Wolveridge's *Speculum Matricis:* a mirror on antiquity?

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Summary of the Contents

The main aim of this study of Wolveridge's *Speculum Matricis* of 1670 is to ascertain the extent to which his midwifery manual fitted within the still dominant Greek medical model, and how, if at all, it reflected influences incompatible with, or hostile to, the Galenic tradition associated with the 'learned' physician.

A detailed examination of the preface, midwifery, illustrations and materia medica reveals a text which mostly (but not completely) derives from Soranic and Galenic traditions, albeit refracted through early modern midwifery and medical texts in English and Latin. Yet the *Speculum Matricis* is not slavishly derivative, as critics contend. Rather, it is innovative in several important aspects. For instance, Wolveridge uses a dialogue between the midwife 'Eutrapelia' and the doctor 'Philadelphos' to structure the midwifery component of the catechetical text.

In other respects, too, ancient knowledge is presented in a fashion that is accessible to a midwife or 'grave matron' reader, who has not the benefit of university education: not least, the text is in English. The *Speculum Matricis* demonstrates the continuing vitality and flexibility of Soranic midwifery and Galenic medicine.

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Introduction

James Wolveridge's midwifery manual *Speculum Matricis Hybernicum; or, The Irish Midwives Handmaid* (hereafter referred to as *Speculum Matricis*) was published in London in 1670.[1] His manual was once believed to be 'the earliest original work on midwifery in the English language' yet, despite that apparent importance, no detailed analysis or description of the work has appeared to date.[2]

The primary aim of this analysis is to determine whether Wolveridge recycled tenets of the Galenic medical model of his era, or if he embraced the new science and medicine epitomised by Andreas Vesalius, Paracelsus, William Harvey, and others. Or did his handbook express both ancient and modern knowledge?

A review of the new science and medicine and its key personalities is followed by chapter outlines, along with their themes, key questions, and summaries, to further clarify the central and subsidiary queries. The research carried out on similar texts to the *Speculum Matricis* is followed by notes concerning the historiography of midwifery and medicine. Finally, a study of the theory and practice of midwifery from antiquity to the Wolveridge's time is presented to inform and contextualise 'neglected areas in medical aspects of women's history.' [3]

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[1] James Wolveridge, *Speculum Matricis Hybernicum; or, The Irish Midwives Handmaid. Catechistically Composed by James Wolveridge, M.D. With a Copious Alphabetical Index.* London, Printed by E. Okes; and are to be sold by Rowland Reynolds, at the Kings-arms in the Poultrey, 1670, (United States, 2011) (henceforth cited as Wolveridge, *Speculum Matricis,* 1670).

[2] Herbert Ritchie Spencer, 'Wolveridge's "Speculum Matricis" (1671), with Notes on Two MS copies in the Society's Library' in *Proceedings of the Royal Society of Medicine*, 20 (7) (1927), pp. 1080-1086 (1080), (henceforth cited as Spencer, 'Wolveridge's "Speculum Matricis"); James Wolveridge, 'Feature of the month' in *History of the RSM* (http://www.rsm.ac.uk/welcom/feature-wolveridge.php.) (8 Dec. 2016).

[3] Laurence Brockliss, Colin Jones, *The Medical World of Early Modern France* (Oxford, 1997), pp. 4, 263-273 (henceforth cited as Brockliss and Jones, *The Medical World of Early Modern France*).

The new science and medicine

Wolveridge's treatise was published during a century in which the outlook of the best educated 'changed from being medieval to being modern in a short and tumultuous time.'[4] The medical and midwifery knowledge of classical antiquity was challenged during the sixteenth and seventeenth centuries by the works of Paracelsus, by Vesalius's treatise on anatomy, by the Baconian scientific method, and by Harvey's tract on the circulation of the blood. The printing press facilitated the availability of those works and altered profoundly the reception of both ancient and modern knowledge.[5]

The clearest break with the classical past comes with the Swiss (dubbed the 'Luther of Medicine' and the 'Monarch of Arcana'), Phillipus Aureolus Theophrastus Bombastus (1493-1541).[6] He probably assumed the title Theophrastus, the name he used in his chemical writings, because of his admiration for the eponymous 3rd century B.C. Greek philosopher and botanist.[7] The surname Paracelsus, by which he is best known, signified that he surpassed Celsus the Roman medical encyclopaedist.[8] At the University of Basle Paracelsus studied mineralogy, chemistry, surgery and medicine and became enthralled with Hermetic texts that espoused alchemy, astrology and theosophy. He denounced most medical writings of antiquity, burned Galen's works, and improved the materia medica by the addition of chemical remedies, including treatments for a range of medical and surgical complaints and women's medicine.[9] Paracelsus popularised opium (as

[4] A. C. Grayling, *The Age of Genius, the Seventeenth Century & the Birth of the Modern Mind* (London, 2016), p. 3.

