed from the offerings at Marischal College when Small was a student there. Jefferson also advocated for an elective system similar to what he experienced at William and Mary. Likewise Jefferson followed Small's lead in the matter of student discipline, viewing corporal punishment as humiliating and counter-productive.

Jefferson's literary tastes were also influenced by Small. For many years, Jefferson's favorite poet was the "sublime" Ossian, the supposed author of a series of poems of an ancient Celtic chieftain who fought against the brutal subjugation of the Romans. James MacPherson, Small's former Marischal classmate, claimed to have discovered and translated the *Poems of Ossian* but the true author was MacPherson himself. Jefferson had access to this poetry in 1765, the same year the work was published in London and at the same time when Small returned to there. Jefferson was probably introduced to these poems by Small. Jefferson was so taken with the poems that he wrote James MacPherson's cousin, who lived for a time in Virginia, to obtain a copy of the original manuscripts.

Finally, Jefferson stated that he got his first views from Small about the

expansion of science and the natural order of things and that to Small's instruction he owed everything.

Although Small's influence may be more easily detected in Jefferson, it can also be seen in the lives of several other of his students. John Page referred to Small as his beloved professor, and when asked what his favorite subjects were in youth, he recalled that he most enjoyed military and naval history until he met Small, after which time was engaged by all things mathematical and scientific, in particular astronomy. In a letter some years after Small returned to England, Jefferson was castigating Page's consuming obsession with astronomy. John McClurg and Walter Jones followed Small's medical inclinations and went to the University of Edinburgh where they likely studied under Small's old mentor John Gregory.

Small's Place in History

If Small had died before he arrived in London in December 1764, a place in history would still have been assured from his influence on his American students and friends. But fate dealt Small other hands to play, and from 1764, when he returned to London, until 1775, when he died in Birmingham, Small helped influence two events that transformed Britain. The first event was the founding of the Birmingham Lunar Society, and the second was Small's essential role in the evolution of Watt's steam engine. Small's involvement in both of these enterprises make this segment of his life more thoroughly studied than his

earlier years, and the relative wealth of information about Small during this period is due more to the record keeping of Small's contemporaries rather than any effort on his part.

Indeed much of the documentation that survives was due to the efforts of Matthew Boulton to thwart any infringement on Watt's steam engine patent. But, even Small's role in the Birmingham Lunar Society and in the development of Watt's steam engine, has been seen more as that of an interested bystander than a prime mover. Evidence strongly suggests that Small was the founding agent of the Birmingham Lunar Society, and under Small's auspices and Boulton's largess, this group grew from informal dinners among three friends into one of the greatest clearinghouses for new ideas and inventions in late eighteenth century Britain. Meetings were comprised of discussions, demonstrations, collaborations, experiments, arguments, and improvements. Members, associates, and guests refined, elaborated, eviscerated, or borrowed each others ideas or inventions in such a way that it was difficult to ascertain where a specific member's original invention or concept left off and an associate's correction or embellishment began. This was truly a marketplace of ideas and a hotbed of invention. Out of this amorphous conglomeration of minds came some of the most transforming concepts, processes, and inventions of the eighteenth century: Watt's steam engine, Withering's digitalis, Boulton's assembly line process, Keir's alkali process soap, Wedgwood's glazes and balanced clay compositions, Darwin's inventions and botanical poetry, and Priestley's discovery of oxygen. What is even more remarkable is that these men and their friends were not isolated but

belonged to a larger network of scientists, mechanics, academics, poets, industrialists, geologists, paleontologists, instrument makers, navigators, canal builders, surveyors, architects, politicians, theologians, educational theorists, potters, doctors, and other assorted intellectuals from Britain, Europe, and the Americas. This network was interconnected by powerful forms of communication, support, and influence.

Thus, when an Italian archaeologist attended a meeting to display newly uncovered urns from an excavation, Boulton and Wedgwood copied its designs and colors, produced urns manufactured with classical designs in mass quantities, marketed and sold them at great profits to an eager public. When, in the course of his travels, Darwin discovered that an old crone was able to relieve symptoms of angina with a poison flower called foxglove, he relayed that story to Withering, who found a way to extract the active agent digitalis and presented a modern medical miracle to the world.

