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in The Scottish Enlightenment: Essays in Reinterpretation, ed. Paul Wood (Rochester: University of Rochester Press, 2000)

Chapter 4

Science and Medicine in the Scottish Enlightenment: The Lessons of Book History

Richard B. Sher

What was the Scottish Enlightenment, and what place, if any, did science and medicine occupy within it? The first part of this chapter begins a search for an answer to this question by examining how science and medicine are treated in some current definitions of the Scottish Enlightenment—sometimes as central, sometimes as peripheral. It then offers a cultural definition, which allows ample room for science and medicine as significant components of the rich intellectual culture of the Scottish Enlightenment, but rejects the notion that they should be privileged over other varieties of Enlightenment thought. The second part of the chapter argues that the study of print culture constitutes one particularly valuable tool for understanding science and medicine in the Enlightenment. It subsequently offers observations that are intended as a contribution to the establishment of a book history of science and medicine in the Scottish Enlightenment.

1

The debate over the place of science and medicine in the Scottish Enlightenment has inspired strong opinions at both ends of the conceptual spectrum. At one extreme, Hugh Trevor-Roper (now Lord Dacre) argued more than thirty years ago that the Scottish Enlightenment should be defined according to its "distinctive ideas", meaning particular patterns of thought that were developed most productively by a handful of innovative thinkers in eighteenth-century Scotland. In an early version of his argument, Trevor-Roper defined the distinctive ideas in question as those having to do with "the social mechanism of progress"; in another version, published ten years later, he identified them with "what would come to be called 'political economy'".[1]

John Robertson and Roger Emerson illustrate this problem. It is my hope that a somewhat broader cultural definition can prove capable of incorporating the principal contributions of both these interpretations and of providing a viable framework for assessing the place of science and medicine, among other modes of intellectual inquiry, in the Scottish Enlightenment.

2

The task of examining science *in* the Enlightenment has recently emerged as a matter of scholarly concern. Jan Golinski raised the issue in his critical non-review of Thomas L. Hankins's *Science and the Enlightenment*, which entirely ignored the content of that book in order to promote an agenda that Hankins had failed to address, namely, "describing eighteenth century science in relation to the Enlightenment as a social and cultural movement".[39] More recently, Thomas Broman has responded to Golinski's challenge by arguing that Jürgen Habermas's concept of the "public sphere" constitutes an ideal framework for achieving this goal, and Paul Wood has argued that "Habermas's work is especially pertinent to the study of the Scottish Enlightenment", at least if it is modified to allow a place for "public science" as it was taught in Scotland's urban universities.[40] Broman summarizes the public sphere in terms of three fundamental attributes: "new forms of sociability" (that is, coffeehouses, salons, masonic lodges, and the like), the emergence and "phenomenal" growth of newspapers and periodicals, and the appearance of "a new kind of discourse, the discourse of 'criticism'".[41] In his view, there are two specific senses in which these developments mark the separation between the Scientific Revolution and the Enlightenment. First, they are indicative of changes in the "circulation of scientific ideas", which are worthy of study in all their manifestations. Second, through the "discourse of criticism", they serve not merely to circulate science among the public but also to establish its public authority.

Yet the concept of the public sphere can lead to confusion and distortion, especially if it is thought to encompass the whole of the social and cultural space of the Enlightenment, as Broman seems to believe. Vital as they were, sociable institutions and popular periodicals and newspapers were not the only means by which Enlightenment ideas and values circulated through particular societies or the republic of letters generally, or gained authority among a wider public. As Wood shows, elitist institutions, such as universities and learned societies, also played a large role in that process. So did books, which occupy an ambiguous position in Habermas's discussion of the public sphere and scarcely appear at all in many accounts of it, such as Broman's.[42] It is well to remember that the expansion of the popular periodical press that is stressed by public sphere advocates was itself often a response to the development of Enlightenment book publishing: the sole purpose of some of the best-selling eighteenth-century periodicals, such as the *Monthly Magazine* and the *Critical Review*, and a secondary purpose of many other journals, was to provide a means of recording and evaluating new books in order to give the public expert guidance in making decisions about which titles to buy and read. Moreover, not all Enlightenment discourse was necessarily "critical" in the sense intended by Habermas.

These remarks suggest that scholars who wish to study science *in* the Enlightenment need to go beyond Habermas's notion of the public sphere. Of the various ways in which they may do so, perhaps the most rewarding is to investigate comprehensively the print culture of Enlightenment science—a project that has barely begun, at least in regard to Britain.[43] As Elizabeth Eisenstein and Adrian Johns have demonstrated in very different ways, publication was central to the making of natural knowledge during the Scientific Revolution.[44] By showing that scientific publication in seventeenth-century England was a contested process, in which scientific authors and institutions (notably the Royal Society of London), the London book trade and its chief institutional embodiment (the Stationers' Company), and the audiences for science interacted in ways that were exceedingly complex and highly contingent, Johns in particular has set the stage for similarly detailed studies of scientific publishing and its reception in various eighteenth-century contexts. Comparing the results of such studies to the work of Johns, Eisenstein, and others may well reveal that the emergence of the public sphere was not the only development separating the Scientific Revolution from the Enlightenment.

The neglect of print culture among scholars of eighteenth-century science has been equaled by that of specialists in the Scottish Enlightenment. Although much has been written about the texts that the Scottish literati produced, they have usually been examined with little or no reference to the books that gave them material existence, the book trade that underwrote, manufactured, and marketed those books, or the reading public that consumed them. Looking carefully at print culture is one way of ensuring that the study of the Scottish Enlightenment avoids the fallacy of parochialism against which John Robertson has warned. Legally or illegally, much printed matter, and especially books, crossed national boundaries, and their doing so was necessary for the existence of a unified Enlightenment, within which the Scottish Enlightenment gained a prominent place. It was chiefly through the process of publishing, reprinting, translating, marketing, and consuming books that the Scottish Enlightenment was transformed into an international phenomenon and made its mark upon the world.

This was at least as true in regard to science and medicine as it was in any other branch of polite learning. Table 1 constitutes a chronological list of the first editions of 111 scientific and medical books, comprising some 169 volumes, which were written in English and published between the conclusion of the Jacobite uprising of 1745–46 and the end of the eighteenth century.

Table 4.1 111 First Editions of Books on Science and Medicine by Scottish Authors, 1746–1800

	Date	Author	Short Title (Format/Vols)	Place & Publisher(s)
1.	1746	Matthew Stewart	*Some General Theorems of Considerable Use in the Higher Parts of Mathematics* (8°)	E: sold by Sands/Knaptons
2.	1748	Colin Maclaurin	*An Account of Sir Isaac Newton's Philosophical Discoveries* (4°)	L: for the author's children; sold by Millar, Nourse/Hamilton & Balfour, Kincaid/Barry/Smith
3.	1748	Colin Maclaurin	*A Treatise of Algebra* (8°)	L: Millar, Nourse
4.	1751	George Cleghorn	*Observations on the Epidemical Diseases in Minorca. From the Year 1744 to 1749* (8°)	L: Wilson
5.	1751	Francis Home	*An Essay on the Contents and Virtues of Dunse-Spaw* (8°)	E: Kincaid & Donaldson
6.	1751	Robert Whytt	*An Essay on the Vital and Other Involuntary Motions of Animals* (8°)	E: Hamilton, Balfour, & Neill
7.	1752	Sir John Pringle	*Observations on the Diseases of the Army, in Camp and Garrison* (8°)	L: Millar, Wilson, Payne
8.	1752	Robert Whytt	*An Essay on the Virtues of Lime-Water in the Cure of the Stone* (12°)	E: Hamilton, Balfour, & Neill
9.	1752–64	William Smellie (M.D.)	*A Treatise on the Theory and Practice of Midwifery* (8°3v)	v1:L: Wilson; v2–3: Wilson & Durham
10.	1753	James Lind	*A Treatise on the Scurvy* (8°)	E: Millar (also E: Kincaid & Donaldson)
11.	1754	Charles Alston	*A Dissertation on Botany* (8°) (translation of Latin original, E: 1753)	L: Dod
12.	1754–71	[edited by Alexander Monro I & II et al.]	*Essays and Observations, Physical and Literary. Read before a Society in Edinburgh* (8°3v)	v1 (1754) & 2 (1756)–E: Hamilton & Balfour (for the Edinburgh Phil. Society); v3 (1771)–E: Balfour
13.	1755	Donald Monro	*An Essay on the Dropsy, and Its Different Species* (12°)	L: Wilson & Durham
14.	1755	Robert Whytt	*Physiological Essays* (12°)	E: Hamilton, Balfour, & Neill
15.	1756	James Ferguson	*Astronomy Explained upon Sir Isaac Newton's Principles* (4°)	L: author
16.	1756	Francis Home	*Experiments on Bleaching* (8°)	E: Kincaid & Donaldson
17.	1756	Francis Home	*The Principles of Agriculture and Vegetation* (8°)	E: Kincaid & Donaldson
18.	1756	Robert Simson	*The Elements of Euclid* (4°)	G: Foulis
19.	1757	James Lind	*An Essay, on the Most Effectual Means, of Preserving the Health of Seamen, in the Royal Navy* (12°)	L: Millar/Kincaid & Donaldson
20.	1758	James Mackenzie	*The History of Health, and the Art of Preserving It* (8°)	E: Gordon; sold by Rivington & Fletcher, Longman, Millar, Nourse, Wilson & Durham, Dodsleys, Johnston
21.	1759	Francis Home	*Medical Facts and Experiments* (8°)	L: Millar/Kincaid & Bell
22.	1760	James Ferguson	*Lectures on Select Subjects in Mechanics, Hydrostatics, Pneumatics, and Optics* (8°)	L: Millar
23.	1761	Matthew Stewart	*Tracts, Physical and Mathematical* (8°) (*Supplement* added in 1763)	E: Millar, Nourse/Sands, Kincaid & Bell
24.	1762	William Hunter (with two papers by John Hunter)	*Medical Commentaries. Part I* (4°) (no more published)	L: sold by Millar
25.	1763	James Lind	*Two Papers on Fevers and Infections* (8°)	L: Wilson
26.	1764	Donald Monro	*An Account of the Diseases Which Were Most Frequent in the British Military Hospitals in Germany, from January 1761 to the Return of the Troops to England in March 1763* (8°)	L: Millar, Wilson, Durham; and Payne
27.	1765	[John Gregory]	*A Comparative View of the State and Faculties of Man. With those of the Animal World* (8°)	L: Dodsley

Table 4.1 Continued

	Date	Author	Short Title (Format/Vols)	Place & Publisher(s)
28.	1765	Robert Whytt	*Observations on the Nature, Causes, and Cure of those Disorders which Have Been Commonly Called Nervous Hypochondriac, or Hysteric* (8°)	E: Becket & de Hondt/Balfour
29.	1767	James Ferguson	*Tables and Tracts, Relative to Several Arts and Sciences* (8°)	L: Millar & Cadell
30.	1768	William Alexander	*Experimental Essays* (8°)	L: Dillys
31.	1768	James Ferguson	*The Young Gentleman and Lady's Astronomy* (8°)	L: Millar & Cadell
32.	1768	James Lind	*An Essay on Diseases Incidental to Europeans in Hot Climates* (8°)	L: Becket & de Hondt
33.	1768	Robert Whytt	*Observations on the Dropsy in the Brain* (8°)	E: Balfour
34.	1769	William Buchan	*Domestic Medicine* (8°)	E: author
35.	1770	Charles Alston	*Lectures on the Materia Medica* (4°2v)	L: Dillys/Kincaid & Bell
36.	1770	Andrew Duncan	*Elements of Therapeutics* (8°)	E: Drummond
37.	1770	James Ferguson	*An Introduction to Electricity* (8°)	L: Strahan & Cadell
38.	1770	{John Gregory}	*Observations on the Duties and Offices of a Physician; and on the Method of Prosecuting Enquiries in Philosophy* (8°)	L: Strahan & Cadell
39.	1770	Donald Monro	*A Treatise on Mineral Waters* (8°2v)	L: Wilson & Nicol, Durham
40.	1771	William Alexander	*An Experimental Enquiry concerning the Causes which Have Generally Been Said to Produce Putrid Diseases* (8°)	L: Becket & de Hondt, Cadell
41.	1771	George Fordyce	*Elements of Agriculture and Vegetation* (8°)	L: Johnson
42.	1771	[edited by William Smellie]	*Encyclopaedia Britannica* (4°3v) (published in 100 numbers between 1768 and 1771)	E: Bell & Macfarquhar
43.	1771–78	John Hunter	*The Natural History of Human Teeth* (4°2v) (counting 1778 *Supplement* as volume 2)	L: Johnson

44.	1772	William Cullen	*Lectures on the Materia Medica* (4°)	L: Lowndes
45.	1772	{William Cullen}	*Institutions of Medicine Part I. Physiology* (no more parts published) (12°)	E: author?
46.	1772	Andrew Duncan	*Observations on the Operation and Use of Mercury in the Venereal Disease* (8°)	E: Kincaid & Creech/Cadell, Murray
47.	1772	John Gregory	*Elements of the Practice of Physic* (8°)	E: Balfour
48.	1773	James Ferguson	*Select Mechanical Exercises* (8°)	L: Strahan & Cadell
49.	1773	Sir William Fordyce	*A New Inquiry into the Causes, Symptoms, and Cure, of Putrid Fever, and on the Ulcerated and Malignant Sore Throat* (8°)	L: Cadell
50.	1773–95	A Society in Edinburgh [i.e., Andrew Duncan]	*Medical and Philosophical Commentaries* (8°10v)	v1: L: Murray/Kincaid & Creech, Drummond/Ewing (publishers vary in later volumes)
51.	1775	Alexander Hamilton	*Elements of the Practice of Midwifery* (8°)	L: Murray
52.	1775	Robert Simson	*Elements of the Conic Sections*, books 1–3 (8°) (translation of Latin original, E: 1735)	E: Elliot/sold by Cadell, Murray
53.	1777	Joseph Black (with an essay by William Cullen)	*Experiments upon Magnesia Alba, Quick Lime, and Other Alcaline Substances* (8°)	E: Creech/Murray, Wallis & Stonehouse
54.	1777–84	William Cullen	*First Lines of the Practice of Physic* (8°4v)	E: Murray/Creech (later Elliot/Cadell)
55.	1778	Benjamin Bell	*A Treatise on the Theory and Management of Ulcers* (8°)	E: Elliot/sold by Cadell
56.	1778	Andrew Duncan	*Medical Cases, Selected from the Records of the Public Dispensary at Edinburgh* (8°)	E: Elliot/Murray
57.	1780	Francis Home	*Clinical Experiments, Histories, and Dissections* (8°)	E: Creech/Murray
58.	1780	Donald Monro	*Observations on the Means of Preserving the Health of Soldiers; and of Conducting Military Hospitals* (8°2v)	L: Murray, Robinson (first book edn., though marked "second edition")