[5] Elizabeth L. Eisenstein, *The Printing Revolution in Early Modern Europe* (2nd ed., New York, 2013).

[6] Thomas Fuller, *The Holy State* (Cambridge, 1642), pp. 56-9.

[7] Arthur Hort, *Theophrastus Enquiry into Plants* (Books 1-5, Cambridge, Massachusetts, 1916) (henceforth cited as Hort, *Plants*); Arthur Hort, *Theophrastus Enquiry into Plants and Minor Works on Odours and Weather Signs* (Cambridge, Massachusetts, 1930); Earle R. Caley, John F. Richards, *Theophrastus on Stones* (Columbus, Ohio, 1956).

[8] Roy Porter, *The Greatest Benefit to Mankind, A Medical History of Humanity from Antiquity to the Present* (London, 1997), pp. 201-211, p. 201 (henceforth cited as Porter, *The Greatest Benefit to Mankind*).

[9] Arthur Edward Waite, *The Hermetic and Alchemical Writings of Aureolus Phillipus Theophrastus Bombast, of Hohenheim, called Paracelsus the Great. Now for the first time faithfully translated into English* (Vol. 1 and 2, London, 1894).

Laudanum, a specific for fevers) and made mercury, lead, sulphur, iron, arsenic, copper sulphate and potassium sulphate (*purgans Paracelsi*) a part of the pharmacopoeia. At his death in 1541 he left behind a legacy of unpublished manuscripts, later printed in 1560 and beyond, that posed a threat to, but did not dislodge, the Galenic model.[10] Francis Mercury van Helmont (1614-98) and his followers carried on the Paracelsian ridicule of Galenic theory and treatments; their intent was to provide 'chemical' reasons for disease, but Galenic medicine still held sway into the eighteenth century.[11]

The publication of Andreas Vesalius' anatomical treatise the *De Humani Corporis Fabrica* of 1543, with woodcut illustrations provided by Martin Kemp, led to further unsettling conflict between the discoveries of the early moderns and the writings of the ancients.[12] Vesalius shadowed the works of Galen, whose full anatomical corpus only became available after 1525, but demonstrated that those ancient but revered writings were flawed because they were based on animals.[13] Scholars were dismayed that Galen should be criticised so vigorously by Vesalius although his *Fabrica* was based on dissections of human cadavers.[14] However, the illustrations of the female anatomy in Vesalius' *Fabrica* were seriously imperfect (as will be shown in my 'Illustrations' chapter) and these errors were copied in midwifery manuals for centuries to come. Nevertheless, the *De Humani Corporis Fabrica* and the *Epitome* that followed revolutionised practical anatomy, while undermining the teachings of Galen.[15]

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[10] Peter Elmer, 'Chemical Medicine and the Challenge to Galenism: The legacy of Paracelsus, 1560-1700' in *The Healing Arts: Health, Disease and Society in Europe 1500-1800* (Manchester, 2004), pp. 108-121, p. 109 (henceforth cited as Elmer, 'Chemical Medicine'); Fielding H. Garrison, *An introduction to The History of Medicine* (4th ed., Philadelphia, 1929), pp. 204-7 (henceforth cited as Garrison, *History of Medicine*).

[11] Elmer, 'Chemical Medicine', p. 132.

[12] Andreae Vesalii, *De Humani Corporis Fabrica Libro Septem* (Basileae, 1543) (henceforth cited as Vesalius, *De Humani Corporis*).

[13] Mary Lindemann, *Medicine and Society in Early Modern Europe* (2nd ed., Cambridge, 2013), p. 91.

[14] Roger French, 'The Weakening of the Latin Tradition' in *Medicine before Science: The Rational and Learned Doctor from the Middle Ages to the Enlightenment* (Cambridge, 2003), p. 143 (henceforth cited as French, *The Weakening of the Latin Tradition*).

