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THE SCOTTISH ENLIGHTENMENT AND THE DEVELOPMENT OF ACCOUNTING

Abstract: This article outlines the lives and background of the main writers who were active in the 18th century period of 'Scottish Ascendancy' in accounting texts. The impressive publications produced by this group are detailed and the question of why this phenomenon should have occurred in Scotland is considered. It is suggested that the Scottish Ascendancy in accounting texts can be considered as part of the achievements of the Scottish Enlightenment and as complementary to the more renowned works in economics, law and philosophy, which are generally recognized as an important component of that movement.

THE SCOTTISH ENLIGHTENMENT

The 'Scottish Enlightenment' is the name given in recent years to the remarkable epoch which Dugald Stewart described as a "sudden burst of genius" [1854, p. 551]. Although it is difficult to give firm dates, it is commonly considered that the Enlightenment extended from the Act of Union (1707) to the death of Sir Walter Scott (1832) with the peak of its achievements occurring in the second half of the eighteenth century.

The period is sometimes characterized by describing the major developments in areas such as economics, philosophy and law, associated with the names of Adam Smith, David Hume and Lord Kames but the Enlightenment was not restricted to a small group working in a narrow range of subjects. Many other important advances occurred in a wide range of disciplines such as medicine, mathematics, agriculture, chemistry, geology, sociology, anthropology and psychology. The roll call of luminaries would include such people as: William Hunter, Andrew Duncan, William Cullen, Colin MacLaurin, James Hutton, Joseph Black, William Robertson, Adam Ferguson and John Millar. The Enlightenment also saw a flowering of the arts so that there were great architects (such as Robert Adam), and a notable literary revival (Sir Walter Scott, Tobias Smollett and the poetry of Robert Burns).

The eighteenth century was also a period in which a number of important accounting texts emanated from Scotland

and this paper considers the connection between these texts and the Enlightenment.

ACCOUNTING IN EIGHTEENTH CENTURY SCOTLAND

In 1700 there were few professional accountants in Scotland and the 'Italian Method of Book-keeping' was not widely used, but by 1800 there were professional accountants operating in the major Scottish towns and a knowledge of accounting was common in the business community. This improvement in the general level of accounting knowledge was aided by the important series of texts which appeared during the century. J. Crawford wrote that:

The first Scottish book on accounting was published in 1683. That book heralded a century during which Scotland established its reputation as a land of accountants: a steady stream of textbooks, including some which ran to so many editions that they could be called classics, appeared from Scottish presses [Pryce-Jones and Parker, 1974, p. v].

The most notable of the accounting authors wrote clear expositions of the 'Italian Method of Book-keeping.' Moreover they wrote in a way which showed their enthusiasm for the merits of the new technique that they were explaining. They were committed advocates of the art and the impact of their writing was not merely parochial since it exercised a considerable influence beyond the borders of Scotland to the rest of the British Isles and to America. The importance of the Scottish texts has been noted by other commentators and the period when they were written has been described as one of 'Scottish Ascendancy' [Yamey, Edey and Thomson, 1963, pp. 170-173].

Any study of the Scottish Ascendancy invites the question as to why the phenomenon should have occurred in Scotland, which was a relatively backward country, when the conditions would seem to have been much more propitious in England. The increase in the demand for accounting texts in Scotland can readily be explained by the country's improving trade but economic factors do not explain why this demand could not have been satisfied by imported books.

This article attempts to answer this question. It seeks to show that the ascendancy may be regarded as part of the more general flowering of the sciences and arts in eighteenth century Scotland which has become known as the Scottish Enlightenment.

It is appropriate to note, at this juncture, that the question considered by this essay may be regarded as part of the larger question of 'Why the Scottish Enlightenment?'. Devine comments on "... the central paradox of the phenomenon, namely the emergence of an age of cultural distinction within a society apparently deprived in both economic and social terms" [1982, p. 26].

It will be appropriate to identify some factors which may have encouraged both the Enlightenment and the Ascendancy in accounting texts but first the backgrounds and achievements of the four most important of the Scottish accounting authors will be described. These writers are:

Alexander Malcolm	1685-1763
John Mair	1702 (or 1703)-1769
William Gordon	1720 (or 1721)-1793
Robert Hamilton	1743-1829.

'PHILO DOGMATICUS' — ALEXANDER MALCOLM¹

Alexander Malcolm was born in Edinburgh in 1685. His father was minister of the Greyfriars Kirk in Edinburgh but the family moved to England when he was deprived of his post on the reestablishment of Presbyterianism in Scotland in 1689 [Scott, 1915]. Alexander, nevertheless, seems to have been educated at the University of Edinburgh and to have graduated Master of Arts [Bywater and Yamey, 1982, p. 157] although his name cannot be traced in the university's records which are incomplete for this period.

He became a teacher of mathematics and bookkeeping in the city and in 1718 he published *A New Treatise of Arithmetick and Book-keeping*.² His approach to these topics was scholarly, imaginative and innovative, with a recognition of the importance of stressing the need for an understanding of principles rather than encouraging rote learning. Whereas the majority of his contemporaries emphasised accounting practice by providing page upon page of illustrative material, but little in the way of supporting text, Malcolm gives a full explanation of principles and he emphasizes accounting's role in the maintenance of justice. This Malcolm considered to be important, as

¹This is the title of a contemporary sketch of Malcolm (drawn by his friend Alexander Hamilton) which is contained in *The Tuesday Club Record Book* which is preserved by the Maryland Historical Society of Baltimore.

²The text shows the influence of North's book *The Gentleman Accomptant* [1714] but in no sense is it a copy of this.

justice was a necessary condition for the development of commerce [pp. 113-114]. Colinson had adopted a similar viewpoint in the dedication of *Idea Rationaria*, the first Scottish book on accounting [1683].

Malcolm's abilities were considerable and three years later he published a major book on the theory of music (*The Treatise of Musick*), which was the first important book on the subject published in Scotland. The music historian Sir John Hawkins (1719-1789) claimed that this was: "one of the most valuable treatises on the subject of theoretical and practical music to be found in any of the modern languages."

Soon after the appearance of his music text Malcolm moved to a teaching post in Aberdeen and in 1730 and 1731 he published separate books on mathematics and bookkeeping. These are based on, but not direct copies of, material from his 1718 book which had covered both subjects. In *A New System of Arithmetick, Theoretical and Practical* his aim is to combine practice and theory. De Morgan described this book as "One of the most extensive and erudite books of the last (i.e. the eighteenth) century" [1847, p. 66]. *A Treatise of Book-keeping* has an approach which is consistent with that of his earlier work but there is specific recognition of the use of accounting for planning purposes and its role as a tool of justice is no longer emphasised.