Table 4.1 Continued

	Date	Author	Short Title (Format/Vols)	Place & Publisher(s)
59.	1780–85	Buffon [edited and translated by W. Smellie]	*Natural History, General and Particular* (8°9v)	E: Creech; v9: add Strahan & Cadell (also L: Strahan & Cadell/Creech)
60.	1781	Alexander Hamilton	*A Treatise of Midwifery* (8°)	L: Murray/Dickson, Creech, Elliot (also E: Dickson, Creech, Elliot)
61.	1781	Alexander Monro I (edited by Alexander Monro II, with life of the author by Donald Monro)	*The Works of Alexander Monro* (4°)	E: Elliot/Robinson (also E: Elliot)
62.	1783	Alexander Monro II	*Observations on the Structure and Functions of the Nervous System* (2°)	E: Creech/Johnson
63.	1783–88	Benjamin Bell	*A System of Surgery* (8°6v)	E: Elliot/Robinson
64.	1784	Alexander Hamilton	*Outlines of the Theory and Practice of Midwifery* (8°)	E: Elliot/Robinson
65.	1784	William Hunter	*Two Introductory Lectures* (4°)	[L]: Johnson
66.	1785	[Sir] Gilbert Blane	*Observations on the Diseases Incident to Seamen* (8°)	L: sold by Murray/Creech
67.	1785	Alexander Monro II	*The Structure and Physiology of Fishes Explained, and Compared with Those of Man and Other Animals* (2°)	E: Elliot/Robinsons (also E: Elliot)
68.	1786	John Anderson	*Institutes of Physics* (8°) (partially published in 1777)	G: author?; marked "fourth edition"
69.	1786	William Cruikshank	*The Anatomy of the Absorbing Vessels of the Human Body* (8°)	L: Nicol
70.	1786	John Hunter	*A Treatise on the Venereal Disease* (4°)	L: author
71.	1786	John Hunter	*Observations on Certain Parts of the Animal Oeconomy* (4°)	L: author
72.	1786	John Moore	*Medical Sketches* (8°)	L: Strahan (A.) & Cadell
73.	1787	[John Brown]	*Observations on the Principles of the Old System of Physic, Exhibiting a Compend of the New Doctrine* (8°)	E: author
74.	1787	William Nisbet	*First Lines of the Theory and Practice in Venereal Disease* (8°)	E: Elliot/Elliot, Robinsons
75.	1788	John Brown	*The Elements of Medicine* (8°2v) (translation of Latin original, E: 1784 edn.)	
76.	1788	James Clark	*A Treatise on the Prevention of Diseases Incidental to Horses, from Bad Management in regard to Stables, Food, Water, Air, and Exercise* (8°)	E: author
77.	1788–90	Donald Monro	*A Treatise on Medical and Pharmaceutical Chymistry, and the Materia Medica* (8°4v)	v1–3 (1788)–L: Cadell; v4 (1790)–L: Cadell as *Appendix or Supplement*
78.	1788–98 (and beyond)	[Anonymous]	*Transactions of the Royal Society of Edinburgh* (4°4v)	v1 (1788)–E: Dickson/sold by Cadell; v2 (1790)–E: Cadell/Dickson; v3 (1794)–E: Cadell/Dickson, E: Balfour; v4 (1798)–E: Cadell & Davies/Dickson, E: Balfour
79.	1789	William Cullen	*A Treatise of the Materia Medica* (4°2v)	E: Elliot/Elliot & Kay
80.	1790–99	William Smellie	*The Philosophy of Natural History* (4°2v)	v1 (1790)–E: heirs of Elliot/Elliot & Kay, Cadell, Robinsons; v2 (1799)–E: Bell & Bradfute, Dickson, Creech, Hill & 5 others in Edinburgh, including the author's son, Alexander Smellie/ Robinsons, Cadell & Davies, Kay
81.	1791	George Fordyce	*A Treatise on the Digestion of Food* (8°)	L: Johnson
82.	1792	James Gregory	*Philosophical and Literary Essays* (8°2v)	E: sold by Cadell/Creech
83.	1792	Alexander Hamilton	*A Treatise on the Management of Female Complaints, and of Children in Early Infancy* (8°)	E: Hill/Murray

Table 4.1 Continued

	Date	Author	Short Title (Format/Vols)	Place & Publisher(s)
84.	[1792]	Alexander Hamilton	*Letters to Dr William Osborn* (8°)	E: Hill/Murray
85.	1792	James Hutton	*Dissertations on Different Subjects in Natural Philosophy* (4°)	E: Strahan (A.) & Cadell
86.	1792	John Walker	*Institutes of Natural History* (8°)	E: Stewart, Ruthven & Co.
87.	1793	Matthew Baillie	*The Morbid Anatomy of Some of the Most Important Parts of the Human Body* (8°)	L: Johnson (also L: Johnson, and Nicol)
88.	1793	Benjamin Bell	*A Treatise on Gonorrhoea Virulenta* (8°2v)	E: Watson, Mudie/Murray
89.	1793–97	John Bell (vols. 3 & 4 by [Sir] Charles Bell, 1802–4)	*The Anatomy of the Human Body* (4°2v [vol. 1 also 8°]) (supplemented by a quarto volume of *Engravings*, 1794)	E: Cadell & Davies/Mudie & Son (*Engravings* E: Bell & Bradfute/ Johnson, Robinsons)
90.	1793–1800	William Nisbet	*The Clinical Guide* (12°4v) (four "parts" with varying subtitles)	v1 (1793)–E: Watson; sold by Creech; v2 (1799)–Johnson replaces Creech; v3–4 (1800)–E: Watson/Johnson
91.	1794	Benjamin Bell	*A Treatise on the Hydrocele, on Sarcocele, or Cancer, and Other Diseases of the Testes* (8°)	E: Bell & Bradfute/Robinsons, Murray
92.	1794	George Fordyce	*A Dissertation on Simple Fever* (8°)	L: Johnston (i.e., Johnson)
93.	1794	John Hunter	*A Treatise on the Blood* (4°)	L: Nicol
94.	1794	William Hunter (edited by Matthew Baillie)	*An Anatomical Description of the Human Gravid Uterus, and Its Contents* (4°) (meant to accompany Hunter's elephant folio [1°] pictorial volume of 1774, *Anatomia uteri humani gravidi tabulis illustrata*)	L: Johnson, Nicol
95.	1794	James Hutton	*An Investigation of the Principles of Knowledge, and of the Progress of Reason from Sense to Science and Philosophy* (4°3v)	E: Strahan (A.) & Cadell

96.	1794	James Hutton	*A Dissertation upon the Philosophy of Light, Heat, and Fire* (8°)	E: Cadell & Davies
97.	1795	John Bell	*Discourses on the Nature and Cure of Wounds* (8°)	E: Bell & Bradfute/Cadell & Davies
98.	1795	George Fordyce	*A Second Dissertation on Fever* (8°)	L: Johnson
99.	1795	James Hamilton	*Select Cases in Midwifery: Extracted from the Records of the Edinburgh General Lying-In Hospital* (8°)	E: for the hospital, sold by Mudie & Son/Johnson (also E: for the hospital, sold by Hill/Johnson)
100.	1795	James Hamilton	*Observations on the Seats and Causes of Diseases* (8°) (vol. 1; no more published)	E: Hill/Robinsons
101.	1795	James Hutton	*Theory of the Earth, with Proofs and Illustrations* (8° 2v)	E: Cadell & Davies/Creech
102.	1795	William Nisbet	*An Inquiry into the History, Nature, Causes, and Different Modes of Treatment Hitherto Pursued, in the Cure of Scrophula and Cancer* (8°)	E: Kay/Watson
103.	1795	John Playfair	[Euclid's] *Elements of Geometry* (8°) (with Playfair's "Elements of Plane and Spherical Trigonometry")	E: Bell & Bradfute/Robinsons
104.	1796	William Buchan	*Observations concerning the Prevention and Cure of the Venereal Disease* (8°)	L: author; sold by Chapman/Mudie & Sons (also L: Chapman/Mudie & Sons)
105.	1797	William Cullen	*Clinical Lectures* (8°) (posthumous edn. of lectures delivered in 1765–66)	L: Lee & Hurst
106.	1797	Alexander Monro II	*Three Treatises. On the Brain, the Eye, and the Ear* (4°)	E: Bell & Bradfute/ Robinsons, Johnson
107.	1798	George Fordyce	*A Third Dissertation on Fever. Part I* (8°)	L: Johnson
108.	1798[–99]	[Sir] Charles Bell	*A System of Dissections, Explaining the Anatomy of the Human Body, the Manner of Displaying the Parts, and Their Varieties in Disease* (2°)	E: 5 parts with differing imprints, chiefly involving Mundell & Son and Joseph Johnson
109.	1799–1802	James Anderson	*Recreations in Agriculture, Natural-History, Arts, and Miscellaneous Literature* (8°6v)	L: sold by Wallis, Evans

Table 4.1 Continued

	Date	Author	Short Title (Format/Vols)	Place & Publisher(s)
110.	1799–1803	Matthew Baillie	*A Series of Engravings, Accompanied with Explanations, which Are Intended to Illustrate the Morbid Anatomy of Some of the Most Important Parts of the Human Body* (4°)	L: Johnson, Nicol & Nicol
111.	1800	William Cullen	*Nosology* (8°) (translation of Latin original, E: 1769)	E: Creech/sold by Robinsons, Kay, Cox (first trans.: Hartford, Conn., 1792)

Explanation and Key:
Date Column: [ ] = assumed date of publication
Author Column: [ ] = published anonymously; { } = first edition published anonymously, but author's name added to second or third edition. "M.D." has been used to distinguish the William Smellie who lectured and wrote on midwifery in London from the William Smellie who was a printer and natural historian in Edinburgh.
Short Title Column: 2° = folio; 4° = quarto; 8° = octavo; 12° = duodecimo; 24° = twenty-fourmo; v = volumes.
Publisher(s) Column: the primary city of publication is given first, as L (London), E (Edinburgh), or G (Glasgow); [ ] = assumed place of publication; unless otherwise indicated, name(s) following the primary city of publication refer to publishers not printers or selling agents; / = copublication involving booksellers in at least two different cities (normally London and Edinburgh).
Full names of booksellers appearing in the Publisher(s) Column, with locations abbreviated as above (adding D for Dublin):
Balfour: John Balfour (E) (see also Hamilton & Balfour; Hamilton, Balfour, & Neill)
Barry: John Barry (G)
Becket & de Hondt: Thomas Becket and Peter Abraham de Hondt (L)
Bell: John Bell (E) (see also Kincaid & Bell; Bell & Bradfute)
Bell & Bradfute: John Bell and John Bradfute (E) (see also Bell)
Bell & Macfarquhar: Andrew Bell and Colin Macfarquhar (E)
Cadell: Thomas Cadell, Sr. (L) (see also Millar; Millar & Cadell; Strahan & Cadell; Strahan (A.) & Cadell)
Cadell & Davies: Thomas Cadell, Jr., and William Davies (L)
Chapman: Thomas Chapman (L)
Cox: Thomas Cox (L)
Creech: William Creech (E) (see also Kincaid & Creech)
Dickson: James Dickson (E)
Dillys: Edward and Charles Dilly (L) (see also Dilly)
Dod: Benjamin Dod
Dodsley: James Dodsley (L) (see also Dodsleys)
Dodsleys: James Dodsley and Robert Dodsley (L) (see also Dodsley)
Drummond: William Drummond (E)
Elliot: Charles Elliot (E; also L) (see also Elliot & Kay)
Elliot & Kay: Charles Elliot and Thomas Kay (E & L) (see also Elliot; Kay)

Evans: Robert Harding Evans (L)
Ewing: Thomas Ewing (D)
Foulis: Robert and Andrew Foulis (G)
Gordon: William Gordon (E)
Hamilton & Balfour: Gavin Hamilton and John Balfour (E) (see also Balfour; Hamilton, Balfour, & Neill)
Hamilton, Balfour, & Neill: Gavin Hamilton, John Balfour, and Patrick Neill (E) (see also Hamilton & Balfour)
Hill: Peter Hill (E)
Johnson: Joseph Johnson (L)
Johnston: William Johnston (L)
Kay: Thomas Kay (L) (see also Elliot & Kay)
Kincaid & Bell: Alexander Kincaid and John Bell (E) (see also Kincaid & Creech; Kincaid & Donaldson; Bell)
Kincaid & Creech: Alexander Kincaid and William Creech (E) (see also Kincaid & Bell; Kincaid & Donaldson; Creech)
Kincaid & Donaldson: Alexander Kincaid and Alexander Donaldson (E) (see also Kincaid & Bell; Kincaid & Creech)
Knaptons: John Knapton and Paul Knapton (L)
Lee & Hurst: [?] Lee and Thomas Hurst (L)
Longman: Thomas Longman (L)
Lowndes: Thomas Lowndes (L)
Millar: Andrew Millar (L) (see also Millar & Cadell)
Millar & Cadell: Andrew Millar and Thomas Cadell, Sr. (L) (see also Millar; Cadell; Strahan & Cadell; Strahan (A.) & Cadell)
Mudie: George Mudie (E) (see also Mudie & Son(s))
Mudie & Son(s): George Mudie, William Mudie, and John Young Mudie (E) (see also Mudie)
Mundell & Son: Catherine Mundell (widow of Robert) and son James Mundell (E)
Murray: John Murray (L)
Nicol: George Nicol (L)
Nicol & Nicol: George Nicol and son William Nicol (L)
Nourse: John Nourse (L)
Payne: Thomas Payne (L)
Rivington & Fletcher: James Rivington and James Fletcher (L)
Robinson: George Robinson (L) (see also Robinsons)
Robinsons: George Robinson, George Robinson, John Robinson, and James Robinson (L (see also Robinson)
Sands: William Sands (E)
Smith: John Smith (D)
Stewart, Ruthven & Co.: Charles Stewart and James Ruthven (E)
Strahan & Cadell: William Strahan and Thomas Cadell, Sr. (L) (see also Cadell; Strahan (A.) & Cadell)
Strahan (A.) & Cadell: Andrew Strahan and Thomas Cadell, Sr. (L) (see also Cadell; Strahan & Cadell)
Wallis: John Wallis (L) (see also Wallis & Stonehouse)
Wallis & Stonehouse: John Wallis and C. Stonehouse (L) (see also Wallis)
Watson: James Watson (E)
Wilson: David Wilson (L) (see also Wilson & Durham)
Wilson & Durham: David Wilson and Thomas Durham (L) (see also Wilson)

Sources: *English Short-Title Catalogue* (*ESTC*); copies of works cited; Ian Maxted, *The London Book Trades 1775–1800: A Preliminary Checklist of Members* (Folkestone, Kent: Dawson 1977); John Morris et al., "Scottish Book Trade Index", at http://www.nls.ac.uk/catframe.htm.