In a way uncommon among academicians and businessmen, there was at first little bitterness or dissention about this constant borrowing and profiting. This in large part was due to the personality of the sympathetic and selfless Small, for after Small's death members of the "Lunar Circle" thought that it was necessary to establish the formal "Society" with rules and rituals to hold the group together. Under Small's guidance, however, goodwill and generosity had been enough.

Small's contribution to Watt's steam engine is something easier to document than his nurturing of the nascent Lunar Society. Correspondence

between Small and Watt, and to a lesser degree the letters of Boulton, Keir, Roebuck, Fothergill, and Darwin, provide strong evidence of Small's direct contributions to the development of Watt's engine, as well as Small's influence on Boulton to financially support the endeavor, and Small's instructions to Watt on the way to write up the specifications for the patent.

Small was interested in the steam engine before he met Watt in 1767, and it was an enthusiasm that he shared with Boulton from the beginning of their relationship, for as early as December 1765, Darwin reported that Small and Boulton gave him an "infection of steam-enginry." The accidental meeting of Small and Watt in the spring of 1767 probably seemed preordained to the two men. In any event, they began a correspondence that continued until Small's death. After Boulton met Watt in 1768, Small encouraged Boulton to consider Watt's project as a potential investment. This three-way collaboration resulted in an Act of Parliament that extended Watt's patent for twenty-five years and the establishment of the firm of Boulton and Watt, which endured for over a hundred years. Watt supplied the original concept and the improvements to make the engine utile, Boulton supplied the capital to manufacture it and the marketing strategy to make it profitable, and Small provided technical advice to make the engine functional, as well as the personal persuasion that made an extended patent possible, and he nurtured and encouraged the despondent Watt to stay active and effective. Without Small's constant intervention Watt may have lived out a mediocre life as a surveyor in Scotland and the steam engine may have had a later and radically different incarnation.

Though producing very little that was original himself, Small was able to connect the dots for other people. He was able to take the smallest spark of an idea and fan it into a fire, just as he brought people and their ideas together and to make a whole that was greater than sum of its parts. This was Small's special magic, this was Small's special gift. In his younger years he used this gift to bring together rustic youths who would, eventually, form a nation and define an ethos for a people; likewise he used this gift to bring together men of disparate abilities and interests to form the Birmingham Lunar Society; and finally, he used this gift to bring together a scientist, an inventor, and a promoter, who were essential in producing the steam engine that would propel the world into the modern era.

There were very few degrees of separation within this rarefied stratum of society, for it was an aristocracy of intellect that spanned social classes and nations. Benjamin Franklin, a mortal enemy of England during the Revolution, maintained his friendships and associations throughout Britain until his death; Joseph Priestley, one of the founders of modern science, moved to Pennsylvania and became a member of the American Philosophical Society; and, Thomas Jefferson, who wrote Small that it was his fervent wish to maintain private friendships amid public dissention, visited Soho and consulted members of the Birmingham Lunar Society about educational, scientific, and political matters.

The minutes of the Aberdeen Philosophical Society contain a question that was likely posed at a gathering of the *partie quarrae*, during a meeting of the Birmingham Lunar Society, and at a convocation of the American Philosophical

Society, “Why does a an outbreak of genius appear at certain times and places in history and not at others?” The answer would include a person like William Small, who was able to take the dry wood of individual intellect, add a spark of interest, and fan the flame of genius with encouragement and exchange. Others questions similar in nature and wording crop up in the records of the Aberdeen Philosophical Society and the correspondence of members of the Lunar Circle.

The connections made possible through Small were numerous. John Gregory and the Trails may have communicated the substance of their meetings in Aberdeen to Small and, Small, in turn, recycled the questions there and at later stages of his life. Through Small and other members and associates of the Birmingham Lunar Society new concepts, perspectives, and innovations made their way into the discussions of the American Philosophical Society. Through Benjamin Franklin, Thomas Jefferson, and Joseph Priestley conclusions of inquiries and results of experiments passed back to the Birmingham Lunar Society. The scientific queries and discoveries of the Birmingham Lunar Society may have influenced Jefferson’s decision to initiate the Lewis and Clark Expedition. Benjamin Franklin, Small’s mentor, was surely a conduit of inquiry and mutual interest for the American and English intellectual and scientific communities. In short, the complex tapestry of eighteenth century Anglo-American intellectual life has common threads, and William Small is clearly one.