[15] Andraea Vesalii, *De Humani Corporis: Epitome* (Basileae, 1543).

Another publication that would shake the foundations of both philosophy and medicine was Francis Bacon's *Organum Novum Scientarium* (*New Scientific Method or Instrument*). Bacon proposed a new system of reasoning to supersede Aristotle's which he claimed would be more suitable for the pursuit of knowledge in the age of science, and which portended the new scientific method. Bacon's proposal was an inductive mode founded on the collection of data, being actual evidence from the natural world, which would lead to higher levels of probability, and truth.[16] Bacon derived his medical knowledge from the Roman Encyclopaedist Celsus who wrote only briefly on the ailments peculiar to women, including descriptions of delivery of a dead fetus, and the excision of an obstructive hymen.[17] Bacon dismissed most of the other ancients (and Paracelsus) and his writings were influential and presaged the age of science.

In 1628 William Harvey (1578-1657) described his discovery of the circulation of the blood in the publication *De motu cordis,* said to be the greatest scientific event of the seventeenth century.[18] He corrected the previous errors of Galen (held as truths) in the descriptions of blood flow within the heart and blood vessels. However, the reaction to his *De Motu Cordis* was dismissive, colleagues distanced themselves from his theory, and pointed out that it would destroy the Greek basis of medicine.[19] But René Descartes, who espoused a mechanistic framework (he later would write a tract on the formation of the fetus) praised Harvey in his *Discourse on Method* in 1637 (one of the first philosophers to do so) and by 1650 Harvey's

[16] Franc. Baconis, *Novum Organum Scientarium* (Lugd. Batavorum, 1650); Joseph Devey, *Novum Organum by Lord Bacon* (New York, 1902) (henceforth cited as Devey, Novum Organon); Lisa Jardine, 'Francis Bacon: The New Organon,' in Lisa Jardine & Michael Silverthorn (eds) in *Cambridge Texts in the History of Philosophy*, Series editors Karl Ameriks & Desmond M. Clarke (Cambridge, 2000), xii.

[17] James Grieve (ed.), *A. Cornelius Celsus of Medicine in Eight Books* (London, 1756), pp. 454-58.

[18] William Harvey, *Exercitatio Anatomica de Motu Cordis et Sanguinis in Animalibus* (Frankfurti, 1628) (henceforth cited as Harvey, *De Motu Cordis*); James Moores Ball, *Andreas Vesalius, the Reformer of Anatomy* (Saint Louis, 1910), p. 16 (henceforth cited as Ball, *Andreas Vesalius*; William Harvey, *Encyclopaedia Britannica* (https://www.britannica.com/biography/William-Harvey) (24 Nov. 2016).

[19] French, *The Weakening of the Latin Tradition*, pp. 175, 178, 180.

theory on the circulation of the blood was accepted in all the Universities of the world.[20] Based on his *De Motu Cordis* it is manifest that Harvey became 'among the first to use the practical scientific methods namely observation, hypothesis, deduction and experiment … [being] neither scholastic Aristotelianism nor Bacon's … accumulation of data and its manipulation' as expressed in the *Organum Novum*.[21] Harvey's *De Geneneratione* (*Generation of Living Creatures*) led to his later appellation as the 'Father of British Midwifery.'[22] Also pertaining to midwifery was Harvey's description of the foetal blood circulation in utero, as contained in his *De Motu Cordis.*[23] Another theory of great importance was Harvey's doctrine of 'epigenesis', being the growth and development of a creature from a simple origin in the ovum, as opposed to the prevalent view that the embryo was a miniature pre-formed model of the organism.'[24] However, while the section on parturition in his *Generation of Living Creatures* was hailed as the first tract written in English on elements of midwifery, the content was mostly theoretical and would have had little practical value to midwives at childbirth. It can be argued that the first book on medicine written in the English language by Philip Barrough, with its sixteen chapters on women's ailments and childbirth, was of more importance to practical midwifery.[25]

So, where did Wolveridge and his *Speculum Matricis* fit within the outline history of medical knowledge? Some confusion on the quest to set Wolveridge's manual in an historical context arises due to an apparent dichotomy in the author's viewpoints on medicine and midwifery. The