Table 4.2 List of Scientific and Medical Authors Represented in Table 1

	Author	Career Summary
1.	William Alexander (d. 1783)	surgeon & physician in Edinburgh, then London
2.	Charles Alston (1683–1760)	Edinburgh physician & professor of medicine & botany (EU)
3.	James Anderson (1739–1808)	economic & agricultural improver in Scotland; editor of *The Bee*
4.	John Anderson (1726–1796)	professor of natural philosophy (GU)
5.	Matthew Baillie (1761–1823)	physician & anatomy teacher in London
6.	Benjamin Bell (1749–1806)	surgeon in Edinburgh
7.	Sir Charles Bell (1774–1842)	surgeon & anatomy teacher in London; briefly surgery professor (EU)
8.	John Bell (1763–1820)	surgeon & private lecturer on surgery & anatomy in Edinburgh
9.	Joseph Black (1728–1799)	physician & professor of chemistry/medicine (GU/EU)
10.	Sir Gilbert Blane (1749–1834)	physician in London & head of Navy Medical Board
11.	John Brown (1735–1788)	physician, medical tutor & lecturer in Edinburgh, and briefly in London
12.	William Buchan (1729–1805)	physician in Yorkshire, then Edinburgh, then London
13.	James Clark (1734–1806)	farrier to the king in Scotland
14.	George Cleghorn (1716–1789)	physician & professor of anatomy in Dublin (TCD)
15.	William Cruickshank (1745–1800)	physician and anatomy teacher in London, succeeding William Hunter
16.	William Cullen (1710–1790)	physician & professor of chemistry/medicine (GU/EU)
17.	Andrew Duncan I (1744–1828)	physician & professor of medicine (EU)
18.	James Ferguson (1710–1776)	Banffshire laborer, then miniaturist, then science writer/lecturer in England
19.	George Fordyce (1736–1802)	physician, scientific/medical lecturer in London
20.	Sir William Fordyce (1724–1792)	physician in London
21.	James Gregory (1753–1821)	physician & professor of medicine (EU)
22.	John Gregory (1724–1773)	physician & professor of philosophy/medicine in Aberdeen, then Edinburgh (KC/EU)
23.	Alexander Hamilton (1739–1802)	professor of midwifery (EU)
24.	James Hamilton (1767–1839)	professor of midwifery, succeeding father Alexander (EU)
25.	Francis Home (1719–1813)	military surgeon, then Edinburgh physician & professor of medicine (EU)
26.	John Hunter (1728–1793)	surgeon & anatomy lecturer in London
27.	William Hunter (1718–1783)	surgeon & anatomy lecturer in London
28.	James Hutton (1726–1797)	physician, agricultural improver, & geologist, in Edinburgh from 1768
29.	James Lind (1716–1794)	physician in Edinburgh, later Haslar, specializing in tropical diseases
30.	James Mackenzie (1680?-1761)	physician, mainly in Worcester
31.	Colin Maclaurin (1698–1746)	professor of mathematics in Aberdeen, then Edinburgh (MC/EU)
32.	Alexander Monro I (1697–1767)	physician & professor of anatomy (EU)
33.	Alexander Monro II (1733–1817)	physician & professor of anatomy, succeeding father Alexander (EU)
34.	Donald Monro (1727–1802)	physician in London
35.	John Moore (1729–1802)	Glasgow physician, then traveling tutor & London author
36.	William Nisbet (1759–1822)	surgeon & physician in Edinburgh, then London
37.	John Playfair (1748–1819)	clergyman; tutor; then professor of mathematics/natural philosophy (EU)
38.	Sir John Pringle (1707–1782)	Edinburgh physician & moral philosophy professor (EU); then London physician with specialty in military medicine
39.	Robert Simson (1687–1768)	mathematics professor with a specialty in geometry (GU)
40.	William Smellie, M.D. (1697–1763)	surgeon in Lanark, then physician & teacher of midwifery in London
41.	William Smellie (1740?-1795)	Edinburgh printer, editor, journalist, and natural historian
42.	Matthew Stewart (1717–1785)	clergyman at Roseneath, then professor of mathematics (EU)
43.	John Walker (1731–1803)	clergyman at Moffat, then Colinton; regius professor of natural history (EU)
44.	Robert Whytt (1714–1766)	physician & professor of medicine (EU)

Abbreviations of university teaching positions: EU = Edinburgh University; GU = Glasgow University; KC = King's College, Aberdeen; MC = Marischal College, Aberdeen; TCD = Trinity College, Dublin

All were composed or edited (or in a few cases, translated or compiled) by the forty-four Scottish authors whose names appear in Table 2, most of whom passed their adult lives in Scotland, though many also resided in London, and a handful elsewhere. Although Table 1 does not pretend to be a complete list of scientific and medical books by eighteenth-century Scottish authors, I believe it is comprehensive enough to permit some generalizations about the book culture of science and medicine during the heyday of the Scottish Enlightenment. It is certainly an impressive collection of titles, and one wonders how many similar lists from other countries could equal it—quantitatively or qualitatively—during this period, especially in proportion to demographics. The point of what follows, however, is not to use this table in order to demonstrate the scale and importance of the Scottish contribution to science and medicine, though others may choose to employ it for that purpose, but rather to show how the methodology of book history can throw new light on the Scottish Enlightenment, and particularly on its scientific and medical component.

A few preliminary words of clarification about Table 1 are necessary. In compiling it, I have excluded several kinds of related technical publications, such as the large literatures on agricultural and economic improvement and bookkeeping, in order to focus on books that were primarily concerned with topics in medicine, the natural sciences, and mathematics. The process of differentiation is necessarily imperfect, because the boundaries between topical categories are indistinct. Even with regard to books that clearly deal with scientific and medical topics, the selection process is sometimes problematic. Some authors, such as the Edinburgh midwifery professor Alexander Hamilton, substantially reworked their material and then published it under different titles, and one must determine whether each of these revised works merits a separate entry. Another problem is deciding how long a publication must be in order to qualify as a book. I have omitted works of less than about one hundred octavo pages—a more or less arbitrary designation, but one that works reasonably well for distinguishing "books" from "pamphlets" in most cases.

Language issues present another kind of problem. Latin works do not appear in Table 1, but if they were translated into English before the end of the century, the first English edition to appear in Britain has been included (for example, Alston on botany, Simson on geometry, Brown on medicine, Cullen's *Nosology*). Although compilations and translations of works by foreign authors have generally been omitted, this rule has deliberately been violated in several instances, such as the *Encyclopaedia Britannica*, Simson's and Playfair's editions of Euclid, and Smellie's translation of Buffon, on the grounds that the translators, compilers, editors, or engravers of such works made significant scientific or medical contributions of their own. Volumes of the proceedings or transactions of Scottish societies, when mainly scientific or medical, have been included, although the individual papers comprising such volumes are of course not cited unless they also appeared separately in book form.

Table 1's chronological focus on the second half of the eighteenth century is not meant to suggest that there was no significant Scottish scientific and medical publishing before 1746 or after 1800. It can be argued, however, that those dates—regarded as general guideposts rather than precise dividers—do frame an era of particularly robust activity and achievement. In regard to the earlier period, works such as Alexander Monro *primus*'s *The Anatomy of the Human Bones* (1726), George Cheyne's *The English Malady: or, a Treatise of Nervous Diseases of all Kinds* (1733), Colin Maclaurin's *Treatise of Fluxions* (1742), and the five volumes of *Medical Essays and Observations* that appeared in Edinburgh in the 1730s and 1740s serve to remind us that the second quarter of the eighteenth century witnessed the publication of a number of important Scottish scientific and medical books, and that the authors in Table 2 frequently built on earlier developments.[45] A good case can be made for dating the origins of the Scottish Enlightenment in science and medicine to that formative period. Yet there were also significant differences in the scientific and medical book cultures of the earlier and later parts of the eighteenth century. For one thing, a higher percentage of the scientific and medical books of the early eighteenth century were published only in Latin, traditionally the primary language of scientific and medical learning in early modern Europe. More generally, during the late seventeenth and early eighteenth centuries there were significantly fewer scientific and medical books published by Scottish authors in *any* language, and this point seems to apply to all of Britain.[46] The mature Scottish Enlightenment was part of a sophisticated English-language book culture that was different in scale from what had existed earlier. For this reason among others, attempts to minimize the extent of the cultural and intellectual transformation that occurred in Scotland during the course of the eighteenth century are likely to be unconvincing.

There are many productive ways in which these tables and that transformation can be investigated. One possibility is to focus on the authors, beginning with queries about their gender, age, background, education, occupation, place of residence, and affiliations. We would find that they were all males, born between 1680 and 1774, about two-thirds clustered in the four decades from 1710 to 1750, with Joseph Black and John Hunter (both born in 1728) at the chronological center of the cohort. All but one (Joseph Black, whose father was a Scots-Irish merchant in Bordeaux at the time of his birth) were born in Scotland. Their social status varied widely, but none were of noble birth or born to a title, though four acquired knighthoods or baronetcies as a result of their contributions to medicine (John Pringle in 1766, William Fordyce in 1782, Gilbert Blane in 1812, and Charles Bell in 1831). With the exception of the itinerant scientific lecturer James Ferguson, and possibly the

farrier James Clark,[47] they were university educated, mainly in Scotland, and most had at least some medical training (and often the M.D. degree) from the University of Edinburgh. Nineteen (43 percent) were professors of medicine, the natural sciences, or mathematics in Scottish universities—ultimately the University of Edinburgh in all but two cases—and another twenty (over 45 percent) were practicing physicians or surgeons who either did not teach any of these subjects or taught them elsewhere, including several who gave private courses in London or Edinburgh. The remaining five followed other pursuits, although one (James Hutton) was also an Edinburgh M.D. by training, and another (William Smellie, the printer) attended medical classes at Edinburgh. A dozen had close family ties with others in the database, including fathers and sons (Alexander Monro *primus* and his sons Alexander and Donald; Alexander and James Hamilton; John and James Gregory), brothers (William and John Hunter; Charles and John Bell), and uncle and nephew (William Hunter and Matthew Baillie). Others were connected as teacher-pupil or master-disciple (for example, William Hunter and William Cruikshank; James Hutton and John Playfair; William Cullen and Joseph Black). Still others were embroiled in antagonistic or competitive relationships rooted in rival scientific or medical theories (for example, William Cullen versus John Brown), or disagreements over the assignment of credit for particular scientific or medical discoveries (for example, the Monros versus William Hunter; the Hunters between themselves), or conflicts over local issues (for example, James Gregory versus the Hamiltons and others).

Most resided in or near Edinburgh for a large portion of their adult lives, but some lived elsewhere in Scotland at times. Several spent time abroad, often in government or military service, and more than one-third of the total number were residents of London for at least part of their professional careers. Nearly all were affiliated with at least one (and usually more) of the leading professional and learned societies that flourished in eighteenth-century Britain, such as the Royal College of Surgeons of Edinburgh, the Royal College of Physicians of Edinburgh, the Royal Medical Society, the Glasgow Literary Society, the Aberdeen Philosophical Society, the Select Society of Edinburgh, the Royal Society of London, and the Edinburgh Philosophical Society and its successor, the Royal Society of Edinburgh. The one figure on the list who made his mature career outside Britain, Dr. George Cleghorn, followed a familiar pattern as a professor in the School of Physic at Trinity College, Dublin, which he helped to revitalize, and as an active participant in Dublin professional and intellectual societies such as the Medico-Philosophical Society and the Royal Irish Academy;[48] he was also a corresponding member of the Society of the Antiquaries of Scotland.

This kind of sociology of scientific and medical authorship is similar to the quantitative studies of "achievement" that have long been practiced by the

sociologically minded, and that Roger L. Emerson has applied to Scottish professors and members of scholarly societies.[49] Its conclusions provide statistical confirmation of the generalizations made earlier about the culture of the Scottish Enlightenment, with slight differences of emphasis. For example, medical men are greatly overrepresented in Table 2, whereas lawyers (0) and clergymen (3) are scarcely evident at all. Had Table 1 focused on books in moral philosophy, history, literature, and social thought, these results would have been reversed in regard to professional affiliation. Similarly, far more Scottish medical men resided in London than did any other category of Scottish Enlightenment author, owing to the early and deep entrenchment of Scots in the London medical establishment and the rich opportunities there for medical teaching and practice, which were not matched by opportunities in London for Scots in the other liberal professions.

On the whole, the answers yielded by this methodology do not tell us very much about the book history of science and medicine in the Scottish Enlightenment, or even about authorship. In order to probe deeper, it is necessary to ask other kinds of questions, which cannot be addressed fully in this essay. What motives and aspirations drove these authors to write and publish such books? Were they after money, fame, human betterment, intellectual distinction, or some combination of these? Did they get what they wanted? In what kinds of issues and controversies did they engage? Who published their books? Where? Why? What did their publications look like? How much did they cost? Were they profitable—if so, for whom? Were they exported, reprinted, translated, censored, pirated? Who bought them? Who read them? In what ways did they change people's lives—including the lives of members of the book trade and the authors themselves? Some of these questions can only be answered fully when authors, publishers, or readers have left behind private correspondence, diaries, account books and business records, and other sources that provide inside information; such sources, unfortunately, are not always available. Nevertheless, much can be learned by examining the extant sources, such as they are, including the evidence provided by the books themselves.

Take the matter of the author's name—or lack of it—on the title page of a book. In Table 1, whenever a book was published anonymously, the name of its author appears in brackets: curly brackets if he revealed his name in the title page of the second or third edition, square brackets if he maintained his anonymity at least that long. Of the 111 titles listed, the author's name appears in square brackets only a handful of times (three of them involving corporate or multi-author works that could not really be associated with a single "author" anyway), and in curly brackets only twice.[50] Clearly, the scientific and medical authors of the Scottish Enlightenment wrote to be recognized, and the concept of the "author function" that Foucault has associated chiefly with literary authors of this period may also be applied to scientific and medical writers.[51]

Revealing one's identity as the author on a title page was a way of claiming ownership over an area of knowledge, both in an economic and legal sense and in an epistemological one. In science and medicine in particular, an author's status as a knowledgeable expert could be further enhanced by enveloping him in the aura of institutional authority. The authors represented in Table 1 typically added as many titles and distinctions after their names as they could muster, from academic degrees to real and sinecure offices and memberships in learned societies. William Cullen, for example, was in the habit of citing his chair at the University of Edinburgh, his office as first physician to the king in Scotland, and his status as a fellow of the Royal College of Physicians of Edinburgh, the Royal Society of London, the Royal Society of Edinburgh, and the Royal Society of Medicine of Paris, to which he later added learned bodies in Madrid, Philadelphia, Copenhagen, and Dublin, and other medical societies in Edinburgh. Dedications could serve a similar function, especially if directed, as they sometimes were, toward figures of undisputed scientific or medical prominence, such as the president of a major scientific or medical society.