Significance of the Study

In the course of the present study a number of interesting facts were discovered about the life of William Small, or more correctly, recovered. To previous researchers of this era, William Small has always been a shadowy figure, a ghostly presence, a bit actor in the drama of history, and they have paid little attention to him except for his connections to others. The present study is different from the others in that it looks at Small as the star of his own story and in it adds some important missing pieces to that story.

In respect to Small's early life, evidence of an extended academic family background helps explain Small's propensity for intellectual inquiry. Details relating to Small's education at Dundee Grammar School and Marischal College provide a context to Small's teaching methods and the impact that he had on his students, as well as his medical training and expertise.

Concerning Small's time in Virginia the present study uncovers events leading up to his recruitment as a professor at the College of William and Mary: particularly the agent who recruited Small; the subjects he taught; the educational innovations he introduced in Williamsburg; details of his personal and professional life, his impact and influence on students; his relationships with such luminaries as Benjamin Franklin, George Wythe, Peyton Randolph, and Thomas Jefferson. Also, the present study sheds additional light on the turbulent politics of education of the era at William and Mary, and the probable reasons Small left Virginia, never to return.

The present study also uncovers interesting information about Small's activities after he returned to Britain. Largely overlooked in the past studies were details of Small's medical careers and his personal and professional connections to some of the most prominent physicians of the day, among which were William Heberden, Alexander Small, Sir John Pringle, John Hunter, and George Fordyce. Lastly, some conflicting information has surfaced concerning the significance of the symptoms of Small's progressively debilitating illness and ultimate death and aftermath.

Future Studies

There are a number of issues that may be productive areas for future investigations. These suggestions could shed additional light on the life and contributions of William Small. For the sake of convenience they are divided into the following specific arenas of interest; Small's family connections, his education, the Virginia Experience, Small's connection to Benjamin Franklin, Small in London, the Birmingham Lunar Society, Small and James Watt, and Small's medical career.

The first area, Small's family background, could include further investigation into the background of Small's family. Evidence indicates that the Smalls were a family with a history of academic pursuits and ecclesiastical occupations. This study might focus on how those influences impacted William Small's decisions and attitudes. It might also look into the tantalizing proposition

that William Small and Alexander Small were related. Alexander Small's family and William Small's family lived in the adjacent counties of Perthshire and Angus, Alexander Small consistently referred to William as "my namesake", and a family relationship might help explain the interest Benjamin Franklin, who was a close friend of Alexander Small, took in William's well being and career.

A study in the second area, Small's educational influences, might include a study investigating Small's connection with John Gregory. Gregory has often been referred to as William Small's mentor, likely based on two references that Small made concerning "the amiable Dr. G" in letters to James Watt and Gregory's recommendation for Small in regard to his medical degree. Nevertheless, there is little other corroborating evidence to support this contention. Gregory was in London part of the time that Small was supposed to be apprenticing for him in Aberdeen and Gregory never taught at Marischal College. A deeper investigation into the Gregory Correspondence housed at the University of Aberdeen might uncover some telling correspondence as might investigation of the correspondence of members of the Aberdeen Philosophical Society, particularly the Trails, who were likely in communication with both Small and Gregory.

An interesting study that might be conducted in connection with the time Small spent in Virginia could be the details of Small's recruitment for the post of professor of mathematics at the College of William and Mary. Previous investigations suggested that Small either applied for the post of professor of mathematics at William and Mary or he was recommended by the then governor,

Francis Fauquier. Nevertheless, evidence indicates that Small was recruited for this office by the Bishop of London's subordinate, Dr. Samuel Nicholls, and that Fauquier was not involved. How Small came to Nicholls' attention is still a matter for conjecture. Perhaps, a more thorough investigation of Bishop Sherlock's correspondence in the Fulham Palace Papers, Samuel Nicholl's papers, or the papers of Dr. William Friend, might turn up more information concerning this mystery.

The fourth area, William Small and Benjamin Franklin, has enormous potential. Evidence strongly suggests that Small and Franklin met in the spring of 1763 when Franklin came to Williamsburg to execute the will of William Hunter, his old friend and co-postmaster-general. Both Small and Franklin were principals in the will and the only two non-relatives to receive cash legacies. On December 1, 1764, Alexander Small posted a letter to Franklin stating that the Virginia professor and "my namesake" has just arrived and wishes particularly to be remembered to you. This letter strongly suggests that not only did William Small and Benjamin Franklin know one another in America but also had engaged in scientific discussions. From this point on Franklin interjected himself into Small's life and career in positive ways so many times that some suggest that Franklin was Small's mentor. A future investigation into this relationship may reveal how Small was connected to so many people of influence and establish a connection for a transmission of ideas and information between the Birmingham Lunar Society and the American Philosophical Society.