Immediately after the appearance of his *Treatise of Book-keeping* Malcolm migrated to America where he became a teacher in New York [Sadie, 1980]. The reason for his emigration is unclear but it is possible that it may have followed the death of Mary, his wife [Lloyd, December 1928]. It is clear, however, that he became very unhappy with his situation there. He writes in a letter to a friend, Charles Macky (who was later to become the first Professor of History at the University of Edinburgh) that he feels "Damned alas to the Slavery of Teaching Latin and Greek to the Cubs of a Stupid ungrateful purse proud race of Dutchmen. I shall say no more on this Subject But that Learning is the Very worst Cargo can be brought to America."³

Malcolm remained in this post until 1740 when he became rector of St. Michael's Church at Marblehead, Boston. This was both a change of vocation and a change of religious allegiance. At Marblehead he became friendly with Dr. Alexander Hamil-

³Letter to Charles Macky, dated 3 July 1738 in the Manuscript Collection of the University of Edinburgh [La. II. 91].

ton (1712-1756), a fellow Scot who emigrated from Edinburgh to Annapolis in 1738-39. Dr. Hamilton, a physician and social historian,⁴ was an uncle of Robert Hamilton (who is considered later in this article). Alexander Hamilton was also a vestryman at St. Anne's, Annapolis and this probably had a part to play in Malcolm's move to the rectorship of that parish in 1749. It is likely that Malcolm also taught at King William's School in Annapolis [Fletcher, 1986, p.211]. In 1753 he was made Chaplain in Ordinary to the Assembly of Maryland. In 1754 he became rector of St. Paul's in Queen Anne's County and from 1755 he was also master of the county Free School. He died in 1763 [Maurer, 1952].

Although Malcolm had emigrated well before the peak of the Enlightenment, his books on mathematics, music and accounting were scholarly, analytical works which deserve recognition as part of the achievements of that movement. His letters in the archives of the University of Edinburgh convey his sense of loss at being separated from the intellectual stimulation of his Edinburgh friends.

'THE ELABORATE MAIR' — JOHN MAIR⁵

John Mair, the most successful accounting author of the eighteenth century, was born in 1702 or 1703, in Strathmiglo, Fife. His father "... was a portioner or small proprietor in that parish, and also carried on business as a manufacturer, to a considerable extent" [Mair, A., 1830, p.iv]. John and a younger brother, Alexander, both entered the University of Saint Andrews in 1722 and they both graduated with M.A. degrees in 1726. John then enrolled as a divinity student but in 1727 he applied for the position of 'doctor' (assistant master) in the Grammar School at Ayr which, incidentally, is still in existence.

John's application for this post was unsuccessful and, instead, he took up an appointment as "Governor to Mr. Charles Cathcart, son to the Honourable Collonell Chas. Cathcart."⁶ A few months later, however, the Ayr post was again vacant and

⁴Alexander Hamilton [1712-1756] was the author of *Itinerarium*, which was written in 1744 when he made a tour through the northern colonies; this was published privately in 1907, and more recently by the University of North Carolina Press in 1948.

⁵A description used by Morrison, J., *The Elements of Book Keeping by Single and Double Entry*, Longman, Hurst, Rees, Orme and Brown, 1813, p. 2.

⁶From a letter to Ayr Town Council, November 1727.

Mair was appointed at a salary of 200 merks [McClelland, 1953].

For the next 19 years Mair was actively initiating and implementing important curriculum developments in addition to carrying out his regular teaching duties and engaging in an extensive writing program which included the most popular bookkeeping text of the century. This book, *Book-keeping Methodiz'd*, exerted a major influence in North America as well as Britain. Sheldahl's inspection of some 160 eighteenth century library, retail and auction book listings enables him to state that "Contemporary sales listings and library catalogs imply that *Mair's book-keeping* was easily the most popular accounting text in the major American cities during the latter half of the eighteenth century" [1985, p. 7]. In 1775 this text was published in a Norwegian translation by Jasper Vande Velde de Fine and through this translation it became both the first English language book on the subject to be translated into another language and the first Norwegian book on bookkeeping. Various editions of the book were republished in Ireland and several other books were based on sections of it.

Mair's writing was characterized by the emphasis that he paid to detail and his attempts, as each new edition was issued, to make his book even more complete and relevant to business needs. The second edition [1741] included an additional section on "Monies and Exchanges"; accounting for the tobacco trade with the colonies was added in the third edition [1749] and the fifth edition had two new sections on accounting for the sugar trade (based on Weston's book which had been published three years earlier) and shopkeepers' accounts. These additions meant that the 251 pages of the first edition [1736] had swollen to 416 pages by the 5th Edinburgh edition [1757].

In 1746 Mair became Rector of the school and First Master and teacher of Arithmetic, Book-keeping and other Sciences. Immediately he began to introduce radical changes. The Ayr Council supported the creation of a new kind of school aimed at "the training up of youth in the knowledge of literature and preparing them for business in the most expeditious way possible" [Boyd, 1961, pp. 76-77]. The remodelled school, based on plans drawn up by Mair, was, in his words, designed to be a "sort of Academy where almost every sort of the more useful kinds of Literature will be taught, and the want of College Education will in great measure be supplied to boys whose parents cannot well afford to maintain them at Universities" [Taylor, 1966, p. 62].

Mair remained at Ayr until 1761 when he accepted an invitation to become Rector at a newly founded Academy at Perth. This was to become a model for several other such academies which were built later in the century at Dundee, Inverness, Elgin, Fortrose, Ayr and Dumfries [Magnusson, 1974, pp. 24-25].

Mair died in February 1769 at sixty-six years of age. His *Book-keeping Moderniz'd* (based on *Methodiz'd* but fifty percent larger with 620 pages) was published posthumously and nine editions appeared over the next thirty-five years, the last appearing in 1807. *Methodiz'd* and *Moderniz'd* were thus standard texts in Britain and America for one hundred years and they fully earn the description of the first 'book-keeping series' [Mephram and Stone, 1977]. A total of thirty-two different printings of these texts have been identified in the period from 1736 to 1807 and *Methodiz'd* subsequently continued as the basis for Langford's *Merchants' Accounts* which had nine editions between 1808 and 1853.