Publishing lectures was one way in which authors used books to trumpet their expertise and raise their stature as professionals. Two titles in Table 1—John Gregory's *Observations on the Duties and Offices of a Physician* (1770) and William Cullen's *Lectures on the Materia Medica* (1772)—were supposedly published by admiring former students without the professors' consent, though in Gregory's case, at least, one may wonder if this was not a ploy to enable the author to preserve an aura of modesty.[52] There were several reasons to publish scientific and medical lectures during the eighteenth century, and they did not apply only to university professors. No matter how dynamic and popular a lecturer might be, print, particularly a printed book, could help him to expand the range of his reputation, which in turn could enhance his fame and success behind the lectern. Thus, publishing *Lectures on Select Subjects* in 1760 helped to increase the fame, and therefore the English lecturing career, of the itinerant natural philosophy lecturer James Ferguson. The chief purpose of Andrew Duncan's *Medical Cases* (1778) was to promote the Edinburgh Public Dispensary, where in 1776–77 he had delivered the lectures on which that book was based, but publication on behalf of a popular charity also furthered Duncan's long quest for an Edinburgh medical chair, which he finally obtained in 1790. The publication in 1784 of *Two Introductory Lectures* by the famed London anatomy lecturer William Hunter was designed to perpetuate his memory a year after his death, and perhaps also to establish the priority of some of his anatomical teachings. The academic lectures of Charles Alston and Joseph Black were also published posthumously, possibly for similar reasons. On the other hand, there were compelling reasons for teachers not to put their lectures into print while still actively lecturing. As Roy Porter has

suggested in regard to Hunter, Black, and others who never published their own lectures, doing so "would have cheapened the goods, reduced pupil demand and the face-to-face homage of students", and ultimately hurt them economically.[53]

A popular alternative to putting academic lectures in print was to publish course outlines or guides, which were sometimes large enough to meet this chapter's criterion for distinguishing a pamphlet from a book. John Walker's *Institutes of Natural History* (1792) bears the subtitle *Containing the Heads of the Lectures in Natural History, Delivered by Dr. Walker, in the University of Edinburgh*, though it is actually a substantial work of 169 octavo pages. Similarly, William Cullen's *Institutions of Medicine* (1772) is well over two hundred pages long in duodecimo format, though it was intended as a course guide, as its subtitle reveals: *For the Use of the Students in the University of Edinburgh*. The professor of midwifery at Edinburgh, Alexander Hamilton, published *Elements of Midwifery* in 1775 as an empirical guide for the benefit of his students, but further experience convinced him to consider his subject "in a more enlarged view", as he put it in the preface to his *Outlines of the Theory and Practice of Midwifery* of 1784; by this he meant both looking at the topic more theoretically and presenting it in a longer volume, intended for a broader reading public. After false starts in 1777, John Anderson published in 1786 his *Institutes of Physics* as a four-hundred-page tome (marked "fourth edition"), essentially an expanded outline of the natural philosophy class that he gave at Glasgow University.

Published lectures and lecture outlines and guides indicate the complex interplay between orality, writing, and print that characterized the Scottish Enlightenment. A lecture might be written, fully or in outline form, then spoken or read aloud in a classroom, then revised and refined, then delivered orally again, and so on, until finally fixed in print. Even then, as the published lectures of John Gregory, William Cullen, and others demonstrate, there might be further revisions in other editions of the book or in works published under new titles.

A similar process occurred in regard to the learned societies for which the Scottish Enlightenment is so well known. In forums that ranged from small, nameless clubs, to moderate-sized academic associations, to the larger "royal" societies that flourished in London and Edinburgh, Scottish men of letters wrote scholarly papers that they presented and discussed orally and then, in some instances, fashioned into books. According to the account in its preface, Donald Monro's *An Essay on the Dropsy* (1755) emerged from a sketch that originally circulated among "a small circle of friends, who weekly submitted to each others examination, their thoughts on the different diseases of the human body"; a Latin version was subsequently submitted as Monro's Edinburgh M.D. thesis, which was in turn translated into English and

expanded to form the published *Essay*. John Gregory's *A Comparative View of the State and Faculties of Man. With those of the Animal World* (1765) developed from discourses delivered to the Aberdeen Philosophical Society. James Lind's *Two Papers on Fevers and Infections* (1763) announced its provenance in its subtitle: *Which Were Read before the Philosophical and Medical Society, in Edinburgh*. Most of the papers in William Alexander's *Experimental Essays* (1768) "have been read before the Philosophical Society of this city [Edinburgh], and some of them before the Royal Society in London", as the author observed in the preface. John Hunter's *Observations on Certain Parts of the Animal Oeconomy* (1786) consisted mainly of papers previously published in the *Philosophical Transactions of the Royal Society of London*.

The evolution of James Hutton's revolutionary geological theory, centering on the idea of uniform change over a long period of time, constitutes a particularly good example of science developing in conjunction with the media through which it is expressed. Hutton wrote (but did not publish) essays containing the germ of his theory around the early 1760s; delivered his seminal paper on the "duration and stability" of the earth to the Royal Society of Edinburgh on 7 March and 4 April 1785; published a brief abstract of the paper to facilitate discussion of it at the society's meeting on 4 July, when he also read the abstract to the society; placed a revised version of the full paper, under the title "Theory of the Earth", in the first volume of the *Transactions of the Royal Society of Edinburgh*, which appeared in 1788, and also published it separately around that time; and finally produced, in 1795, his two-volume *Theory of the Earth, with Proofs and Illustrations*, in which an enhanced version of his 1788 paper appeared as the first chapter of the first volume.[54] Perhaps "finally" is the wrong word to use in connection with the 1795 book, because at the time of his death in 1797, Hutton was preparing the manuscript of a third volume, which was not published until 1899. Among his contemporaries, the presentation of the theory culminated in 1802, when John Playfair, a high-ranking officer of the Royal Society of Edinburgh throughout this period, effectively popularized Hutton's argument in his *Illustrations of the Huttonian Theory of the Earth*.

The dialectical relationship between orality, writing, and print that is so well illustrated by the evolving presentation of Hutton's theory seems perfectly natural today, because it remains common for scholarly books to evolve from material originally presented as classroom lectures and conference papers and subsequently published, at least in part, in journals, multi-author books, conference proceedings, and the transactions of scholarly societies. It therefore may be surprising to learn that at least one Scottish contemporary believed that the last of these forms of publication was generally in direct conflict with the publication of books. On 15 June 1784, David Erskine, eleventh earl of Buchan, wrote a fascinating letter to the English printer and

antiquarian John Nichols about the state of learning in Scotland. After praising Nichols and his former master, William Bowyer the younger, for upholding the tradition of "learned editors and typographers", he adds: "Since the death of Robert Foulis, of Glasgow, and Thomas Ruddiman his predecessor, we have had only one learned printer in Scotland, William Smellie, whose fort is Natural History, and whose press groans under the weight of Edinburgh theses and lawyers' briefs".[55] These comments remind us of Elizabeth Eisenstein's emphasis on the early modern tradition of "scholar-printers", who combined technical skills in the print shop with book learning, and who applied their knowledge and skill as editors of books and periodicals, translators, and authors in their own right.[56] The earl had recruited Smellie as an associate in the institution he had recently founded, the Society of the Antiquaries of Scotland, and Smellie had responded by writing, and of course printing, an account of the society's genesis and early years.[57] Now the society was preparing to publish its first volume of transactions (once again printed by Smellie, with his son Alexander, although it did not actually appear until 1792), and Buchan was bursting with patriotic pride that Scottish antiquarian learning would have a forum for the publication of its papers.

In the same letter to Nichols, the earl of Buchan contrasts this idealized vision of scholarly organization and learned printing with its opposite:

> When I founded the Society of Antiquaries, and laid the platform of the new Royal Society of Edinburgh on the same foundations by emulation, there was hardly an individual in Scotland who had any notion of writing but for a bookseller; and gentlemen commonly withdrew any paper of merit from the old [Edinburgh] Philosophical Society soon after it was read, and prepared it for the press, and at the dissolution of that Society all the papers were withdrawn. At present I have the pleasure to find that several gentlemen addict themselves to literary pursuits, and communicate to both Societies, with a view to enrich their Transactions, exclusive of any views of separate publication. (503–4)

These remarks force us to think twice about our preconceptions concerning the culture of print in the eighteenth century. In the earl's view, booksellers (in the sense of bookseller-publishers) and learned printers represent completely different approaches to the representation of knowledge. Booksellers are associated with separately published books designed to compete in the commercial marketplace, and "writing . . . for a bookseller" is therefore writing for money. Learned printers, however, are committed to forging national monuments of knowledge in the form of scholarly proceedings or transactions, composed of papers whose authors receive no reward beyond the satisfaction of helping to advance the learning of their nation.

The earl of Buchan's preference for scholarly societies and patriotic printing smacks of the late seventeenth-and early eighteenth-century *virtuosi* tradition

that Roger L. Emerson has done so much to elucidate, in which gentlemen-scholars function as a high-minded elite in pursuit of scientific and antiquarian ends. Yet in advocating that tradition in late eighteenth-century Scotland, the earl knew he was fighting a rearguard action, because commercialized scholarly book publishing constituted the status quo that he sought to overturn. Even he had to admit, in the letter to Nichols quoted above, that it was sometimes desirable for papers "to be enlarged and published separately, where . . . they might be professionally beneficial to the country, or interesting to the public at large, independent of our Societies and those attentive to the objects of their pursuits" (504). Although at this time the personal interests of authors and booksellers had no place in his patriotic publishing ideals, by 10 January 1786, the earl was forced to make a further concession on this issue when he wrote to the English antiquarian Richard Gough: "I now begin with you to be convinced that it is fruitless to cultivate any thing in this country that is not attended with profit to the undertakers".[58] In acknowledging that "the public at large" constituted a deserving audience for Scottish learning, "independent" of learned societies, and that "profit to the undertakers" had to be taken into account along with the more noble goal of service to the nation, the earl of Buchan reluctantly recognized the fundamental attributes of the commercial system of book publishing that had already taken hold in eighteenth-century Britain. A large book-buying public was emerging, and fame and wealth awaited those authors and publishers who were willing and able to cultivate it.

Of course, not every scientific and medical book was intended for a large or popular reading public, or to make large profits. Many of the titles in Table 1 were clearly meant for a professional audience, or for the private libraries of well-to-do gentlemen and the well-endowed libraries of elite institutions. Any book published in folio (2°) would certainly fall into that category. In the eighteenth century, such books were large, prestigious, and extremely expensive. For example, Alexander Monro the younger's *Observations on the Structure and Functions of the Nervous System* (1783) was a one-volume folio priced at two guineas (£2.2s.) in boards, and Monro's *Structure and Physiology of Fishes Explained* (1785) used the same format and sold for the same high price. These were status publications: when advertising Monro's *Observations* in the *Edinburgh Evening Courant* for 8 January 1783, the publisher, William Creech, boasted that it is "without exception, the most splendid [book] that has ever been produced from the Scottish Press". Since these books were sold in boards, or temporary covers, their owners could also expect to pay a premium price for binding, both because folios, being larger than other books, commanded higher binding prices in themselves, and also because anyone investing in a folio edition would invariably want to bind it in a suitably elegant manner. Even more extreme was the gigantic "elephant" folio (1°) of thirty-four plates that John Baskerville printed for William Hunter in 1774, *Anatomia uteri humani gravidi tabulis illustrata / The Anatomy of the Human Gravid Uterus Exhibited in Figures*, which has been called one of the "more spectacular and expensive books of the century".[59] Although it sold for no less than six guineas (£6.6s.) in boards, it was so expensive to produce that a retail bookseller stood to make only eight shillings from its sale, and its London sales agents probably hoped to gain more prestige than profit from their association with it.

It was precisely because the folio format was so commercially disadvantageous that it was so rarely employed: of the 111 titles in Table 1, the two folios by Monro and Charles Bell's heavily illustrated *System of Dissections* (1798–99) were the only instances of this format. On the other hand, duodecimos—small and cheap books marked 12° in Table 1—were nearly as unpopular a format as folios for the scientific and medical books of the Scottish Enlightenment. Only six titles in Table 1—Robert Whytt's *Essays on the Virtues of Lime-Water* (1752) and *Physiological Essays* (1755), Donald Monro's *An Essay on the Dropsy* (1755), James Lind's *Essay on the Health of Seamen* (1757), William Cullen's *Institutions of Medicine* (1772), and William Nisbet's *Clinical Guide* (1793)—were originally published as duodecimos. These six small-format books constituted just over 5 percent of the total number of titles in Table 1, and when combined with the three folios they still account for only 8 percent. Thus, 102 of the 111 first editions, roughly 92 percent, used one or the other of the two intermediate formats: the upscale quarto (4°) or the more modest octavo (8°).

Quartos were relatively expensive works intended mainly for gentlemen's libraries, but being less unwieldy and expensive than folios, and more prestigious and potentially more profitable than octavos (because they commanded much higher prices), they had considerable appeal. When a book was intended to make a big impression, such as Colin Maclaurin's posthumous *An Account of Sir Isaac Newton's Philosophical Discoveries* (1746) or William Cullen's *A Treatise of the Materia Medica* (1789), quarto was the format of choice. It was also suitable for grand tomes such as the *Encyclopaedia Britannica* (1771), with its impressive engravings and long articles on scientific and medical subjects, such as "Astronomy" by James Ferguson and "Midwifery" by Dr. William Smellie, and the *Transactions of the Royal Society of Edinburgh* (1788–). Technically, formats referred to the manner in which each sheet of paper was folded, and the dimensions of books therefore depended on the size of the sheets of paper being used by the printer; thus, a quarto printed on smaller paper might be the same size as a standard octavo, while a quarto printed on very large paper, such as Alexander Monro the younger's *Three Treatises* (1797), could be the size of a folio. Normally, however, quartos were smaller than folios and larger than octavos, and the term was sometimes used to refer to books of a certain size regardless of how they were made.