The fifth area might concentrate on the time Small spent in London,

December 1764 through May 1765. During this brief span of time Small lived within a short walk of both Alexander Small's house and Benjamin Franklin's residence. Small arrived in December of 1765, went to the Royal Society with Franklin in January, obtained his medical degree between March and April of that year, likely attended meetings of various clubs with Franklin, was requested to teach medical classes, and searched out revolutionary experimental philosophy apparatus for the College of William and Mary. An investigation into the intellectual clubs that he visited with Franklin might reveal a number of the connections that he established during this time and their importance.

The sixth area, concerning Small's involvement with the Birmingham Lunar Society, likely contains the richest arena of investigation due to the relative wealth of documentation. Two topics worthy of investigation are the true origin and nature of the Birmingham Lunar Society, and the recruitment for and utilization of the Birmingham Lunar Society. In regard to the first topic, it seems as if the structure, the membership, and the origin of the Birmingham Lunar Society has been superficially superimposed after the fact. It would be interesting to have a less dogmatic interpretation of the recruitment process and a matrix of the different viewpoints and contributions (political, religious, educational, scientific, philosophic, technical) of the various members, associates, and friends of the Society in order to provide a composite profile of the organization. The second topic concerning the recruitment for and utilization of the Birmingham Lunar Society chiefly concerns the roles of Matthew Boulton and William Small in this organization. Boulton utilized information that was discussed and

analyzed in meetings of the Birmingham Lunar Society to advance and create business opportunities for himself. William Small seems to have, on occasion, recruited individuals who had an expertise in a scientific or technological area in which Matthew Boulton was interested. Did William Small create the Birmingham Lunar Society as a think tank to serve Boulton's business interests? Was William Small an intellectual procurement agent for Matthew Boulton?

The seventh area relates to the relationship between William Small and James Watt. Small and Watt, in many ways, seemed an extension of the other's personality. Although different in many ways, they were eerily alike, particularly in regard to certain manifestations of their personalities. At times they were enthusiastic, inventive, gregarious, and at other times, lethargic, exhausted, or depressed. An interesting study would involve an investigation of their psychological profiles to determine if both men were manic-depressive and the impact this may have had on their respective contributions.

The eighth area refers to a largely unexplored area of Small's life. In the past, previous researchers have investigated Small only in connection either with Jefferson, the Birmingham Lunar Society, or James Watt. They have almost totally disregarded Small's primary profession as a physician. Three areas of Small's medical career contain many subjects to be explored; in his early career, the manner, place, and extent of his medical training; in Virginia, his practice and his cases; in Birmingham, the background of his recommenders, John Eliot and John Gregory, his consultations and practice; and his role in the Birmingham Public Hospital and the extent of his *pro bono* work for the poor. Recent

information indicates a substantial correspondence between William Small and Sir John Pringle, one of the foremost physicians of his era.

Finally, an investigation into Small's illness may provide more conclusive evidence. Malaria has been cited as the cause of Small's death. Indeed, it seems the most viable answer, as malaria was a frequent killer in colonial Virginia. Indeed, Small had many of the symptoms, but some symptoms are at variance with the disease itself and neither was Small able to diagnose his own illness nor did Darwin treat its symptoms with quinine. Many of the prominent physicians who were consulted diagnosed Small's illness as of the stomach and incurable.