During his life Mair was also a prolific author on other subjects, with successful textbooks on history, geography, mathematics and Latin to his credit (see Appendix). These writings and his educational vision and the innovations that he introduced at Ayr and Perth qualify him for recognition in educational history as a pioneer in Scottish science, mathematics and business education [Sutherland, 1952, p. 422]. Although his books were less erudite than those of Malcolm, they were more successful and influential in spreading a knowledge of the subjects on which he wrote. If the motto of the Enlightenment was 'improvement,' then Mair was part of the Enlightenment.

'THE INGENIOUS GORDON' — WILLIAM GORDON⁷

William Gordon is reputed to have been the son of the Third Duke of Gordon, by an early marriage to a French lady in Tours. The legend is that the marriage was not recognized in Scotland, the mother died young of a 'broken heart' and William did not succeed to the Dukedom [Bulloch, 1905, p. 145; Aberdeen Journal, *Notes and Queries*, 1908, p. 107; Murray, 1930, p. 34]. Although the story must be false, since the third Duke was born at about the same time as William, it seems likely that there is an underlying element of truth in the

⁷A description used by Morrison, J., *The Elements of Book Keeping by Single and Double Entry*, Longman, Hurst, Rees, Orme and Brown, 1813, p. 2.

claimed connection to the ducal line since William received considerable help from the Dukes of Gordon and dedicated several of his books to the Fourth Duke, referring to him as "illustrious patron and Generous benefactor."

William Gordon studied at Marischal College (one of the two universities in Aberdeen) from 1732 to 1736 and graduated, Master of Arts, in 1736 [Anderson, 1898, p. 309]. About 1750 he became schoolmaster at Fochabers which is adjacent to Gordon Castle. This appointment may indicate the exercise of some influence by the Duke. He left this post in 1753, just after the death of the Third Duke, to take up a post as writing and mathematical master at the High School, Stirling.

In Stirling, he married Elizabeth Christie, daughter of the Town Provost, but other things did not go well. In 1755 he was suspended from his church precentorship because of some domestic scandal and, in the following year, there was a complaint that he was not taking proper care of the boys under his charge. Shortly after this, in the same year, he resigned from the post.

William next moved to Glasgow where, in the same year, he founded and ran a Mercantile Academy with James Scruton and Robert Dodson (and later Alexander Jack). In 1767 he received a loan of £300 from the Fourth Duke of Gordon to purchase the part of the premises that he occupied. While at Stirling, William had written his first book, *Every Young Man's Companion*, but his period in Glasgow saw the appearance of his major works, *The Universal Accountant and Complete Merchant* and *The General Counting-House and Man of Business*. While these were not so influential as Mair's bookkeeping texts they were important and well regarded with their worth recognized in America where Chauncey Lee used them in preparing the bookkeeping section of his book *The American Accountant* [1797].

The Academy continued until 1783 but latterly it does not seem to have been successful. Gordon's partner, James Scruton, was ill and Gordon himself was in perpetual financial difficulties because of a propensity for ill-advised business ventures. In September 1782 he was imprisoned in Glasgow's Tolbooth for nonpayment of outstanding debts but in December, 1782, he obtained a *cessio bonorum* (a form of bankruptcy) and was released from jail.⁸

In 1783 Gordon moved to Edinburgh to become "Master of

⁸Document in the Scottish Record Office, Edinburgh, CS 25/7 Dec 1782.

the Mercantile Academy" there. He established his new Academy in the Scale Stairs at the head of Blackfriars' Wynd [Caledonian Mercury, 30 September, 1786] where he continued his writing, including a major revision of *The Universal Accountant* in which he makes a case for the establishment of Chairs in Accounting at all universities. He says:

... it would tend much to the prosperity of trade, that not only such as are intended for the commercial line, but that all youth of distinction also, should be early introduced to the knowledge of figures and accounts ... For this purpose, it is to be regretted, that a proper Professor is not appointed in every University in Britain ... [5th edition, 1787, Vol. II, pp. 14-15].

In 1793 he is recorded as being in partnership with George Paton at the Commercial Academy, South Bridge, Edinburgh [Williamson, 1794] but he died on 12th December later that year. His will shows the total value of his estate to be only £76. 3s. 3 ¼d and there was still the matter of the Duke's outstanding £300 loan.

'THE JUDICIOUS HAMILTON' — ROBERT HAMILTON⁹

Robert Hamilton, in retrospect the most important of this group of writers, was born in Edinburgh into an influential family with strong kirk and university connections and important business interests. Robert's father, Gavin Hamilton, was a prominent Edinburgh publisher, bookseller, paper maker and bailie of the burgh who, two years after Robert's birth, distinguished himself by his brave loyalty to the British crown when, during the 1745 Rebellion, Bonnie Prince Charlie's father was proclaimed King James VIII of Scotland in Edinburgh.

Robert was educated at the University of Edinburgh (where in 1732 his grandfather had been Principal and where two uncles were currently professors). Following his he was employed in the banking-office of Hogg and Son, but in 1766, at the age of twenty-two, he applied for the Chair of Mathematics at Marischal College. He was unsuccessful but the decision was close.

After the failure to secure the Aberdeen professorship Robert became involved in managing the family's paper mill but, on his father's death, he took the opportunity to divest

⁹A description used by Morrison, J., *The Elements of Book Keeping by Single and Double Entry*, Longman, Hurst, Rees, Orme and Brown, 1813, p. 2.

himself of these irksome obligations. In 1769 the rectorship of Perth Academy became vacant on the death of John Mair and Hamilton applied for and was appointed to this post. At Perth, Hamilton wrote his main accounting work, *An Introduction to Merchandize* [1777-79]. This book is much in advance of its time with an emphasis on the managerial uses of accounting information which is absent from the other eighteenth century books. Although it is exceptional in many other respects, its chief claim to fame is the remarkable description of a costing system that it contains [Mephram, 1988].

In 1775, Hamilton obtained an LL.D. from the University of Edinburgh and in 1779 he was appointed to the Chair of Natural Philosophy at Marischal College, Aberdeen. Hamilton's preference, however, was for an appointment in mathematics and he soon came to an amicable agreement with the professor of that subject to exchange classes. Thus, although he remained professor of natural philosophy, he in fact taught the mathematics classes until 1817 when he officially transferred to the Chair of Mathematics.

At Aberdeen, Hamilton continued his writing but his next important work was not published until he was seventy. This was a book on *The National Debt* [1813] in which he sought to demonstrate the fallacy of attempts to painlessly redeem that debt by means of a sinking fund. This work has always been regarded as his main claim to fame. Hamilton died in 1829. throughout his life he was active in humanitarian, religious, civic and philanthropic activities and he wrote several essays on social problems which were published posthumously.