[20] Thomas Wright, *Circulation, William Harvey's Revolutionary Idea* (London, 2013), pp. 206, 210; Porter, *The Greatest Benefit to Mankind*, p. 217; Rene Descartes, *L'homme et un traitte de la formation du foetus*, (Paris, 1664) (reproduction 2016).
[21] Chauncy D. Leake (ed.), *Exercitatio Anatomica De Motu Cordis by William Harvey, M.D.* (Baltimore, 1828), p. 137.
[22] William Harvey, *Anatomical Exercitations concerning the Generation of Living Creatures* (London, 1653) (henceforth cited as Harvey, *Generation of Living Creatures*); R. W. Johnstone, 'William Harvey, the father of British Midwifery' in *Journal of Obstetrics and Gynaecology of the British Empire*, Vol. 55 No. 3 (1948), pp. 293-302 (henceforth cited as Johnstone, *The Father of British Midwifery*).
[23] Harvey, *De Motu Cordis*, pp. 55-58.
[24] Harvey, *Generation of Living creatures*, pp. 499, 562.
[25] Philip Barrough, *The Method of Physick* (London, 1583) (henceforth cited as Barrough, *Physick*).

Speculum Matricis began with a message from 'The Author to the Reader' in which Wolveridge lauded the author of *De Generatione* 'as Learned a Physitian as our Age hath known' and implicitly bids to be recognised as a learned physician himself.[26] A 'Learned Physician' denoted someone who had a 'learned' or scholastic University education, with a curriculum influenced by the philosophical and medical writings of ancient Greece and Rome. So, was Wolveridge using the reference to Harvey to align himself with modernity, or not? A thorough evaluation of Galenic medicine and the intellectual formation of a physician of the era, combined with an analysis of the midwifery, illustrations and materia medica and of the *Speculum Matricis* should clarify the extent to which Wolveridge was embedded in the classical past.

Chapter outlines

The principal theme of chapter one was to investigate Galenic medicine since the medicine and midwifery of Wolveridge's era was still so seated in the Galenic and Greek traditions.[27] When discussing the medicine of antiquity, the blanket term Galenic is used. However, as will become apparent, the writings of Soranus are at least as important. Galen (c.129-200 A.D) provided a complete medical system based on the earlier Hippocratic writings and the humoral concepts which originated in Greece.[28] Consequently Galen became the unimpeachable authority on medicine for almost fifteen hundred years.[29] The works of Aristotle (384-322 B.C.) also informed Galenic medicine and his tract on anatomy *De Generatione*

[26] Wolveridge, *Speculum Matricis*, 1670, A4v; Harvey, *Generation of Living Creatures.*
[27] Brockliss and Jones, *The Medical World of Early Modern France*, p. 1.
[28] Nancy G. Siraisi, *Medieval and Early Renaissance Medicine* (Chicago, 1990), p. 104 (henceforth cited as Siraisi, *Medicine*); Roderick E. McGrew, Margaret P. McGrew, *Encyclopedia of Medical History* (London, 1985), pp. 118-22 (henceforth cited as McGrew & McGrew, *Encyclopedia of Medical History*); Vivian Nutton, 'Medicine in the Greek World,' in Lawrence I. Conrad, Michael Neve, Vivian Nutton, Roy Porter, Andrew Wear, *The Western Medical Tradition: 800 BC to AD 1800* (Cambridge, 1995), p. 24 (henceforth cited as Nutton, 'Medicine in the Greek World').
[29] Garrison, *History of Medicine*, p. 112; Albert S. Lyons, R. Joseph Petrucelli, *Medicine, an Illustrated History* (New York, 1987), pp. 251-61 (henceforth cited as Lyons and Petrucelli, *Medicine, an Illustrated History*.

Animalium is of great significance to our understanding of human reproduction.[30] Central to the advance of midwifery was the Greek physician Soranus (1st. cent. A.D.) who practised in the century before Galen. His *Gynecology* represented ancient gynaecological and midwifery practice at its zenith.[31] The *Gynecology* was quoted by the Byzantine physicians Aetius of Amida and Paul of Aegina and paraphrased to Latin, most particularly by Moscio (Muscio) about 500 A.D. Copies of the manuscript were popular during the medieval period and informed Eucharius Roesslin's midwifery manual *Der Swangern Frawen and Hebammen Rossgarten* of 1513 which influenced similar texts that followed.[32]