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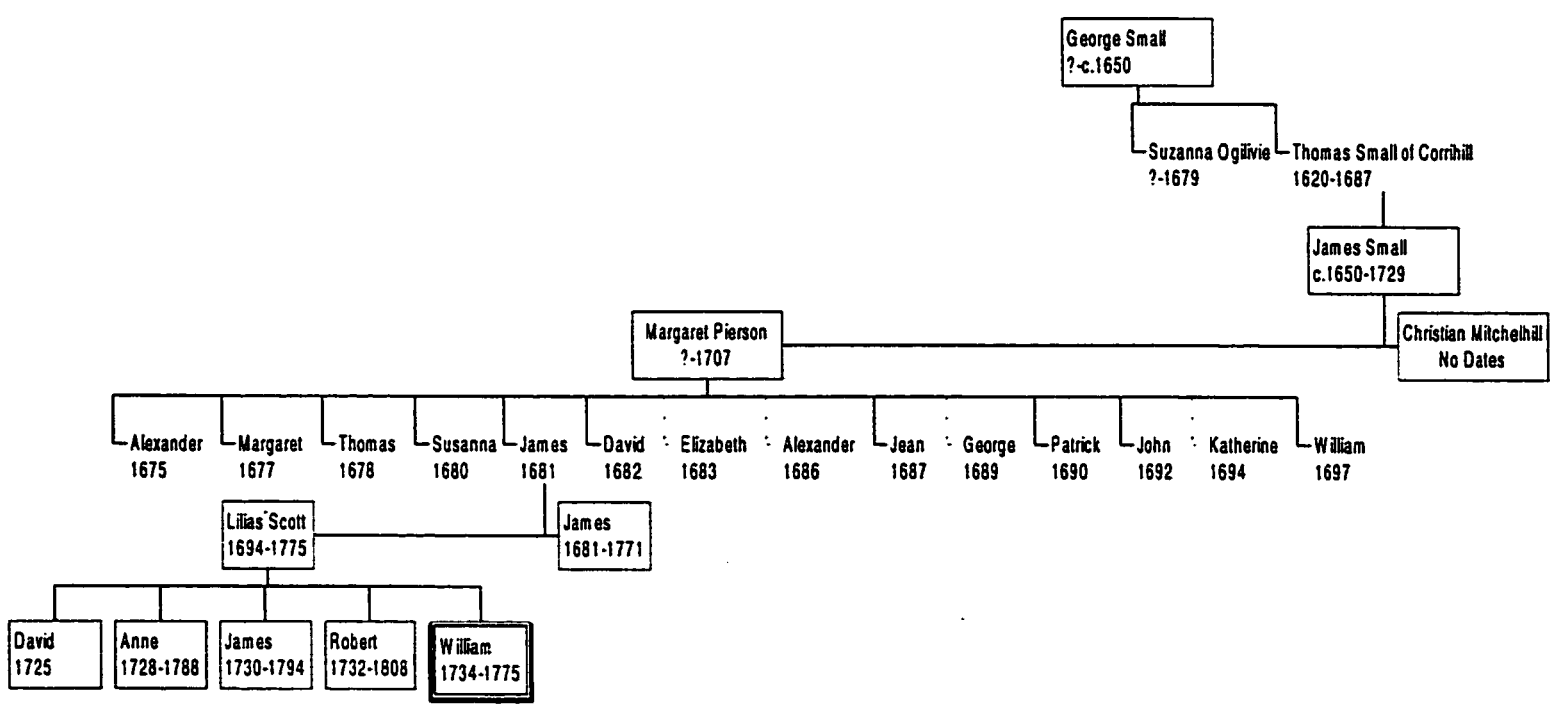
Gentlemen's Magazine.

Scot's Magazine.

Times Past.

Appendices

Appendix 1: Small Family Tree



Appendix 2: Dundee Grammar School

Name	Dates	1743	1744	1745	1746	1747	1748	1749	1750
Gilbert Lundie Janitor	5.1740-3.1747	█	█	█	█	█	█	█	█
George Blair Rector	10.39-3.49	█	█	█	█	█	█	█	█
John Mearns	5.1741-7.1756	█	█	█	█	█	█	█	█
William Lauder	12.1742-10.1745		█	█	█	█			
John Pitcairn	3.1746-4.1747				█	█			
John Knox	died before office								
John Davidson	2.1748-4.1761						█	█	█
John Coumts Rector	5.1749-4.1773							█	█
William Small	10.1743-5.1750	█	█	█	█	█	█	█	█

Likely Had Small █ Possibly Had Small █ Did Not Have Small █

Faculty and Classes Marischal College (1751 – 1755)

.-1752)	Bejan	Thomas Blackwell
	-Classics	
752-1753)	Semi-Bejan	Francis Skene
	-Classics -Natural and Civil History, Geography, Chronology -Mathematics (Arithmetic, Geometry, Algebra, Plain Trigonometry)	
3-1754)	Tertian	William Duncan
	-Criticism and Belles Lettres -Natural and Experimental Philosophy (Mechanics, Hydrostatics, Pneumatics, Optics, Astronomy, Magnetism, Electricity)	
'54-1755)	Magstrand	Alexander Gerard
	-Logic -Metaphysics -Pneumatology and Natural Theology -Moral Philosophy (Ethics, Jurisprudence and Politics)	