Robert Hamilton's work on the national debt qualifies him for recognition as part of the Scottish Enlightenment but it will be claimed here that his *Merchandize* also deserves recognition as a pioneering work which emphasised the use of accounting as a decision making aid to manufacturers and traders. In the past the merits of this book have been seriously underestimated [Mephram, 1983].

THE ECONOMIC BACKGROUND

There is evidence that some Scottish businessmen, at the start of the eighteenth century, were developing accounting systems which helped them to improve their efficiency [Marshall, 1980] and throughout the century there was a growing demand for books which explained sound accounting procedures. It is relevant to outline some of the economic developments which created this demand.

At the end of 17th century Scotland had been hit by successive failures of the harvest. There was the aftermath of the Darien¹⁰ disaster and the effect of war. Trade between Scotland and England was minimal and Scotland was poor in comparison with its southern neighbor.

There were, however, encouraging signs of developing economic activity. In 1683 Colinson, in the first Scottish book on bookkeeping, expressed his view that the number of new Scottish trading ventures was increasing and that there was optimism that trade would grow and flourish[p. 1].

Early in the century the Treaty of Union [1707] created an Anglo-Scottish Common Market. Previous trade patterns were modified and expansion encouraged. There was not an instantaneous growth of trade with England but there was a steady improvement. Internal, coastal and overseas trade were also expanding.

In 1700 Scotland's trading partners were the countries of northern Europe with the trade with the Netherlands being particularly important. At the Scottish end of this trade the east coast had an advantage. This led to the development of trading activity in the East of Scotland and Edinburgh, whereas Glasgow and the West were at a distinct disadvantage.

During the first half of the century, however, the balance shifted. The 1707 Treaty gave Scottish traders entry to England's jealously guarded colonial markets without payment of customs duties, and Scottish owned ships obtained the protection and privileges afforded by the Navigation Acts.

Seventy years after the Treaty of Union, John Gibson, an eighteenth century Glasgow accountant, describes Glasgow's subsequent commercial development as follows:

The Union with England opened a field of trade, for which the situation of Glasgow was greatly to her advantage; the commerce of the east coast, since that period, has declined: that of the west has increased to an amazing degree [1777, pp. 205-6].

In the same year James Scruton, Gordon's partner in the Academy in Glasgow, asked the rhetorical question "what was Scotland before its union with England? or, to come nearer

¹⁰In 1698 the Company of Scotland Trading to Africa and the Indies (the Darien Company) had attempted to establish a Scottish colony (New Caledonia) on the narrow Isthmus of Darien linking North and South America. The adventure was a complete failure, 2,000 died and the money cost of 300,000 pounds was a considerable drain on the nation's cash resources.

home, what was Glasgow . . . ?” [1777, p. 2]. In writing this, he had in mind Glasgow’s flourishing trade with the West Indies and North America — a trade which was only possible after the Treaty of 1707. Mair had introduced a chapter on the tobacco trade into the 3rd edition of *Book-keeping Methodiz’d* [1749]. Although this trade collapsed with the American War of Independence, Scotland consolidated its industrial success in the second half of the century and started a period of economic expansion which lasted until the 1870’s. The sugar trade with the West Indies, which had been in existence since the beginning of the century, developed rapidly, partially filling the gap caused by the demise of tobacco. Mair had included a chapter on the sugar trade since the 5th edition [1757].

The linen industry, which was Scotland’s major manufacturing industry in the middle of the 18th century, also received benefits from the Union with England in the form of export bounties and tariff protection from the competition of Dutch and German manufacturers. The industry experienced an era of rapid growth in the period from 1740 to 1780. Hamilton hints that his description of a costing system for a linen manufacturer is based on a real system, and Perth, where he wrote his book, was an important center for the trade. At the end of the century the profits earned from the linen trade became an important additional source of capital for the developing manufacture of cotton yarn and cloth. This new branch of the textile industry, which was centered on Glasgow and Paisley, was soon making use of spinning machines driven by water power.

The partnership form of business organization became increasingly important as the century passed and it was recognized that sound bookkeeping practices were essential to foster the mutual trust that was required among partners. Colinson had claimed that the “. . .honourable and profitable Science of Book-keeping is the only help, that encourages many to join their small stocks together . . .” [1683, p. 1]. Although the textbooks concentrated on the accounts of the sole trader they all considered partnership accounts in some detail. The Bubble Act of 1720 ostensibly banned partnerships with freely transferable shares and limited liability but the accounting texts continued to describe a form of organization, ‘the fixt company’, which had similarities to the modern limited liability company [Malcolm, 1731, p. 65] Methods of accounting for transferable shares in such companies were developed and even the question of shares issued at a premium was discussed.

As a group the 18th century writers provided a body of literature which moved bookkeeping towards accounting. This development should be viewed along with the increasing adoption of the system by merchants and manufacturers, as the century passed, and the birth of the Scottish accountancy profession. At the beginning of the eighteenth century there were one or two 'professional' accountants in Edinburgh, in the last decade of the century the number was over thirty. All three developments assisted the expanding Scottish economy.

THE SCOTTISH EDUCATIONAL SYSTEM

The 'Scottish Enlightenment' and the 'Scottish Ascendancy' in accounting texts were, in part at least, due to the calibre of the Scottish educational system in the eighteenth century. The four accounting authors were all educationalists and all were products of the Scottish university system. Higher education facilities were good in Scotland where there were five universities (compared with two in England) and it has been claimed that "In the eighteenth century there was a greater proportion of the population possessed of a university education in Scotland than in any other country in Europe" [Feuer, 1963, p. 216].

The century was one of general educational advance and commercial education facilities also improved considerably. In the seventeenth century commercial education had been catered for by the apprenticeship system. Towards the end of the century, however, it was increasingly the case that aspiring young merchants with ability and the necessary financial backing, were attending special schools abroad, often in Holland. The formal teaching of the subject in Scottish schools was also improving at the beginning of the eighteenth century. In the first decade of that century both Glasgow and Edinburgh Councils established the official post of teacher of bookkeeping and there were other developments.

In the first half of the century a grammar school education was almost entirely devoted to Latin and the classics, but by 1750 changes in the curriculum were taking place and mathematics, science and bookkeeping were finding a place.

George Watson, Scotland's first professional accountant [Brown, 1905, p. 183], who had received his own commercial education in Holland, demonstrated his conviction that bookkeeping should have a place in the school curriculum when, in leaving instructions in his will for the establishment of a school, he provided that the scholars should be taught ac-

counting and bookkeeping. This was his only stipulation on curriculum matters. Watson died in 1723; his school, George Watson's Hospital (now George Watson's College) opened in Edinburgh in 1741.