The themes for chapter two are laid out in five sections; Wolveridge's biographical details; physician training at Oxford and Cambridge Universities and elsewhere; the early years of medical education at Trinity College Dublin, the introduction of Laud's Statutes; and the putative influence of John Stearne on Wolveridge's medical education. Born in England, Wolveridge graduated M.D. from Trinity College in 1664.[33] In the same year

[30] Porter, *The Greatest Benefit to Mankind*, p. 64; G. E. R. Lloyd, *Aristotle: The Growth and Structure of His Thought* (Cambridge, 1969), pp. 3-18 (henceforth cited as Lloyd, *Aristotle*; Arthur Platt, *De Generatione Animalium,* in William David Ross and John Alexander Smith (eds), *The Works of Aristotle* (Vol 5, Oxford, 1912), pp. 714-89 (henceforth cited as Platt, *De Generatione Animalium*).

[31] Owsei Temkin, *Soranus' Gynecology* (Baltimore, 1956), xxv (henceforth cited as Temkin, *Soranus' Gynecology*).

[32] Temkin, *Soranus' Gynecology*, xliv-xlix; E. Ingerslev, 'Roesslin's Rosengarten: Its Relation to the Past (the Muscio Manuscripts and Soranos), Particularly in Relation to Podalic Version' in *The Journal of Obstetrics and Gynaecology of the British Empire*, Vol. 15, No 1, (1909), pp. 1-25, (p. 7) (henceforth cited as Ingerslev, *Roesslin's Rosengarten,* no 1); Monica H. Green, 'The Sources of Eucharius Roesslin's Rosegarden for Pregnant Women and Midwives (1513)' in *Medical History,* 53 (2) (2009), pp. 167-192 (henceforth cited as Green, *Eucharius Roesslin*); Wendy Arons, *Eucharius Roesslin. When Midwifery Became the Male Physician's Province. The Sixteenth Century Handbook. The Rose Garden for Pregnant Women and Midwives, Newly Englished 1526* (Jefferson, North Carolina, 1994), pp 4-5 (henceforth cited as Arons, *Eucharius Roesslin*); Elaine Hobby, Elaine Hobby (ed.), 'The Birth of Mankind: Otherwise named, The Woman's Book' in Mary Thomas Crane and Henry Turner (eds), *Literary and Scientific Cultures of Early Modernity* (Farnham, England, 2009) (henceforth cited as Hobby, *The Birth of Mankind*), and others.

[33] George Dames Burtchaell, Thomas Ulick Sadleir, *Alumni Dublinenses, A Register of the Students, Graduates, Professors and Provosts of Trinity College in the University of Dublin (1593- 1860), with Supplement* (2nd ed., Dublin, 1935), p. 892 (henceforth cited as Burtchaell & Sadleir, *Alumni Dublinenses*); T. Percy C. Kirkpatrick, 'A note on the Speculum Matricis of James Wolveridge. M.D.' in *Irish Journal of Medical Science,* Vol. 13, Issue 8 (August 1938), pp. 577-8 (henceforth cited as Kirkpatrick, *Speculum Matricis*).

he entered a marriage licence bond with Brigitt Fisher in the diocese of Cork and Ross.[34] Their son Joseph was apprenticed to a London Goldsmith in 1667 but there the record ceases.[35] Wolveridge's *Speculum Matricis* was completed in Cork in 1669. A Dr. James Wolveridge was buried in Odiham Hampshire in 1681/2 but it is uncertain whether this was the author of the *Speculum Matricis*.[36] Standard biographical and medical history sources were examined, as itemised in the footnotes of the chapter, but little was discovered about the life of the author.

The details of Wolveridge's education at Trinity College are unknown but we do know – in general – what that must have been.[37] The educational requirements for physician training in Trinity reflected Laud's Statutes, and those already in vogue in Oxford and Cambridge Universities, and the continental Universities, and their curricula. The candidate first graduated as Master of Arts and then entered the medical faculty, as was also the case in Paris.[38] Theory and practice from the texts of Hippocrates, Galen and other writers and compilers from antiquity were core subjects. Two medical degrees were available, the Bachelor of Medicine and the Doctor of Medicine. The medical courses at the Universities of Leyden and Rheims were acceptably like those available at Oxford and Cambridge, and were of importance to Irish Catholics who wished to study medicine.[39]