Figure 4: Marischal College



Appendix 5: William and Mary Faculty (1757-1764)

1757

Thomas Dawson	President	
Thomas Robinson +	Grammar School	fired in May
William Preston	Moral Philosophy	quit in May
Richard Graham	Natural Philosophy	fired in November
Emmanuel Jones*	Indian School	fired in November
John Camm	Divinity School	fired in November

+ Robinson's contract is extended until the end of the year

* "Judas" Jones recants and is reinstated as the Indian Master

1758

Thomas Dawson	President	
William Davis	Interim Grammar	through Easter term
Goronwy Owen	Grammar Master	took oath June 10
Jacob Rowe	Moral Philosophy	began in Spring
William Small	Natural Philosophy	took oath October 18
Emmanuel Jones	Indian School	
-----	Divinity School	vacant

1759

Thomas Dawson	President	
Goronwy Owen	Grammar Master	
Jacob Rowe	Moral Philosophy	
William Small	Natural Philosophy	
Emmanuel Jones	Indian School	
-----	Divinity School	vacant

1760

Thomas Dawson	President	
Goronwy Owen	Grammar Master	quit in June
William Webb+	Interim Grammar	Trinity Term
Jacob Rowe	Moral Philosophy	fired in June
William Small*	Natural Philosophy	
Emmanuel Jones	Indian School	
-----	Divinity School	vacant

+ William Webb stayed only long enough to attend one faculty meeting

* After Rowe's departure, Small took over Moral Philosophy as well. As Dawson was perpetually intoxicated, Small likely served as administrator of the upper school and controlled its curriculum.

1761

Thomas Dawson	President	died in March
William Yates+	Grammar Master	
William Small *	Moral Philosophy	
William Small	Natural Philosophy	
Richard Graham	Moral Philosophy	began Trinity Term
Emmanuel Jones	Indian School	
-----	Divinity School	vacant

+ William Yates hired as Grammar Master (see Walter Jones letter); elevated to President after Dawson's death (he may have continued as Grammar Master until a replacement could be found).

* Small served both as Professor of Natural Philosophy and Moral Philosophy until Graham's arrival in June. Although he performed two jobs, Bursar's records seem to indicate that Small only received one salary from the Board of Visitors. This may have been a cause of Small's dissatisfaction and the reason for the urgent recall of Graham.

1762

William Yates	President	
James Horrocks+	Grammar Master	began in February
William Small	Natural Philosophy	
Richard Graham	Moral Philosophy	
Emmanuel Jones	Indian School	
-----	Divinity School	vacant

+ Horrocks began teaching in the Grammar School in February but did not take his oaths until May 30.

1763

William Yates	President	
James Horrocks	Grammar Master	
William Small	Natural Philosophy	
Richard Graham	Moral Philosophy	
Emmanuel Jones	Indian School	
-----	Divinity School	vacant

1764

William Yates+	President	dies mid-September
James Horrocks	Grammar Master	succeeds Yates
Richard Graham*	Natural Philosophy	
William Small	Moral Philosophy	
John Camm*	Divinity School	

+ Yates dies in mid-September. Small canvasses for the vacant post but is rejected partially due to his layman status; Camm and Graham seen as too belligerent by the Board of Visitors; Jones not a credible candidate-Horrocks becomes President by default.

* Graham is returned to his original post as Professor of Natural Philosophy by order of the Privy Council, Small given post of Professor of Moral Philosophy. Camm returned to Divinity School by order of the Privy Council.

VITA

Martin Richard Clagett earned a Bachelor of Science from the University of South Carolina, Columbia, South Carolina, in 1974, and a Master of Classical Languages from the University of Richmond, Richmond, Virginia, in 1988. He has worked as a teacher for the County of Henrico, for the past 15 years and as an adjunct professor of Latin at Virginia Commonwealth University for the last 7 years. Martin Clagett has lectured at the Birmingham Public Library and the University of Birmingham on the subject of William Small, and has an upcoming fellowship at the Jefferson Center for International Studies.