The four accounting authors contributed to the educational developments. The achievements of Mair and Hamilton at Ayr Grammar School and Perth Academy have been mentioned. The new academies, which built on their pioneering work, typically included mercantile studies as an important part of the syllabus. Alongside this development there was also a rapid growth in the number of private educational establishments run by writing masters and bookkeeping teachers such as Malcolm and Gordon.

SCOTTISH PUBLISHING

A trade which prospered in step with the progress of the Enlightenment was publishing and printing. In Edinburgh (and Glasgow), as the century passed, printing flourished. Arnot [1779, p. 438] states that in 1739 there were only four printers in Edinburgh but forty years later the number had risen to twenty-nine. From the 1730's the Edinburgh firms produced cheaper texts than the London printers [Jones, 1985, p. 92] and, towards the end of the century, it even seemed possible that Edinburgh might supplant London as the main center of publishing in Britain.

In part the large number of printing firms was sustained by reprinting English books. Before 1710 Scottish printers had been free to reprint such works without restraint but, in that year, a Copyright Act imposed restrictions. Considerable litigation followed this Act but this did not put a brake on the Scottish progress [McDougal, 1988]. The strength of printing in Edinburgh also encouraged Scottish writing and, since the book trade was profitable, publishers were able to offer substantial advances to authors [Chitnis, 1976, p. 38]. When Stevenson, Professor of Logic at Edinburgh University, assisted in the defense of Scottish printers in one of the copyright actions, he claimed that the Scottish printing activities were designed ". . . to encourage learning in Scotland, and to give an opportunity to good Scottish writers who might otherwise never appear in print at all" [McDougal, 1988, p. 8]. If this point is tendentious it is, nevertheless, true that the strength of printing and publishing in Edinburgh, the availability of credit for prospective writers and the climate of the Enlightenment all encouraged Scottish writing. The Enlightenment fostered a

belief in the printed word as an instrument in the advancement of society and gave encouragement to the publication of 'academic' texts of all kinds, including books on bookkeeping.

The majority of the book-keeping texts by Scottish authors were published in Edinburgh. Authors frequently published their own works but there were also important publishing houses and Hamilton had family connections with the major publishing firm of Hamilton, Balfour and Neill. This firm alone published 400 titles between 1750 and 1762 [MacDougall, 1974].

THE ACCOUNTING TEXTS CONSIDERED AS PART OF THE ENLIGHTENMENT

The effect of the Enlightenment on the intellectual life of Scotland was dramatic and the four accounting writers display the versatility which was common in the period. It has already been noted that Malcolm wrote a major work on music; Mair was a pioneer of science education in the school curriculum and Gordon campaigned for the inclusion of accounting in university studies. The importance of Hamilton's treatise on the redemption of the National Debt and his social writings is generally acknowledged and both he and his father are listed by Camic among 375 Scottish eighteenth century 'intellectual achievers' [1983, pp. 243-256]. An appendix details the writings of the group.

David Hume emphasised the catalytic effect of the 'spirit of the age':

The same age which produces great philosophers and politicians, renowned generals and poets, usually abounds with skilful weavers, and ship-carpenters. We cannot reasonably expect, that a piece of woollen cloth will be wrought to perfection in a nation which is ignorant of astronomy, or where ethics are neglected. The spirit of the age affects all the arts; and the minds of men, being once roused from their lethargy, and put into a fermentation, turn themselves on all sides, and carry improvements into every art and science. [1963, p. 301]¹¹

In their activities and in their accounting writings it is reasonable to suggest that the Scottish accounting writers were

¹¹In contrast, Adam Smith relates improvements in the arts and sciences to a prior improvement in trade and material prosperity [*Wealth of Nations*, III, IV, paragraph 10].

encouraged and influenced by the intellectual 'ferment' of the period and the 'spirit of the age'. This does not, however, mean that the Scottish Ascendancy in accounting texts should necessarily be counted among the achievements of the Enlightenment since some would argue that bookkeeping texts (however good) are too lowly for consideration alongside the other achievements of the age.

Young, however, makes the point that:

... the Scots thinkers of the Enlightenment not merely refused to recognize any distinction between the pure and applied sciences, but were prepared to treat the practical applicability of their speculations as a yardstick of their merits [1967, p. 11].

With this criterion of 'practical applicability', the bookkeeping texts, and particularly those of Mair and Gordon, must surely rank as achievements of the Enlightenment in that they were important contributions to the development of systematic business systems which were of considerable practical use and extremely influential. These texts played a major role in spreading a knowledge of sound accounting methods to the rest of Britain and to America and Norway (through the translation of Mair's book).

Accounting did not feature in university studies but it has been noted that Gordon considered that the 'science' had advanced to the point where it should be taught in all universities. If this were to be done, he claimed "... we should not only have more intelligent merchants, but the members of both Houses of Parliament, would thereby become better judges of political economy . . ." [Vol. II, 1787, pp. 14-15]. This reference to political economy is particularly interesting because it has been claimed that Adam Smith's "... political economy was a new discipline produced by the Scottish Enlightenment" [Chitnis, 1976, p. 9].

Smith's *Wealth of Nations* [1776] is rightly regarded as a major contribution of the Enlightenment. On his death, in 1790, his obituary in the Caledonian Mercury claimed that he had converted his chair at Glasgow university to one of trade and finance. It should be recognized, however, that the *Wealth of Nations* was not designed to give practical advice to the business man. The accounting texts, however, did have this aim and Hamilton's *Merchandize* is particularly relevant in this respect.

The first volume of the first edition of Hamilton's book appeared one year after the *Wealth of Nations*. Although Smith

discussed opportunity cost, he did not consider how the businessman could make use of the concept. In contrast Hamilton appreciates its uses in business decision making and sets out to develop practical tools. Writing after Smith had suggested that society was improved by the 'invisible hand' of competition, he outlines a cost accounting system which is designed to improve the manufacturer's efficiency. He does this by advocating an opportunity cost approach in discussing transfer prices for his comprehensive costing system and as the basis behind a residual income method of appraising performance. In this way Smith's analysis was converted, perhaps coincidentally, to a management decision-making end and Hamilton produces a work whose worth remains unchallenged in the field for the next century. Nothing of any note was published (in English) on this subject for over 100 years after Hamilton's book until the appearance (in the 1880's) of three books on cost accounting [Metcalf, 1885; Garcke and Fells, 1887; Norton, 1889].¹²

CONCLUSION

If the Scottish Enlightenment has a focus it was probably a focus on the improvement of society through a study of 'the science of man' [Hume, 1975, p. 273] and the search for the laws underlying human behavior. Malcolm argues that "Societies are supported by Commerce" and he claims that a sound system of bookkeeping is a prerequisite for ensuring the justice which is required for the promotion of commerce and hence the advancement of society [1718, pp. 113-114]. The eighteenth century Scottish accounting authors considered their texts as more than sound, utilitarian manuals which explained a useful, but optional, technique. The Italian Method had 'practical applicability' but the authors thought of it as a major advance which would lead to major improvements in trade and commerce and their writings convey their excitement and enthusiasm for its outstanding virtues. Gordon, for example, considers that "Regular books frequently examined, will contribute more to prosperity in trade, than great address and abilities without them" [1765, Vol II, p. 12]. The writers were outstandingly successful in spreading a knowledge of this

¹²In Chapter II of *Evolution of Cost Accounting to 1925* [1976] Garner notes some earlier discussions of industrial accounting, but these do not seem sufficiently important to falsify this statement.

important system and the benefits arising must have been considerable.