In determining the way books looked as well as how much they cost, formats could also affect the expectations, and therefore the accomplishments, of authors. Since booksellers stood to make their biggest profits on quarto editions that sold well, authors had their best chance of negotiating a large amount of copy money for a popular book published in that format, especially if it was a multivolume work. The best-selling histories of David Hume and William Robertson—who received an unprecedented £4,000 for the first two editions of his three-volume *History of the Reign of Charles V* (1769)—are the most impressive examples.[60] Although the authors of scientific and medical books did not normally aspire to such an exalted degree of quarto fame and wealth during the eighteenth century, they could occasionally do quite well for themselves with the right kind of book. In such cases, financial incentive must be taken into account as one motivating factor in the "making" of scientific knowledge.

The Philosophy of Natural History by the earl of Buchan's "learned printer", William Smellie, shows what could go right—and wrong—in such an enterprise. While the wealthy earl pontificated on the virtues of knowledge for its own sake and that of the nation, Smellie, who had ten children and was perpetually short of money, worked long hours during the 1780s to complete his magnum opus. After organizing a subscription drive that demonstrated widespread interest in his work, printed as an expensive quarto, he offered the copyright to the Edinburgh bookseller Charles Elliot for one thousand guineas (£1,050), with the subscription list as a kind of subsidy. It was an ingenious ploy, and in a letter of 11 December 1786 Elliot accepted the arrangement as offered, causing Smellie's biographer to boast that his subject had received "probably the largest sum that had ever been given, at least in Edinburgh, for the literary property of a single quarto volume".[61] The terms stipulated further that Smellie would receive up to £50 for each additional quarto edition, although if later editions were published in octavo he would be given considerably less. Smellie printed the work for an extra charge and delivered 2,094 copies to the publisher.[62] Unfortunately, Elliot's death in January 1790 threw the project into confusion, and the book finally appeared a few months later under the imprint of "the heirs of Charles Elliot" and several other booksellers. Smellie had difficulty collecting his one thousand guineas, which his family did not receive until after his death in 1795. He also found it difficult to negotiate terms for a second volume of the work, which was ready for the press in December 1794 but was not published until 1799.[63]

Publishing in quarto format could be risky in other ways, too. If a quarto sold poorly, its publishers stood to lose a good deal more than if they had printed in octavo, because of higher production costs. This was the lesson learned by the Dilly brothers in London and the firm of Kincaid and Bell in Edinburgh when they copublished Charles Alston's *Lectures on the Materia*

Medica in two quarto volumes in 1770. Alston had been a well-respected professor of medicine at the University of Edinburgh, and the publication of his lectures ten years after his death must have seemed like a good idea at the time. But sales were dismal, at least in Scotland, and on 13 April 1771, John Bell (of Kincaid and Bell) wrote to the Dillys in regard to this title: "we are out £150 & not £40 came in".[64]

Furthermore, expensive quarto editions were more vulnerable to unauthorized reprints in smaller, cheaper formats, especially in Dublin, Philadelphia, and other towns where British copyright law did not apply during the eighteenth century.[65] Of course, all British books were fair game for Irish and American reprinters, but the high price of quartos made them more attractive targets than titles originally published in less expensive formats. William Cullen's authorized quarto edition of his *Lectures on the Materia Medica* (1773) was quickly reprinted in an octavo edition in Dublin (1773) and (unusually) a quarto in Philadelphia (1775), and his revised and expanded *Treatise on the Materia Medica*, which appeared in Edinburgh in two quarto volumes in 1789, was reprinted in a two-volume octavo format in the same two cities, Dublin in 1790 and Philadelphia in 1791. John Hunter's *A Treatise on the Venereal Disease* (1786) was reprinted twice in Philadelphia, first in an abridged octavo format in 1787, and four years later in an unabridged octavo. In the case of the first volume of Smellie's *Philosophy of Natural History*, the large quarto edition originally published in Edinburgh in 1790 appeared as a two-volume octavo in Dublin later in the same year and as a one-volume octavo in Philadelphia in 1791.

Foreign octavos usually offered substantial savings over the original British quartos. Whereas the Edinburgh quarto edition of Smellie's *Philosophy of Natural History* sold for a guinea (£1.1s., or twenty-one shillings) in boards, and sometimes more, the two-volume Dublin octavo could be purchased for just thirteen shillings. I have seen the London quarto edition of Cullen's *Lectures* priced anywhere from fourteen shillings in boards to eighteen shillings bound—a far cry from the Dublin octavo's price of 6s.6d. The two-volume London quarto edition of Cullen's *Treatise* cost two guineas (£2.2s., or forty-two shillings) in boards, while Luke White's two-volume Dublin octavo sold for a little more than one-third as much at 15s.2d.[66] The price differential in America could be even greater because the expenses of transportation and insurance had to be added on to the cost of a book imported from Britain. Although Dublin and Philadelphia reprints were legal so long as copies were not exported to Britain and (until 1778) its colonies, some smuggling from Ireland did occur, and Warren McDougall has uncovered evidence regarding the efforts of the Edinburgh bookseller Charles Elliot to secure copies of the second Dublin edition of Cullen's *Lectures* in 1783.[67] Of course, even foreign reprints that were not smuggled into Britain deprived British publishers of markets in

Ireland and the Americas and fueled their charges of unfair competition. For the dissemination of ideas, however, foreign reprint editions provided a valuable service by making a number of high-end scientific and medical books of the Scottish Enlightenment both more available and more affordable to consumers and readers throughout the Atlantic world. The fact that several of these reprint editions were published by booksellers who were either Scottish or Scots-Irish, such as Thomas Ewing of Dublin, and Robert Bell and Robert Campbell of Philadelphia, suggests other intriguing questions about how Scottish thought gained popularity abroad.

All told, twenty-two books in Table 1, or approximately 20 percent of the total, were originally published in quarto. This figure is not insignificant, but it pales beside the number of scientific and medical books in the table that were initially published in octavo format: eighty titles, or 72 percent of the total. As these numbers indicate, in eighteenth-century Britain, octavo was the standard format for certain kinds of books, scientific and medical works among them. An octavo of several hundred pages could accommodate a large amount of text within a book that was still small enough to fit within the pocket of a greatcoat, and it could often be printed cheaply enough to sell for just five or six shillings—roughly between a third and a fourth as much as a comparable volume printed in quarto. When illustrated, as many scientific and medical books were, octavos, unlike duodecimos, could contain plates of a decent size, though obviously not so large as those in quartos and folios. And whereas quartos, like folios, were typically sold in boards, and handsomely (and often expensively) bound by their owners, octavos were frequently bound in a workmanlike manner and sold that way by booksellers. As a result, the octavo format was ideal for scholarly books intended for general use and popular sale.

As a rule, authors could not expect to receive large amounts of copy money for books published in octavo format. When Henry Home, Lord Kames, demanded three hundred guineas (£315) from the Edinburgh bookseller William Creech for the rights to the first edition of his *Gentleman Farmer* (1776), both Creech and his London associate, William Strahan, were offended by Kames's audacity, which they considered symptomatic of the "extravagant Demands of Modern Authors". "300 Guineas for a simple Vol. 8vo. [that is, a one-volume octavo] on Husbandry!!! Ridiculous! What an immense Number must be sold to indemnify such a Price", Strahan wrote to Creech on 23 July 1776.[68] Strahan's letter includes a detailed account of the likely expenses for publishing Kames's book, in order to demonstrate that the publishers could hope to make a profit of only £73.6s.8d. if they sold off the entire impression of one thousand copies and paid the author no copy money at all! Yet if eighteenth-century scientific and medical authors could not get rich off a single volume or edition of an octavo, they could sometimes earn a great deal from

octavos with the potential for sustained, long-term sales. William Cullen's four-volume *First Lines of the Practice of Physic* (1777–84), a strong seller among medical students, set off a small war among competing publishers, from which Cullen eventually came away with more than £1,200.[69] William Buchan's incredibly popular one-volume octavo, *Domestic Medicine*, about which more will be said below, earned its author perhaps £1,500 over the course of thirty-six years, though when one considers the vast number of editions and copies that were published during this period, these profits may not appear quite so impressive.

As these remarks suggest, publishers of octavos generally looked toward later editions for the bulk of their profits, especially if copy money had been paid to the author. From their point of view, therefore, the object was to find books with staying power, which could be continually revised and reprinted, and perhaps generate "spin-offs" of various kinds. The London booksellers Joseph Johnson and George Nicol found such a work in Matthew Baillie's *The Morbid Anatomy of Some of the Most Important Parts of the Human Body*, which caused a stir upon publication in 1793 because it was the first systematic study of medical pathology. The book's success enabled Baillie to expand the work extensively in the second edition of 1797, and the following year *An Appendix to the First Edition of the Morbid Anatomy* was published for the benefit of the purchasers of the first edition. Then came *A Series of Engravings, Accompanied with Explanations, Which Are Intended to Illustrate the Morbid Anatomy*, which was issued in ten large fascicules during the period 1799–1803 and finally published as a single, expensive quarto in the latter year. *The Morbid Anatomy* would remain popular, in America as well as Britain, for several more decades, and it launched Baillie on a distinguished medical practice in London that brought him enormous wealth and commemoration after death in Westminster Abbey.

As scientific and medical publishing became increasingly commercialized, principles of ethics and propriety coexisted uneasily with legal and financial realities, and relations between authors and publishers sometimes showed signs of strain. The publishing career of the Edinburgh physician Andrew Duncan is a case in point. Although Duncan could be an exceedingly difficult character, he had an entrepreneurial mind and knew how to tap the commercial potential of medical issues. In 1773 he began editing *Medical and Philosophical Commentaries*, which appeared periodically (annually from 1780) and contained news of the latest publications and developments in medicine. Duncan originally contracted with the London bookseller John Murray to receive £15 for each volume, but strong sales led him to request more. In a letter of 29 August 1774, Murray replied that he had offered Duncan "too much" in the first place. Murray had to make some concessions, however, in order to prevent Duncan from taking this profitable publication elsewhere, so he gave

him twelve free copies of the work and in 1778 raised the editor's fee to £20 per volume. Nevertheless, Murray's relations with Duncan remained strained. Duncan switched publishers in 1780, returned to Murray in 1783, and then left him again in 1786, when the Edinburgh bookseller Charles Elliot offered him better terms.[70]

Duncan's involvement with another profitable medical work is a more complicated story, not all of which can be told here. In 1785 Charles Elliot commissioned two Edinburgh physicians, Charles Webster and Ralph Irving, to revise a standard English pharmacological reference book entitled *The New Dispensatory*, which soon appeared as *The Edinburgh New Dispensatory*. It was hugely successful, and in 1789 Andrew Duncan edited for Elliot a second, substantially revised edition that was copublished by the London office of Elliot's firm and marketed in four different versions with varying prices: from seven shillings in boards to nine shillings neatly bound and on fine paper. After Elliot's death in 1790, the trustees of his estate sold the rights to William Creech, who published editions in 1790, 1791, 1794, 1797, and 1801. Duncan continued as the editor at first, and the third edition of 1791 incorporated his abstract on Lavoisier's new chemistry, among other improvements. From the fourth edition of 1794 through the sixth edition of 1801, however, *The Edinburgh New Dispensatory* was edited by John Rotheram of Newcastle (1751–1804), who seems to have been brought to Edinburgh by Creech "to superintend new editions of some of his property books", including this one.[71]

In 1803 Duncan's son, Andrew the younger (1773–1832), edited another revised edition of the work for Creech's chief rival, Bell and Bradfute, as if it were a first edition. Creech was furious when he learned what was happening, and there followed an unpleasant exchange in which the elder Duncan (to whom the 1803 edition was dedicated) accused Creech of publicly maligning his character, while Creech defended himself by claiming he had been "ill used" by Duncan.[72] He believed the Duncans had stolen his property and had acted unethically by declining his offer to reward the younger Duncan's improvements with "a handsome compensation".[73] Creech seems to have believed that the elder Duncan was behind the scheme for the 1803 edition. According to Andrew the younger's preface, however, the initiative for the latest revisions had come from the publishers, and the editor was merely attempting to provide "what was expected from him" by them. The new edition was another commercial success,[74] and over the course of the next three decades the firm of Bell and Bradfute would publish eleven more editions of *The Edinburgh New Dispensatory*, all fat one-volume octavos (the twelfth edition of 1830 reached 1,127 pages), and all edited by Andrew Duncan the younger, who made his international reputation chiefly on the strength of this work.

This brief sketch of the publishing history of *The Edinburgh New Dispensatory* provides an indication of how much the development of science and

medicine in the Scottish Enlightenment owed to the book trade. Rather than being passive instruments to whom men of letters submitted fully formed manuscripts for publication, Charles Elliot, William Creech, and Bell and Bradfute stimulated scientific change by commissioning qualified editors like the Duncans and Rotheram to prepare new editions that were each meant to be larger and better than the preceeding ones. The dispute between Creech and the elder Duncan represents a disagreement over ownership and control of the work but not over the nature of the working relationship between editor and publisher, for Creech would have been happy to incorporate the younger Duncan's latest revisions and to compensate him competitively for them. The whole process demonstrates the close connection between economic incentive and scientific "progress" in the highly commercialized print culture of late eighteenth- and early nineteenth-century Britain.