Economic advances and the growth of capitalism created a demand for accounting texts in Scotland, England, Ireland and America. To a considerable extent this demand was met by Scottish textbooks which, in the case of America, were exported from Glasgow or through London [McDougal, 1988, pp. 14-20]. This paper has argued that the Scottish Enlightenment provided the conditions which encouraged a group of able academics to supply the needed books. The texts were practical, technical works but they were also, it is posited, a part of the general intellectual ferment of the 'Enlightenment' and there is a basis for considering them an important part of this movement and complementary to more renowned works in economics and law. If the accounting writings lacked the glamour of some of the other publications of the period, and some of the other works of their authors, they had an influence throughout the English speaking world which is arguably as profound.

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APPENDIX

BOOKS WRITTEN BY ALEXANDER MALCOLM (1685-1763)

- A New Treatise of Arithmetick and Book-keeping* Edinburgh: printed by John Mosman and William Brown for John Paton 1718
- A New System of Arithmetick, Theoretical and Practical. Wherein the Science of Numbers is Demonstrated* . . . London: J. Osborn and T. Longman, F. Fayram and E. Symon 1730
- A Treatise of Book-keeping, or Merchants Accounts; in the Italian Method of Debtor and Creditor* 1st edition, London: printed for J. Osborn and T. Longman 1731
- (facsimile reprint as vol. 11 of *Historic Accounting Literature*, London: Scolar Press, 1979; facsimile reprint, New York: Garland Publishing, 1986) 2nd edition, London: printed by Dan. Browne for D. Browne . 1743
- A Treatise of Musick, Speculative, Practical and Historical* 1st edition, Edinburgh: printed for the Author 1721
- 2nd edition, London: J. Osborn and T. Longman 1730
- London: J. Osborn 1731
- Malcolm's Treatise of Music* . . . *Corrected and Abridged by an Eminent Musician* London: printed for J. French 1776
- 2nd edition, London: printed for J. French 1778
- 2nd edition, London: printed for J. Murray 1779

BOOKS AND ARTICLES WRITTEN (OR EDITED) BY JOHN MAIR
(1702/3-1769)

BOOKS

- Book-keeping Methodiz'd* 1st edition, Edinburgh: T. and W. Ruddimans for the Author 1736

(facsimile reprint as vol. 12 of <i>Historic Accounting Literature</i> , London: Scholar Press, 1979)	
1st edition, Edinburgh: W. Sands, Brymer et al	1736
2nd edition, with Additions and Improvements, Dublin: printed by Mary Fuller	1737
2nd edition, Edinburgh: printed by W. Sands, Brymer et al	1741
2nd edition, Edinburgh: printed for, and sold by W. Sands . . . and by Mess. Midwinter, Innys et al, London	1741
2nd edition, Dublin: printed by Isaac Jackson	1742
2nd edition, Dublin: printed by Isaac Jackson	1748
3rd edition, with Additions and Improvements, Edinburgh: printed by W. Sands, A Murray, and J. Cochran	1749
<i>the Last Edition, with Additions and Improvements</i> , Dublin: printed and sold by Isaac Jackson	1750
4th edition, Edinburgh: printed by Sands, Murray et al	1752
3rd edition, Dublin	1754
4th edition, Dublin	1754
5th edition, with Additions and Improvements, Dublin: printed and sold by I. Jackson	1754
5th edition, Edinburgh: printed by Sands, Donaldson et al	1757
6th edition, Edinburgh: printed by Sands, Donaldson et al	1760
Norwegian translation by Jasper Vande Velde de Fine, Norway	1775
7th edition, Edinburgh: printed by Sands, Murray et al	1763
7th edition, Dublin: printed by H. Saunders	1763
From the last edition printed at Edinburgh and revised, Dublin: printed and sold by I. Jackson	1764
8th edition, Edinburgh: W. Sands, A. Murray et al	1765
8th edition, Dublin: printed by H. Saunders	1767
9th edition, Dublin: printed by H. Saunders	1772
From the last edition printed at Edinburgh . . . with many additions and improvements, Dublin: R. Jackson	1773
<i>Book-keeping Moderniz'd</i> 1st edition, Edinburgh: A Kincaid, W. Creech and J. Bell	1773
2nd edition, Edinburgh: John Bell and William Creech	1778
3rd edition, Edinburgh: J. Bell et al	1784
4th edition, Edinburgh: John Bell and William Creech	1786
5th edition, Edinburgh: Bell & Bradfute and Wm. Creech	1789
6th edition, Edinburgh: Bell & Bradfute and Wm. Creech	1793
7th edition, Edinburgh: Bell & Bradfute and Wm. Creech	1797
8th edition, Edinburgh: Bell & Bradfute	1800
9th edition, Edinburgh: Bell & Bradfute	1807
<i>Arithmetic, Rational and Practical</i> 1st edition, Edinburgh: A. Kincaid and J. Bell	1766
2nd edition, Edinburgh: A. Kincaid and Wm. Creech	1772
3rd edition, Edinburgh: John Bell and Wm. Creech	1777
4th edition, Edinburgh: John Bell and Wm. Creech	1786
5th edition, Edinburgh: Bell & Bradfute and Wm. Creech	1794
6th edition, Edinburgh: Bell & Bradfute and Wm. Creech	1799
<i>Ancient History Epitomized</i> Edinburgh: T and W Ruddimans	1750
Also published as part of <i>An Introduction to Latin Syntax</i> (next item)	
<i>An Introduction to Latin Syntax . . . to which is subjoined, An Epitome of Ancient History . . .</i> 1st edition, Edinburgh, 1750; 2nd edition, Edinburgh, 1755; 3rd edition, Edinburgh, 1760; 4th edition; 5th edition;	

- 6th edition, Edinburgh, 1770; 7th edition; 8th edition, Edinburgh, 1777; 8th edition, 1779; 9th edition, 1786; another edition, Dublin, 1790; another edition, Glasgow, 1790; 11th edition, Kilmarnock, 1790; 10th edition, Glasgow, 1797; another edition, Edinburgh, 1797; 1st American edition, Philadelphia, 1799; 11th edition, Dublin, 1800; 12th edition, Edinburgh, 1793; another edition, New York, 1804; 12th edition, Edinburgh, 1805; 13th edition; another edition, New York, 1807; another edition, Baltimore, 1811; another edition, New York, 1811; 15th edition, Edinburgh, 1811; another edition, New York, 1813; 17th edition, Edinburgh, 1815; 18th edition, Edinburgh, 1816; another edition, New York, 1817; stereotype edition, Edinburgh, 1818; another edition, Baltimore, 1820; stereotype edition, Edinburgh, 1821; another edition, New York, 1821; stereotype edition, Edinburgh, 1823; another edition, Baltimore, 1824; stereotype edition, Edinburgh, 1826; another edition, Edinburgh, 1827; another edition, New York, 1830; another edition, Edinburgh, 1831; another edition, New York, 1833; another edition, New York, 1836; another edition, New York, 1838; another edition, New York, 1839; another edition, New York, 1843; another edition, New York, 1846; another edition, New York, 1848; another edition, New York, 1853; another edition, Philadelphia, 1857; revised by A. R. Carson, Edinburgh, 1860; another edition, Philadelphia, 1861
- The Tyro's Dictionary, Latin and English* 1st edition, Edinburgh, 1760; 2nd edition, Edinburgh, 1763; 3rd edition, Edinburgh, 1778; 4th edition, Edinburgh, 1785; 5th edition, Edinburgh, 1793; 6th edition, Edinburgh, 1801; 7th edition; another edition, New York, 1809; 8th edition, Edinburgh, 1812; 9th edition, Edinburgh, 1817; 10th edition, Edinburgh, 1822; revised by G. Ferguson, Edinburgh, 1846
- A Radical Vocabulary, Latin and English* 1st edition; 2nd edition; 3rd edition, Edinburgh, 1772; 4th edition; 5th edition, Edinburgh, 1779; 6th edition, Edinburgh, 1785; 7th edition, Edinburgh, 1791; 8th edition, Edinburgh, 1799; 9th edition, Edinburgh, 1803; American edition, New York, 1809
- The First Four Books of C. Julius Caesar's Commentaries of his Wars in Gaul, with an English Translation* 1st edition; 2nd edition, Edinburgh, 1757; another printing, Edinburgh, 1769; 3rd edition, Edinburgh, 1770; 4th edition, Edinburgh, 1770; 5th edition; 6th edition, Edinburgh, 1792; another printing, Edinburgh, 1793; 7th edition, Edinburgh, 1808
- Sallust's History of Catiline's Conspiracy, and the War with Jugurtha* 1st edition, 1741; 2nd edition; 3rd edition, Edinburgh, 1770; 4th edition, Edinburgh, 1774; 5th edition; 6th edition, Edinburgh, 1793; another printing, 1822; another printing, 1831; another printing, 1847
- A Brief Survey of the Terraqueous Globe* Edinburgh and Perth, 1762; republished "with great additions, amendments and improvements", Edinburgh, 1775; another printing, Edinburgh, 1789; another printing, London, 1795; 2nd edition, London, 1802
- A Select Century of M. Cordery's Colloquies* Glasgow, 1775; another printing, 1786; another printing, 1788; 7th edition, Dundee, 1792; another printing, 1797

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 Edinburgh: Bell & Macfarquhar, pp 365-423 1771
 'Bookkeeping,' section in *Encyclopaedia Britannica* 1st edition,
 Edinburgh: Bell & Macfarquhar, pp 582-620 1771

BOOKS EDITED AND/OR REVISED BY MAIR

Cocker's Arithmetic, revised by Mair
 Edinburgh: Sands, Murray and Cochran 1751
 51st edition 1756
 Edinburgh 1760
 A new edition, Edinburgh: Alexander Donaldson 1762
 A new edition, Edinburgh: A. McCaslan 1765
 another edition, Glasgow: James Brown 1771
 another edition, Edinburgh 1771
 another edition, Edinburgh 1780
 another edition, Glasgow 1787
Wilson's Introduction to Arithmetic, edited and revised by Mair, 2nd
 edition, Edinburgh: W. Sands et al 1752
 (First edition, which was not edited by Mair, was 1741)

ADAPTATIONS OF MAIR'S WORKS

*Essays on Book-keeping wherein the Art is fully explained, To which is
 added a Large Appendix containing a Variety of Specimens in Company
 Accounts . . . by a Teacher of Book-keeping.* Glasgow: printed for John
 Orr 1758
 (The major part of the contents of this book comes from Mair's
Book-keeping Methodiz'd, the remainder is Webster's *An Essay on
 Bookkeeping*)
*An Essay to Make A Compleat Accountant . . . by Richard Roose, London:
 for Hannah Roose* 1760
 (contains "The Six Questions in Company Accompts" from Mair's
Book-keeping Methodiz'd)
*Book-keeping epitomized or a compendium of Mair's methodical treatise of
 merchants-accompts* by the Rev. John Shaw, Leeds: J. Binns and
 London: J. Johnson, Ogilvy and Speare, and Vernor and Hood, 1794
*Merchants' Accounts; or Book-keeping according to the Italian Method of
 Double Entry* London: Published by R. Langford 1808
 (preface describes the book as *Mair's Book-keeping Methodized, with
 some corrections and additions*)
 another edition 1822
 another edition 1824
 another edition 1826
 another edition 1828
 another edition 1830
 another edition 1835
 another edition 1843
 another edition 1853
Clavis Mairiana, or a Key to Mair's Introduction to Latin Syntax by a
 young gentleman 1st edition, New York: J. Seymour, 1809; 2nd
 edition, revised by Muirhead, Edinburgh: Wallace & Co., 1814;

Another edition by John Black, Edinburgh: University Press, 1818;
Another printing, Edinburgh, 1822

BOOKS WRITTEN BY WILLIAM GORDON (1720/1-1793)