More generally, the publishing history of *The Edinburgh New Dispensatory* represents Scottish scientific and medical appropriation on a grand scale. The removal to Scotland by Charles Elliot of a work that had been produced in London for decades, and his insertion of the word "Edinburgh" in the title so that no one would be likely to miss what had happened, was an aggressive entrepreneurial act. So was the way the newly titled work was mass-marketed by Elliot and those who succeeded him. Beyond the obvious fact that there was money to be made, scotticizing the *New Dispensatory* was an act of patriotism that trumpeted Edinburgh's importance as a medical and scientific center. To carry out and sustain such a bold undertaking required not one but a steady succession of visionary booksellers and competent pharmacological editors, backed by the authority of two overlapping Scottish institutions: the Edinburgh University Faculty of Medicine and the Royal College of Physicians of Edinburgh.[75] This act of appropriation also enhanced Scotland's scientific stature abroad. In 1791 the second edition of Elliot's *Edinburgh New Dispensatory* was reprinted in Philadelphia by Charles Elliot's former protégé, the Scottish emigrant bookseller Thomas Dobson, and on the basis of its subsequent influence the work has been called "the first book of consequence in the emergence of an American medico-pharmaceutical literature, particularly dispensatories".[76]

Yet another significant aspect of medical publishing in the Scottish Enlightenment is revealed by a different publishing genre with which the elder Andrew Duncan was involved. Duncan's previously mentioned *Medical Cases, Selected from the Records of the Public Dispensary at Edinburgh* was copublished in 1778 by Charles Elliot in Edinburgh and John Murray in London. Like the proceedings of scholarly societies touted by the earl of Buchan, the lectures published by professors in Scottish universities, and the pharmacopoeias sponsored by the royal colleges of physicians in London and Edinburgh, *Medical Cases* was the product of an institutional affiliation, but one more popular

and more blatantly political than those just mentioned. The public dispensary was part of a process of institutionalizing public health in eighteenth-century Edinburgh, in which the benefits of modern medicine and pharmacy, such as they were, were increasingly made available to the general population. Books like *Medical Cases* formed the publishing wing of that process. By publicizing interesting cases from the institution, including treatments, results, and analyses, such books attempted to advance not only the cause of medicine through an empirical approach but also the cause of the institution itself. They were typically dedicated to political rather than to scientific or medical figures. Duncan, for example, dedicated *Medical Cases* to the Whig advocate Henry Erskine (younger brother of the earl of Buchan), whose political influence had helped to establish the public dispensary, and he proudly observed that since its foundation "upwards of four hundred patients, under my direction, have already been supplied with medicines from the funds of this charity" (vii). In this way, *Medical Cases* established Duncan's reputation as what Henry Cockburn called "the great patron of the Old Dispensary".[77]

A similar pattern appears in regard to James Hamilton's *Select Cases in Midwifery; Extracted from the Records of the Edinburgh General Lying-In Hospital. With Remarks* (1795), which was "printed for the Benefit of the Hospital", and sold by George Mudie and Son in Edinburgh (or Peter Hill, in another imprint) and Joseph Johnson in London. Hamilton, then assistant physician of the hospital, explains in his preface the advantages of an empirical case-history approach:

> Many advantages result from the publication of cases. The characteristics of diseases are thereby impressed on the minds of young practitioners; the ordinary rules of practice are illustrated; and the value of expedients that are not universally sanctioned is ascertained. In short, by this means the experience of the individual, is rendered generally useful. (i–ii)

He then discusses the history of the Edinburgh Lying-In Hospital, from the original proposal issued by his father, Alexander, in 1791 to its opening in November 1793, describes its facilities and activities, and makes an appeal for "some speedy pecuniary aid", without which "the Hospital must soon be shut up" (ix). The book is dedicated to the officers of the hospital, headed by James Stirling, the lord provost of Edinburgh. Once again an ambitious physician was pushing the right political buttons by associating himself with an enlightened, charitable medical institution in Edinburgh, and his reward would come five years later when the town council, under the leadership of the provost, appointed him his father's successor in the midwifery chair.

If these little books by Duncan and Hamilton were linked to local charitable institutions, another branch of Scottish scientific, and especially medical, publications was connected with ideals of "improvement" on a global

scale. One popular way for Scottish physicians to cope with a glut of medical practitioners at home was to put themselves in the service of the British Empire, which during this period of colonial expansion and conflict had a constant need for their services at sea, at war, and in exotic locations. By publishing the results of their empirical researches in the field or their broader reflections upon them, sometimes recommending specific treatments and cures, they built reputations that led to prominent medical careers. George Cleghorn spent fourteen years in the Mediterranean as a regimental surgeon and then published his medical findings in *Observations on the Epidemical Diseases in Minorca* (1751), which was also valuable as a local natural history. Sir John Pringle, who would ascend to the presidency of the Royal Society of London in 1772, established his scientific reputation with his 1752 book on diseases of the army. Donald Monro took advantage of his three years during the early 1760s as physician at the British Military Hospital in Germany by writing a book about the subject that was published in 1764, and he subsequently expanded "An Essay on the Means of Preserving the Health of Soldiers", which was appended to that book, into a two-volume work that appeared in 1780. James Lind made his name with books about scurvy and other diseases that British seamen, soldiers, and colonials were likely to encounter aboard ships and in tropical climates. Toward the end of the century, Gilbert (later Sir Gilbert) Blane of Ayrshire would draw upon his experiences as physician to Lord Rodney's fleet in his *Observations on the Diseases Incident to Seamen* (1785) and would subsequently implement some of his enlightened treatments and those of Lind (such as the introduction of lemon juice on ships to prevent scurvy) in his capacity as head of the Navy Medical Board. All these books were published in London, mostly by Scottish booksellers there such as Andrew Millar, Thomas Durham, and John Murray (who had himself served in the Royal Marines during the Seven Years' War, before setting up as a London bookseller).[78] With the exception of Cleghorn, who settled in Ireland because his regiment was relocated there, and subsequently taught at Trinity College, Dublin, the Scottish physicians who engaged in this sort of medical service and writing were preparing themselves not for academic careers in medicine, certainly not in Scotland, but rather for private practice or public service in England.

Self-publication, either by subscription or through some other method, was one way for authors to minimize potential conflict with booksellers and maintain greater control over their books and the profits they might generate. The three most interesting instances from Table 1 concern the books of John Hunter, James Ferguson, and William Buchan. Hunter's first book, *The Natural History of the Human Teeth*, was published in London in 1771 by Joseph Johnson and, in 1778, a *Supplement* to that work was published in the same conventional manner. In 1783, Hunter purchased a large house in

Leicester Square in London, along with another house located behind it on Castle Street, and proceeded to build, at enormous expense, what might fairly be called an eighteenth-century multimedia center for the study of anatomy and medicine. The facility contained an examination room and a medical and scientific library in the main residence; a dissection facility, a print shop, a warehouse, and a bookshop in the Castle Street house; and a lecture hall, a museum, and a salon or conversation room located between the two houses. In 1786 Hunter had one thousand quarto copies of two of his new books printed (by John Richardson), corrected (by a group of Scottish medical friends consisting of Gilbert Blane, George Fordyce, David Pitcairn, and Andrew Marshal), folded (by his students, apparently), stitched (by women hired for the purpose), and sold—all on site. One of those books, *A Treatise on the Venereal Disease*, sold rapidly enough to justify a smaller reprinting of five hundred copies at Castle Street just two years later. The other, *Observations on Certain Parts of the Animal Oeconomy*, sold more slowly but still went to a second in-house edition of five hundred copies in 1792.[79]

According to one contemporary, Hunter said he resorted to self-publication because he feared that conventional publication by booksellers would be likely to result in unauthorized editions being printed in Dublin by prior arrangement with the London trade.[80] That explanation hardly rings true, especially since his first book on teeth had been conventionally published and was never reprinted in Dublin. More likely, Hunter opted for self-publication because he wished to control all aspects of his medical media empire. The interplay of orality, print, and visual media reached its high point in Hunter's complex, where medical students, fellow professionals, and the general public could hear (and also see, for demonstrations were invariably featured) Hunter's lectures, share in conversations at his Sunday evening salon or at the meetings of the medical society that Hunter and Fordyce founded in 1785 (the Lyceum Medicum Londinense), consult and even borrow books from the library (which had restricted access, but was widely available to professional friends), view artifacts in the museum, and peruse, and perhaps purchase, the proprietor's printed works in the bookshop.

The career of James Ferguson is another notable instance of enterprising scientific publishing by a Scotsman who combined oral and visual media with his work as an author. The self-educated son of a laborer in the north of Scotland, Ferguson possessed a penchant for astronomy and natural philosophy as well as considerable skill as an artist. After supporting himself for some time as a painter of miniature portraits, he forged a career as a popular scientific lecturer and author in England. His career illustrates the dialectical interplay of orality and printing, for his books prepared audiences for his popular lectures in towns and at spas, just as those lectures stimulated sales of his books. Ferguson also found ways to integrate his artistic skills into both his lectures

(that is, the apparatus that he designed and built) and his books (that is, ingenious scientific drawings and charts). Ferguson initially made his name as an author by publishing his own works: first, four brief astronomical pamphlets between 1746 and 1754, and then, by subscription, the substantial *Astronomy Explained upon Sir Isaac Newton's Principles* (1756), with fourteen copper plates, reasonably priced (for a well-illustrated quarto) at fifteen shillings.

As a London-based itinerant lecturer and popular author on natural philosophy and astronomy, James Ferguson pursued a career somewhat similar to that of the English instrument-maker Benjamin Martin (1705–82), who started lecturing and publishing on those subjects earlier, lived longer, and was a more prolific author.[81] Yet few of Martin's many publications had staying power, and virtually no editions of his works appeared in English after his death. By contrast, Ferguson's books remained enormously popular until the early Victorian era, and several of them were revitalized in the early nineteenth century, when new editions were edited by Sir David Brewster and C. F. Partington in Britain and Robert Patterson in America.

This difference may be ascribed partly to Ferguson's superior skill at composing and illustrating his books, and partly to the circumstances of publication. Martin's books were generally "printed for the author", although he sometimes collaborated with booksellers such as John Noon and, from 1751, William Owen.[82] As noted earlier, Ferguson began by publishing his own books, but his career soon took a different turn. After *Astronomy Explained* generated a second edition in 1757, he sold the copyright for £300 to another transplanted Scotsman in London, the prominent bookseller Andrew Millar.[83] Millar subsequently became the publisher of all Ferguson's works, including *Lectures on Select Subjects in Mechanics, Hydrostatics, Pneumatics, and Optics* in 1760, the third edition of *Astronomy Explained* in 1764, *Tables and Tracts, Relative to Several Arts and Sciences* in 1767, and, jointly with his protégé and successor Thomas Cadell, *The Young Gentleman and Lady's Astronomy Familiarly Explained in Ten Dialogues* (1768; titled from the second edition of 1769 onward, except in Ireland, *An Easy Introduction to Astronomy, for Young Gentlemen and Ladies*). Millar also sponsored Ferguson's lectures at fashionable Bath and Tunbridge Wells,[84] presumably in order to support his author as well as to provide a venue for selling more of his books. After Millar's death in 1768, Cadell and his publishing associate, William Strahan, assumed Millar's role as the publishers of new books written by Ferguson, including *An Introduction to Electricity* (1770), *Select Mechanical Exercises* (1773), and *The Art of Drawing* (1775), and they also continued to issue numerous editions of his older titles, sometimes in association with other booksellers who had purchased copyright shares of Ferguson's earlier works at the auction of Millar's properties in 1769.[85] With the exception of the first three editions of *Astronomy Explained*

and one quarto printing of *Lectures on Select Subjects* (1764) and its *Supplement* (1767), all these books were relatively inexpensive octavos, mostly priced at just four or five shillings, and none more than the nine shillings charged for *Astronomy Explained* on account of its many pages and plates.[86] Ferguson himself became surprisingly wealthy, and was worth £6,000 when he died in 1776 (unlike Martin, who died bankrupt). By that time, his works were so thoroughly integrated into the vast marketing network of the Strahan-Cadell publishing empire that their popularity continued in full force, without any need for Ferguson himself to push their sale, as Martin had felt compelled to do with his books.[87]

Whereas James Ferguson produced a steady stream of popular scientific books over the course of two decades, William Buchan was associated almost exclusively with a single best-selling title: *Domestic Medicine*. He first published it by subscription in Edinburgh in 1769, employing his friend William Smellie as editor and printer. From the outset, Buchan conceived of his book as a popular work, to be purchased and used by families seeking to avoid and, if necessary, treat, various kinds of health problems. His prepublication letters to Smellie show how deeply involved the author was with overseeing the book's type, layout, format, print run, and price, as well as the organization of the subscription drive.[88] He queried Smellie about the cost of printing an astonishing ten thousand copies, but eventually settled for something closer to five thousand—still an extremely large print run for a new and untried octavo being published in Edinburgh. Yet the entire edition seems to have sold out in Scotland within a short time.[89]

Buchan then came to the attention of leading publishers in London (William Strahan and Thomas Cadell) and Edinburgh (John Balfour and the firm of Alexander Kincaid and William Creech), who paid him the impressive sum of £500 for the rights to the second edition of *Domestic Medicine*, with an additional £50 (sometimes paid in the form of one hundred copies of the book, and sometimes in cash) for every subsequent edition or impression that the author revised for publication.[90] For the remainder of his life, Buchan continued to revise his book, and these publishers or their successors published his revised editions with impressive frequency (every other year, on average), in exceptionally large print runs (usually six thousand copies per edition), and always in the same one-volume octavo format. Meanwhile, Buchan made unsuccessful bids for academic chairs in Edinburgh in the early 1770s, and in the late 1770s he fared no better as an itinerant scientific lecturer, employing the very apparatus that the late James Ferguson had previously used so effectively. He then moved to London and practiced medicine from the Chapter Coffeehouse, but again without much success. These failures, and the fact that *Domestic Medicine* never contained any illustrations, placed Buchan in a more direct relationship to the printed word than either

Hunter or Ferguson. For Buchan, there was no interplay of print and orality, or of the printed word and the printed image or the built demonstration model. To him, the printed word was everything, and his professional life during the last quarter of the eighteenth century consisted largely of devising new ways to exploit its commercial potential by continually revising his famous book and by attempting, with limited success, to write others.

The publishing exploits of Hunter, Ferguson, and Buchan demonstrate some of the commercial possibilities available to enterprising Scottish scientific and medical authors in the late eighteenth century, but they also show the limitations of private publishing. It is not by chance that both Ferguson and Buchan moved early in their careers from publishing by subscription to professional publishing by the commercial book trade in London and Edinburgh. Managing a subscription publication was a huge undertaking, and unless one happened to have a way of attracting book-buyers through some other means, as Hunter did, it was easier to turn the operation over to an efficient organization such as the Strahan-Cadell publishing and bookselling network. In addition to maintaining a system of printing, wholesaling to the trade, and retailing to the public in bookshops, the partners knew how to publicize books like Ferguson's and Buchan's. They advertised extensively in newspapers, issued publication catalogs that listed their titles with information about format and price, and arranged for their books to receive notices in the major book review journals. Buchan seems to have relied on Scottish newspaper advertisements to promote the first edition of *Domestic Medicine* in the spring and summer of 1769. When Strahan, Cadell, and their Edinburgh associates published the second edition in 1772, however, they supported it not only with newspaper advertisements in London (where Strahan printed and partially owned the *London Chronicle*) and Edinburgh, but also with prominent notices in the *Monthly Review* (which Strahan printed and partially owned) and the *Critical Review*, almost as if the book were being published for the first time.[91] By around 1780 they were featuring Buchan's book—along with James Ferguson's six major titles—in catalogs that they regularly issued under the title *Books Printed for W. Strahan, and T. Cadell in the Strand*. Furthermore, Buchan's book benefited from the collaboration of London and Edinburgh copublishers, who sometimes advertised it without reference to their distant associates. In short, private publishing could sometimes be feasible on a small scale, but the emergence of a mass market for scientific and medical books necessitated sophisticated commercial operations of a kind that no author could provide.