- Every Young Man's Companion* 1st edition; 2nd edition, London: J. Hodges, 1757; 3rd edition; 4th edition, London: J. Rivington, H. Woodfall et al, 1765; 5th edition, London: H. Woodfall, 1769; 6th edition, London and Salisbury: H. Woodfall, J. Rivington et al, 1777
- The Universal Accountant and Complete Merchant* (2 Vols) 1st edition, Edinburgh: printed for the author and A. Donaldson 1763/65
(facsimile reprint of Vol II, New York: Garland Publishing, 1986)
- 2nd edition, Edinburgh: printed for Alexander Donaldson 1765
- 3rd edition, corrected, and revised by the Author, Edinburgh: printed for Alexander Donaldson 1770
- 4th edition, Edinburgh: A. Donaldson 1777
- 5th edition (New Modelled) (2 Vols) Edinburgh: printed for A. & J. Donaldson & C. Elliott 1787
- 6th edition, Dublin: printed by T. Henshall 1796
- The General Counting-House and Man of Business* 1st edition, Edinburgh: printed for A. Donaldson 1766
- 2nd edition, Edinburgh: A Donaldson & S. Crowder 1770
- Glasgow 1770
- The Elements, Analysis and Practice of Arithmetic* 1st edition (written with Robert Dobson), Volume 1 of 3 according to title page, Glasgow: printed by R. Urie for the Authors 1771
- 2nd edition (NOT with Robert Dobson), Glasgow 1775
- Institutes of Arithmetic, elementary and practical* Edinburgh: W. Creech .. 1779
- Edinburgh: W. Creech 1789
- Revision of Hayes translation of Livy* (8 Vols) Edinburgh 1761
- Titus Livius Roman History, translated into English* Edinburgh: W. Smith 1783; Edinburgh, 1809; Edinburgh: Bell & Bradfute, 1813
- Cornelius Nepos, Vitae Excellentium Imperatorum ... with an English translation* Edinburgh 1790
- A New Geographical Grammar and Complete Gazetteer* Edinburgh: Alexander Guthrie 1789
- Another Issue, Edinburgh: Martin, McDowall, and Company 1789
(This book seems to have been initially issued in parts)

BOOKS AND ARTICLES WRITTEN BY ROBERT HAMILTON (1743-1829)

BOOKS

- An Introduction to Merchandize* 1st edition (2 Vols) printed for the Author; sold by T. Cadell, London and John Balfour, Edinburgh . 1777/79
- 2nd edition, Corrected and Revised, Edinburgh and London: Charles Elliot 1788
(facsimile reprint as vol. 15 of 'Historic Accounting Literature, London: Scholar Press, 1979)
- 3rd edition, Edinburgh, Glasgow, Aberdeen, Perth and Leith: J. Hunter; Bell & Bradfute et al 1797
- 4th edition, Corrected and Revised, Edinburgh, London, Glasgow, Aberdeen, Perth and Leith: J. Hunter, G. G. and J. Robinson et al .. 1799

<i>Mephram: Scottish Enlightenment and Development of Accounting</i>	175
5th edition, Edinburgh	1802
<i>New-modelled</i> edition revised by Elias Johnston, Edinburgh, Aberdeen and London: Archibald Constable and Co. and Fairbairn & Anderson et al	1820
<i>A Short System of Arithmetic and Bookkeeping</i> 1st edition, London and Edinburgh: C. Elliott & T. Kay	1788
2nd edition	1796
3rd edition, Edinburgh, Glasgow, Perth and Leith: J. Hunter, Bell & Bradfute et al	1798
4th edition	
5th edition, Edinburgh	1802
6th edition	
7th edition, Edinburgh	1810
8th edition, Edinburgh	1815
Another edition <i>Enlarged and Improved</i> by James Welsh, Aberdeen and Edinburgh: A Constable and Co. et al	1826
<i>An Essay on Peace and War</i> . . . published anonymously, London: G. G. J. and J. Robinson	1790
<i>Heads of a Course of Lectures on Mathematics</i> Aberdeen: A. Brown and Edinburgh: W. Creech	1800
<i>An Inquiry Concerning the Rise and Progress, The Redemption and Present State, and the Management of the National Debt of Great Britain</i> 1st edition	1813
2nd edition, Enlarged, Edinburgh: Oliphant, Waugh and Innes	1814
American Edition, 'From the 2d London ed', Philadelphia: M. Carey	1816
French Translation by J. Henri La Salle, <i>Recherches sur l'origine, les progres, le rechat, l'etat actuel et la regie de la dette nationale de la Grande-Bretagne</i> Paris: Gide fils	1817
3rd edition, Enlarged (title extended by the addition of the words <i>and Ireland</i>), Edinburgh: Oliphant, Waugh, and Innes	1818
Part reprinted in J. R. McCulloch (editor), <i>A Select Collection of Scarce and Valuable Tracts and Other Publications on the National Debt and Sinking Fund</i> , London	1857
(reprinted New York: Augustus M. Kelly, 1966)	
<i>An Address to the Inhabitants of Aberdeen on the Management of the Poor</i> Aberdeen	1822
<i>Observations upon the causes of distress in the country, and proposals of a plan for ameliorating the condition of the poor</i> . . . Glasgow: printed by J. Curll	1822
<i>The Progress of Society</i> London: John Murray, Albemarle-Street	1830
(reprinted New York: Augustus M. Kelly, 1969)	
<i>Essays</i> Aberdeen: printed by D. Chalmers and Co.	1831
<i>Mathematical Tables: contining logarithms of numbers . . . also, Tables of Compound interest, probabilities of life, and annuities for years and lives</i> 1st edition, Edinburgh: printed for William Creech	1790
2nd edition with several additional tables, Aberdeen: printed by Chalmers for William Creech, Edinburgh	1807
2nd edition, Edinburgh: J. Fairbairn	1816
A book entitled <i>Remarks on the necessity and the Means of Extinguishing a large portion of the National Debt</i> (1818) has been attributed both to Hamilton and Thomas Bunn (Halkett, S. and J. Laing, <i>Dictionary of Anonymous and Pseudonymous English Literature</i> , Edinburgh: Oliver and Boyd, 1929, Vol. 5, p. 75).	

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“Book-keeping,” section of <i>Encyclopaedia Britannica</i> 2nd edition, Vol. 2, Edinburgh: J. Balfour et al	1778
3rd edition, Vol. 3, Edinburgh: Bell and Macfarquhar	1797
4th edition, Edinburgh: A. Bell	1801
5th edition, Edinburgh	1810
6th edition, Vol. IV, Edinburgh: Constable & Co. (an additional section is appended on a <i>New Method of Book-keeping</i>	1823
7th edition, Edinburgh: Black (includes an reference to Cronhelm, F. W., <i>Double Entry by Single</i> , 1818)	1842