Historians of Scottish Enlightenment print culture must determine the precise nature and extent of the contributions of the London and Edinburgh booksellers who published the majority of scientific and medical books. New studies, such as William Zachs's recent biography of the first John Murray and

Warren McDougall's forthcoming book on Charles Elliot, represent important beginnings along these lines. We are learning that books were made by the book trade as well as by their authors, and that understanding the nature of the roles played by the most important members of the trade is one of the keys that unlocks the secrets of Enlightenment intellectual culture. In this sense, the leading publishers of the books in Table 1 were among the primary enablers of the Scottish Enlightenment, comparable to the great patrons, such as the third duke of Argyll (Lord Ilay) and the third earl of Bute, who had a hand in the appointment of so many Scottish men of letters to prominent professional positions. No matter how the Scottish Enlightenment is defined, it could not have occurred without individuals like these, who enabled the Scottish literati to develop and articulate their ideas through a unique configuration of institutions, cultural practices, and publications.

The book culture of Scottish science and medicine that is represented in Table 1 must be regarded as an international movement, involving not only London and Edinburgh but also Ireland, the Americas, and continental Europe—in short, anywhere such books turned up as imports, reprints, or translations. It must be studied, too, in relation to oral modes of expression, such as academic lectures and discourses delivered at learned societies, as well as in relation to the politics of patronage, since books were often dedicated to patrons and frequently led to appointments and promotions, especially in the Scottish universities. At the same time, its study reminds us of a truth too often minimized in the work of scholars who have given priority to natural knowledge in the Scottish Enlightenment: through the power of publication, science and medicine often thrived apart from formal institutions such as universities and learned societies. Above all, the book culture of eighteenth-century Scottish science and medicine must be understood as a broad-based phenomenon, involving the complex interplay of authors, members of the book trade, books themselves (considered as texts, artifacts, and commodities), and their readers, and as one of the central components of the culture of the literati that lay at the heart of the movement known as the Scottish Enlightenment. Understood in this manner, science and medicine appear to be neither peripheral to the Scottish Enlightenment nor its driving force, but rather an integral part of its rich and multifaceted intellectual culture. And book history assumes its rightful place as one essential way of situating science and medicine *in* the Enlightenment.

Notes

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1. Hugh Trevor-Roper, "The Scottish Enlightenment", *Studies on Voltaire and the Eighteenth Century* 63 (1967): 1640; *idem*, "The Scottish Enlightenment", *Blackwood's Magazine* 322 (1977): 373–74.

2. Gladys Bryson, *Man and Society: The Scottish Inquiry of the Eighteenth Century* (Princeton, N.J.: Princeton University Press, 1945).

3. William Robert Scott, *Francis Hutcheson: His Life, Teaching, and Position in the History of Philosophy* (Cambridge: Cambridge University Press, 1900), 265; Ernest Campbell Mossner, *The Life of David Hume* (Oxford: Clarendon Press, 1954), 243.

4. It could be argued that the reverse is true: the "original" definition of the Scottish Enlightenment was extremely broad and open-ended, and subsequent attempts to narrow its meaning by Trevor-Roper and Duncan Forbes, among others, represent deviations from William Robert Scott's initial usage of the term. But Robertson seems to mean the first systematic, institutionalized use of the concept.

5. John Robertson, "The Enlightenment above National Context: Political Economy in Eighteenth-Century Scotland and Naples", *The Historical Journal* 40 (1997): 673–74.

6. John Robertson, "The Scottish Enlightenment", *Rivista Storica Italiana* 108 (1996): 798.

7. Roger L. Emerson, "Science and the Origins and Concerns of the Scottish Enlightenment", *History of Science* 26 (1988): 338. All subsequent quotations in this paragraph are taken from this source.

8. I refer here to the following publications by Roger L. Emerson. On Scottish clubs and societies: "The Social Composition of Enlightened Scotland: The Select Society of Edinburgh, 1754–1764", *Studies on Voltaire and the Eighteenth Century* 114 (1973): 291–329; "The Enlightenment and Social Structures", in *City and Society in the Eighteenth Century*, eds. Paul Fritz and David Williams (Toronto: Hakkert, 1973), 99–124; the valuable four-part series on the Edinburgh Philosophical Society and its transformation into the Royal Society of Edinburgh, in *The British Journal for the History of Science*: "The Philosophical Society of Edinburgh, 1737–1747", 12 (1979): 154–91, "The Philosophical Society of Edinburgh, 1748–1768", 14 (1981): 133–76, "The Philosophical Society of Edinburgh 1768–1783", 18 (1985): 255–303, and "The Scottish Enlightenment and the End of the Philosophical Society of Edinburgh", 21 (1988): 33–66; and "The Edinburgh Society for the Importation of Foreign Seeds and Plants, 1764–1773", *Eighteenth-Century Life* 7 (1982): 73–95.

On Scottish universities and academic patronage: "Scottish Universities in the Eighteenth Century, 1690–1800", *Studies on Voltaire and the Eighteenth Century* 167 (1977): 453–74; "Aberdeen Professors, 1690–1800: Two Structures, Two Professoriates", in *Aberdeen and the Enlightenment*, eds. Jennifer J. Carter and Joan H. Pittock (Aberdeen: Aberdeen University Press, 1987), 155–67; "Lord Bute and the Scottish Universities, 1760–1792", in *Lord Bute: Essays in Re-interpretation*, ed. Karl W. Schweizer (Leicester, England: Leicester University Press, 1988), 147–79; *Professors, Patronage and Politics: The Aberdeen Universities in the Eighteenth Century* (Aberdeen: Aberdeen University Press, 1992); "The 'affair' at Edinburgh and the 'project' at Glasgow: The

Politics of Hume's Attempts to Become a Professor", in *Hume and Hume's Connexions*, eds. M. A. Stewart and John P. Wright (Edinburgh: Edinburgh University Press, 1994), 1–22; and "Politics and the Glasgow Professors, 1690–1800", in *The Glasgow Enlightenment*, eds. Andrew Hook and Richard B. Sher (East Linton, Scotland: Tuckwell Press, 1995), 21–39.

9. Roger L. Emerson, "Scottish Cultural Change, 1660–1710, and the Union of 1707", in *A Union for Empire: Political Thought and the British Union of 1707*, ed. John Robertson (Cambridge: Cambridge University Press, 1995), 121–44; *idem*, "Natural Philosophy and the Problem of the Scottish Enlightenment", *Studies on Voltaire and the Eighteenth Century* 242 (1986): 243–91; *idem*, "Sir Robert Sibbald, Kt, the Royal Society of Scotland and the Origins of the Scottish Enlightenment", *Annals of Science* 45 (1988): 41–72; *idem*, "Science and the Origins and Concerns of the Scottish Enlightenment".

10. Roger L. Emerson, "The Religious, the Secular, and the Worldly: Scotland, 1680–1800", in *Religion, Secularization, and Political Thought: Thomas Hobbes to J. S. Mill*, ed. James E. Crimmins (London and New York: Routledge, 1989), 68–89; *idem*, "American Indians, Frenchmen, and Scots Philosophers", *Studies in Eighteenth-Century Culture*, vol. 9, ed. Roseann Runte (Madison, Wisc.: University of Wisconsin Press, 1979), 211–36; *idem*, "Conjectural History and Scottish Philosophers", *Historical Papers/Communications historiques: Guelph* (1984): 63–90; *idem*, "Sir Robert Sibbald", 62.

11. Robertson, "Scottish Enlightenment", 796.

12. See, in particular, Emerson, "Science and the Origins and Concerns of the Scottish Enlightenment", 356, where he claims that "by 1715, at the latest . . . the agenda of the Scottish Enlightenment had been pretty well set by them and based upon a scientific view of things".

13. Robertson, "Enlightenment above National Context", 697.

14. E. Franklin Court, *Institutionalizing English Literature: The Culture and Politics of Literary Study, 1750–1900* (Stanford, Calif.: Stanford University Press, 1992); Robert Crawford, ed., *The Scottish Invention of English Literature* (Cambridge: Cambridge University Press , 1998); Robert Crawford, *Devolving English Literature* (Oxford: Clarendon Press, 1992); Lynee Lewis Gaillet, ed., *Scottish Rhetoric and Its Influences* (Mahwah, N.J.: Hermagoras Press, 1998); Wilbur Samuel Howell, *Eighteenth-Century British Logic and Rhetoric* (Princeton, N.J.: Princeton University Press, 1971); Thomas P. Miller, *The Formation of College English: Rhetoric and Belles Lettres in the British Cultural Provinces* (Pittsburgh: University of Pittsburgh Press, 1997).

15. George Davie, "The Social Significance of the Scottish Philosophy of Common Sense", in *The Scottish Enlightenment and Other Essays* (Edinburgh: Polygon, 1991), 51–85.

16. John Dwyer, *The Age of the Passions: An Interpretation of Adam Smith and Scottish Enlightenment Culture* (East Linton, Scotland: Tuckwell Press, 1998); *idem*, *Virtuous Discourse: Sensibility and Community in Late Eighteenth-Century Scotland* (Edinburgh: John Donald, 1987); John Mullan, "The Language of Sentiment: Hume, Smith, and Henry Mackenzie", in *The History of Scottish Literature, Volume 2: 1660–1800*, ed.

Andrew Hook (Aberdeen: Aberdeen University Press, 1987), 273–89; Christopher Lawrence, "The Nervous System and Society in the Scottish Enlightenment", in *Natural Order: Historical Studies of Scientific Culture*, eds. Barry Barnes and Steven Shapin (Beverly Hills and London: Sage Publications, 1979), 19–40; Geoffrey M. Sill, "Neurology and the Novel: Alexander Monro *primus* and *secundus*, *Robinson Crusoe*, and the Problem of Sensibility", *Literature and Medicine* 16 (1997): 250–65; Mark Salber Phillips, " 'If Mrs Mure Be Not Sorry for Poor King Charles': History, the Novel, and the Sentimental Reader", *History Workshop Journal* 43 (1997): 111–31.

17. For an earlier formulation of this approach, see Richard B. Sher, *Church and University in the Scottish Enlightenment: The Moderate Literati of Edinburgh* (Princeton, N.J.: Princeton University Press, 1985), 3–19.

18. Home to Gilbert Elliot, 1 June [1757], National Library of Scotland, Edinburgh, MS 11,009, fols. 141–42.

19. Quoted in Isaac D'Israeli, *Miscellanies of Literature* (London: George Routledge and Sons, n.d.), 123.

20. Stuart to John Murray, 1 June 1773, quoted in William Zachs, *Without Regard to Good Manners: A Biography of Gilbert Stuart, 1743–1786* (Edinburgh: Edinburgh University Press, 1992), 70.

21. Robert Kerr, *Memoirs of the Life, Writings, and Correspondence of William Smellie*, 2 vols. (1811; reprint, Bristol: Thoemmes Press, 1996), 2:252–54.

22. On sociability and politeness in the Scottish Enlightenment, see John Dwyer and Richard B. Sher, eds., *Sociability and Society in Eighteenth-Century Scotland* (Edinburgh: Mercat Press, 1993); and the articles of Nicholas Phillipson cited in n. 29.

23. On the notion of "situating" the public sphere in specific geographical contexts, see Charles W. J. Withers, "Towards a History of Geography in the Public Sphere", *History of Science* 36 (1998): 45–78..

24. J. Crawford, "Reading and Book Use in Eighteenth-Century Scotland", *The Bibliotheck* 19 (1994): 23–43.

25. See Dwyer, *Virtuous Discourse* and *Age of the Passions*; Alexander Murdoch and Richard B. Sher, "Literary and Learned Culture", in *People and Society in Scotland. Volume 1, 1760–1830*, eds. T. M. Devine and Rosalind Mitchison (Edinburgh: John Donald, 1988), 127–42.

26. Dena Goodman, *The Republic of Letters: A Cultural History of the French Enlightenment* (Ithaca, N.Y., and London: Cornell University Press, 1994); Daniel Roche, *France in the Enlightenment*, trans. Arthur Goldhammer (Cambridge, Mass., and London: Harvard University Press, 1998).

27. Emerson, "Science and the Origins and Concerns of the Scottish Enlightenment", 357.

28. Paul Wood, "The Natural History of Man in the Scottish Enlightenment", *History of Science* 27 (1989): 115. Although Wood sometimes differs from Emerson on specific points, they apparently share the belief that "natural knowledge was at the very core of Enlightenment culture", in the sense of being its central feature. See Paul Wood, "Science, the Universities, and the Public Sphere in Eighteenth-Century Scotland", *History of Universities* 13 (1994): 123.

29. See the following articles by Nicholas Phillipson: "Culture and Society in the Eighteenth-Century Province: The Case of Edinburgh and the Scottish Enlightenment", in *The University in Society*, ed. Lawrence Stone, 2 vols. (Princeton, N.J.: Princeton University Press, 1974), 2:407–48; "Towards a Definition of the Scottish Enlightenment", in Fritz and Williams, *City and Society*, 125–47; "The Scottish Enlightenment", in *The Enlightenment in National Context*, ed. Roy Porter and Mikuláš Teich (Cambridge: Cambridge University Press, 1981), 19–40. Compare Trevor-Roper's dismissive remark about the mathematician Colin Maclaurin (Trevor-Roper, "Scottish Enlightenment" [1977 version], 373) with Phillipson's nuanced, sympathetic account of Maclaurin in "Culture and Society", 437–42.

30. Sher, *Church and University*, chap. 8, esp. 308, and 3–19.

31. Roy Porter, *The Enlightenment* (Atlantic Highlands, N.J.: Humanities Press International, 1990), 21–22.

32. See, for example, Emerson, "Science and Moral Philosophy in the Scottish Enlightenment", and Paul Wood, "Science and the Pursuit of Virtue in the Aberdeen Enlightenment", both in *Studies in the Philosophy of the Scottish Enlightenment*, ed. M. A. Stewart (Oxford: Clarendon Press, 1990), 11–36, 127–49; and Wood, "Natural History of Man". In " 'The Fittest Man in the Kingdom': Thomas Reid and the Glasgow Chair of Moral Philosophy", *Hume Studies* 23 (1997): 277–313, Wood wrongly associates me with a position that fails to appreciate "the leading (and multifaceted) role of medicine and the natural sciences in the [Scottish] Enlightenment" because it narrowly defines the Scottish Enlightenment "in terms of the study of moral philosophy" (see 311–12, n. 105).

33. Richard B. Sher, "Professors of Virtue: The Social History of the Edinburgh Moral Philosophy Chair in the Eighteenth Century", in Stewart, *Scottish Enlightenment*, 87–126.

34. David Allan, *Virtue, Learning, and the Scottish Enlightenment: Ideas of Scholarship in Early Modern History* (Edinburgh: Edinburgh University Press, 1993), 150.

35. Donald J. Withrington, "What Was Distinctive about the Scottish Enlightenment?", in Carter and Pittock, *Aberdeen and the Enlightenment*, 15; cf. 13, and 18, n. 18.

36. See R. A. Houston, *Scottish Literacy and the Scottish Identity: Illiteracy and Society in Scotland and Northern England, 1600–1800* (Cambridge: Cambridge University Press, 1985).

37. This tension is a prominent theme in Richard B. Sher, "Commerce, Religion, and the Enlightenment in Eighteenth-Century Glasgow", in *Glasgow: Volume 1: Beginnings to 1830*, eds. T. M. Devine and Gordon Jackson (Manchester and New York: Manchester University Press, 1995), 312–59.

38. Ned C. Landsman, "Presbyterians and Provincial Society: The Evangelical Enlightenment in the West of Scotland, 1740–1777", in Dwyer and Sher, *Sociability and Society*, 194–209. A somewhat similar argument is made much less effectively in John R. McIntosh, *Church and Theology in Enlightenment Scotland: The Popular Party, 1740–1800* (East Linton, Scotland: Tuckwell Press, 1998).

39. J. V. Golinski, "Science in the Enlightenment", *History of Science* 24 (1986): 411–12.

40. Thomas Broman, "The Habermasian Public Sphere and 'Science in the Enlightenment'", *History of Science* 36 (1998): 123–49; Wood, "Science, the Universities, and the Public Sphere", 99.

41. Broman, "Habermasian Public Sphere", 127.

42. In *The Structural Transformation of the Public Sphere: An Inquiry into a Category of Bourgeois Society*, trans. T. Burger and F. Lawrence (Cambridge, Mass.: MIT Press, 1989), Habermas recognizes the primacy of print culture in the public sphere but limits his discussion of books to a brief mention of a handful of novels (49–50). These novels, and presumably most other books of the Enlightenment, reside in the "literary public sphere" (*literarische Öffentlichkeit*), which is only the "literary precursor" of, or "training ground" (29) for, the "political public sphere" (*politische Öffentlichkeit*) with which he is mainly concerned.

43. See, however, G. S. Rousseau's pioneering article, "Science Books and Their Readers in the Eighteenth Century", in *Books and Their Readers in Eighteenth-Century England*, ed. Isabel Rivers (New York: St. Martin's Press, 1982), 197–255; see also the suggestive remarks in the introductions to *The Sciences in Enlightened Europe*, eds. William Clark, Jan Golinski, and Simon Schaffer (Chicago and London: The University of Chicago Press, 1999) and Roy Porter, ed., *The Popularization of Medicine, 1650–1850* (London and New York: Routledge, 1992).

44. Elizabeth L. Eisenstein, *The Printing Press as an Agent of Change: Communications and Cultural Transformations in Early-Modern Europe* (Cambridge: Cambridge University Press, 1979), pt. 3; Adrian Johns, *The Nature of the Book: Print and Knowledge in the Making* (Chicago and London: University of Chicago Press, 1998). Contra Johns, I view these two outstanding books as complementary, rather than mutually exclusive, approaches to this subject.

45. For example, one of the titles in Table 1, Robert Whytt's *Essay on the Virtues of Lime-Water* (1752), was a book-length expansion of an essay first published several years earlier in a volume of *Medical Essays and Observations*. Another entry, Robert Simson's *Elements of the Conic Sections* (1775), was an English translation of Simson's original work of 1735, *Sectionum Conicarum Libri V.*

46. Rousseau, "Science Books and Their Readers", 230–31, 234.

47. I have no information about Clark's education, but his contributions are discussed in A. G. Clement and Robert H. S. Robertson, *Scotland's Scientific Heritage* (Edinburgh and London: Oliver and Boyd, 1961), 41.

48. T. Percy C. Kirkpatrick, *History of the Medical Teaching in Trinity College Dublin and of the School of Physic in Ireland* (Dublin: Hanna and Neale, 1912), chap. 7; Davis Coakley, *Irish Masters of Medicine* (Dublin: Town House, 1992), chap. 4.

49. Vern L. Bullough and Bonnie Bullough, "Intellectual Achievers: A Study of Eighteenth-Century Scotland", *American Journal of Sociology* 76 (1971): 1048–63, and "Historical Sociology: Intellectual Achievement in Eighteenth-Century Scotland", *British Journal of Sociology* 24 (1973): 418–30; Sheila Devlin-Thorpe et al., eds., *Scotland's Culture Heritage*, 3 vols. (Edinburgh: University of Edinburgh, 1980–84), esp. vols. 1 and 3; P. J. and R. V. Wallis, *Eighteenth-Century Medics: Subscriptions, Licenses, Apprenticeships*, 2d ed. (Newcastle-upon-Tyne: PHIBB, 1988); Emerson's studies of Scottish clubs and societies, cited in note 8.

50. Technically, John Brown's *Elements of Medicine* (1788) does not contain the author's name on the title page either, but since it states there that the book is "by the author of the original work", who is identified as "Joannis Brunonis, M.D." on the title pages of the original Latin editions of 1780 and 1784, I have not bracketed Brown's name in Table 1.

51. Michel Foucault, "What Is an Author?", in *The Foucault Reader*, ed. Paul Rabinow (London: Penguin, 1991), 101–20, esp. 109.

52. Laurence B. McCullough, *John Gregory and the Invention of Professional Medical Ethics and the Profession of Medicine* (Dordrecht: Kluwer Academic Publishing, 1998), 184.

53. Roy Porter, "William Hunter: A Surgeon and a Gentleman", in *William Hunter and the Eighteenth-Century Medical World*, eds. W. F. Bynum and Roy Porter (Cambridge: Cambridge University Press, 1985), 25, and "Medical Lecturing in Georgian London", *British Journal for the History of Science* 28 (1995): 94–95.

54. Dennis R. Dean, *James Hutton and the History of Geology* (Ithaca, N.Y., and London: Cornell University Press, 1992); Jean Jones, "James Hutton", in *A Hotbed of Genius: The Scottish Enlightenment 1730–1790*, eds. David Daiches, Jean Jones, and Peter Jones (Edinburgh: Edinburgh University Press, 1986), 116–36.

55. Earl of Buchan to John Nichols, 15 June 1784, in John Nichols; *Illustrations of the Literary History of the Eighteenth Century*, 8 vols. (1831; reprint, New York: Kraus Reprint Corporation, 1966), 6:503.

56. Eisenstein, *Printing Press as an Agent of Change*, 250 and passim.

57. William Smellie, *Account of the Institution and Progress of the Society of the Antiquaries of Scotland*, 2 vols. (Edinburgh: n.p., 1782–84).

58. Nichols, *Illustrations*, 6:514.

59. William Zachs, *The First John Murray and the Late Eighteenth-Century London Book Trade* (Oxford: Oxford University Press, 1998), 107, 265. This work by Hunter does not qualify for inclusion in Table 1, but its posthumous companion volume appears under 1794.

60. See Richard B. Sher, "*Charles V* and the Book Trade: An Episode in Enlightenment Print Culture", in *William Robertson and the Expansion of Empire*, ed. Stewart J. Brown (Cambridge: Cambridge University Press, 1997), 164–95.

61. Kerr, *Memoirs*, 2:293, 262–63.

62. Ibid., 2:327.

63. Ibid., 2:295, 322–23, 331–32.

64. John Bell Letterbook, Bodleian Library, Oxford, MS Eng. Letters c. 21, fol. 74.

65. James W. Phillips, *Printing and Bookselling in Dublin, 1670–1800: A Bibliographical Enquiry* (Dublin: Irish Academic Press, 1998), 285–86.

66. These prices are drawn from a comparative database of British and Irish book prices that I have been compiling using newspapers, periodicals, and booksellers' catalogues in London, Edinburgh, and Dublin.

67. Warren McDougall, "Smugglers, Reprinters, and Hot Pursuers: The Irish-Scottish Book Trade, and Copyright Prosecutions in the Late Eighteenth Century", in *The Stationers' Company and the Book Trade, 1550–1990*, eds. Robin Myers and Michael Harris (Winchester, England: St. Paul's Bibliographies, 1997), 151–83, esp. 168–69.

Elliot was motivated in this instance not by the low price of the Dublin reprints but by the fact that the Edinburgh edition of this book was out of stock at a time when demand for it was high among Edinburgh medical students.

68. Creech Letterbook, Dalguise Muniments, National Archives of Scotland. Cited by permission of Anderson Strathern, WS, Edinburgh.

69. Zachs, *First John Murray*, 191–95.

70. Ibid., 179–80.

71. Kerr, *Memorials*, 2:333–34.

72. Creech to Duncan, 3 November 1803 (copy), Creech letterbook, Edinburgh Central Library.

73. Ibid. In order to establish the validity of the copyright he had purchased from Elliot's estate, Creech placed this extraordinary sentence opposite the title page of the edition of *The Edinburgh New Dispensatory* that he published in 1790: "This Book, although apparently only a New Edition, is in fact a New Work; and as such Entered in Stationers Hall". Creech's claim almost certainly would not have held up in the courts, however, and I have omitted *The Edinburgh New Dispensatory* from Table 1 on account of the difficulty of identifying a "first" edition of this work.

74. On 31 October 1805, the second John Murray informed Bell and Bradute that "Duncan's Dispensatory" was selling out rapidly in London and requested more copies, "as they are certain of sale here during the next month" (Edinburgh City Chambers, SL 138/9).

75. On the role of the Royal College of Physicians, see David L. Cowen, "The Edinburgh Pharmacopeia", *Medical History* 1 (1957): 123–39, and "The Edinburgh Pharmacopeia", in *The Early Years of the Edinburgh Medical School*, eds. R. G. W. Anderson and A. D. C. Simpson (Edinburgh: Royal Scottish Museum, 1976), 25–45.

76. Nydia M. King, *A Selection of Primary Sources for the History of Pharmacy in the United States* (Madison, Wisc.: American Institute of the History of Pharmacy, 1987), 2. See also David L. Cowen, "The Edinburgh Dispensatories", *Papers of the Bibliographical Society of America* 45 (1951): 85–96. I am indebted to Warren McDougall for information about Dobson's connection with Elliot.

77. Henry Cockburn, *Memorials of His Time* (1856; reprint, Edinburgh: Mercat Press, 1988), 284.

78. Zachs, *First John Murray*, 8–9.

79. A. H. T. Robb-Smith, "John Hunter's Private Press", *Journal of the History of Medicine and Allied Sciences* 28 (1970): 262–69. The imprints of the first editions read "sold at No. 13 Castle Street, Leicester Square", but in both cases the names of George Nicol and Joseph Johnson were added to the second edition as selling agents. Hunter's last book, *A Treatise of the Blood*, was also printed in quarto by Richardson at Castle Street, but the author died while the proofs were being corrected, and the book was published posthumously in November 1794 by the bookseller George Nicol.

80. As quoted in Stephen Paget, *John Hunter: Man of Science and Surgeon (1728–1793)* (New York: Longman, Green, and Co., 1897), 173.

81. John R. Millburn, *Benjamin Martin: Author, Instrument-Maker, and "Country Showman"* (Leyden: Nordhoof International Publishers, 1976).

82. Millburn, *Benjamin Martin*, app. I, supplemented by the *ESTC*.

83. John R. Millburn, *Wheelwright of the Heavens: The Life and Work of James Ferguson, F.R.S.* (London: Vade-Mecum Press, 1988), 93.

84. Ibid., 171–73.

85. *A Catalogue of the Copies and Shares of Copies of the Late Mr. Andrew Millar, which will be Sold by Auction . . . on Tuesday the 13th of June, 1769* [London: n.p., 1769]. I am grateful to Warren McDougall and Hugh Amory for providing me with the text of this printed sale catalog, the marginalia of which indicate that in 1769 a one-twelfth share of Ferguson's *Astronomy Explained* was worth £20.

86. *Books Printed for W. Strahan, and T. Cadell in the Strand* [London: n.p., 1780]. For a fuller account of editions of Ferguson's books and their prices, see John R. Millburn's microfiche, *A Bibliography of James Ferguson, F.R.S. (1710–76): Astronomical and Philosophical Lecturer* (Aylesbury, England: John Millburn, 1983).

87. John R. Millburn, "The London Evening Courses of Benjamin Martin and James Ferguson, Eighteenth-Century Lecturers on Experimental Philosophy", *Annals of Science* 40 (1983): 437–55, esp. 446.

88. Kerr, *Memoirs*, 1:225–74.

89. The advertisement for the second edition of *Domestic Medicine* in the *London Chronicle* for 29–31 October 1772 asserts that "5000 of this Book were sold off at Edinburgh in a few months".

90. See Richard B. Sher, "William Buchan's *Domestic Medicine*: Laying Book History Open", in *The Human Face of the Book Trade: Print Culture and Its Creators*, eds. Peter Isaac and Barry McKay (Winchester, England: St. Paul's Bibliographies, 1999), 45–64.

91. *Critical Review* 34 (November 1772): 361–72; *Monthly Review* 48 (June 1773): 450–53.

CHAPTER 5

"A SCOTSMAN ON THE MAKE": THE CAREER OF ALEXANDER STUART

Anita Guerrini

> There are few more impressive sights in the world
> than a Scotsman on the make.
> —J. M. Barrie, *What Every Woman Knows*

As he lay dying in 1742, Alexander Stuart, M.D., wrote his will. Despite a successful career as a physician and a natural philosopher, Stuart emerges in this document as a pathetic failure, crushed by a mountain of debt. His dying plea to sell his scientific manuscripts in order to pay his debts only makes plain the depth of his delusion. Not only did his chosen editors refuse, after his death, to prepare the manuscripts for publication, but when his widow finally managed to sell some of them she earned only a few shillings, which did not approach the extent of her husband's debts.

The checkered career of Alexander Stuart (1673–1742) reveals both the opportunities and the pitfalls that awaited a young "Scotsman on the make" in the medical world of early eighteenth-century Britain. He was one of a number of Scottish medical men who made a significant intellectual and social impact on English, and especially London, medicine, well before the founding of the Edinburgh Medical School in the 1720s. Yet Stuart's career also demonstrates how precarious was the foothold of young Scots in the south. Geoffrey Holmes and others have argued that in this period the English medical profession was "opening", in the sense of becoming less hierarchical and restrictive in its composition.[1] Scottish medical men, by their sheer numbers as well as by their intellectual attainments, played an important role in that opening. But the process was neither smooth nor inevitable. While intellectual merit was admired, only patronage could lead to the goal of professional success. Stuart's failure to cultivate a sufficient amount of aristocratic patronage led to his ultimate downfall. Despite his considerable intellectual attainments, Stuart well knew that professional advancement depended little on merit.