With regards to the influence of John Stearne it is recorded that he matriculated at Trinity College Dublin in 1639 but moved to England two

[34] Burtchaell & Sadlier, *Alumni Dublinenses,* p. 892; Herbert Webb Gillman, *Index to the Marriage Licence Bonds of the Diocese of Cork and Ross, Ireland, for the years from 1623 to 1750* (Cork, 1896-7), p. 139 (henceforth cited as Gillman, *Index to the Marriage Licence Bonds*).
[35] *London's Livery Companies Records Online* http://www.londonroll.org/ (14 March 2017).
[36] Frederic Madden, Bulkeley Bandinel, John Gough Nichols, *Collectanea topographica et genealogica* (vol 8, London, 1843), p. 228 (henceforth cited as Madden et al, *Collectanea*).
[37] John F. Fleetwood, 'The Seventeenth Century' in *Irish Journal of Medical Science,* Vol. 170 (2001), pp. 203-8 (henceforth cited as Fleetwood, 'The Seventeenth Century').
[38] Cornelius O'Boyle, *The Art of Medicine. Medical Teaching at the University of Paris, 1250-1400* (Leiden, Boston, Koln, 1998), p. 56 (henceforth cited as O'Boyle, *The Art of Medicine*).
[39] Evan H. Hare *(*ed.), *Theodore Puschmann, A History of Medical Education from the Most Remote to the Most Recent Times,* (London, 1861), pp. 197-237 (henceforth cited as Hare, *Medical Education*).

years later.[40] Stearne returned to Dublin in 1651 with his Cambridge M.A. to continue his medical studies when James Wolveridge was (presumably) a student during the putative interval 1650-1664. Stearne graduated M.D. from Trinity College in 1658 and two years later became Medicus, a Fellow appointed to lecture in medicine, and founded the College of Physicians, Dublin. Stearne became Trinity's first Regius Professor of Physic in 1662, two years before Wolveridge graduated M.D. so their careers must have inevitably intertwined.

In chapter three the analysis of the *Speculum Matricis* itself commences. At the outset the provenance of the manual is discussed, with attention to publication matters and key citations from the literature. The remainder of the chapter is devoted to investigation of the title page, the prefatory pages and the midwifery elements of the *Speculum Matricis*. The key questions are whether the information in the manual reflected the inherited classical knowledge, or recent (or post-medieval) discovery, or both. The numerous illustrations and the repository of materia medica in the *Speculum Matricis* are likewise assessed in later chapters.

James Wolveridge's *Speculum Matricis Hybernicum; or, The Irish Midwives Handmaid* of 1670 was published in London.[41] The manual was reprinted the following year with change of name to S*peculum Matricis, or, the Expert Midwives Handmaid*, a title apparently more appealing to the book trade and Wolveridge's intended English audience.[42] In 1682 Wolveridge's publisher Rowland Reynolds (the copyright holder with rights to perpetual ownership) released an enhanced version of the original with the title *The English Midwife Enlarged*, as did the publisher and bookseller

[40] TCD, *Admission Book, pp. 5, 21-28;* J. D. H. Widdess, *A History of the Royal College of Physicians of Ireland 1654-1963* (Edinburgh and London, 1963), p. 7 (henceforth cited as Widdess, *Royal College of Physicians*).

[41] Wolveridge, *Speculum Matricis, 1670*.

[42] James Wolveridge, *Speculum Matricis; or, the Expert Midwives Handmaid. Catechistically Composed by James Wolveridge, M.D. With a Copious Alphabetical Index.* London, Printed by E. Okes; and are to be sold by Rowland Reynolds, at the Kings-arms in the Poultrey, 1671 (henceforth cited as Wolveridge, *Speculum Matricis,* 1671); Wolveridge, *Speculum Matricis*, 1670, sigA6r.

Thomas Sawbridge, presumably both shared production costs.[43] The altered editions of Wolveridge's book may indicate that he had died by that time.

As to reception of the *Speculum Matricis* the question arises as to how important it was in its day? Among the early references to the *Speculum Matricis* the most influential was Percivall Willughby (1596-1685) who quoted from Wolveridge in his *Observations in Midwifery* (his records were published in 1863) with Harvey, his (Willughby's) 'honoured good friend.'[44] According to a recent paper the *Speculum Matricis* was popular and frequently reprinted.[45] In 1927 Spencer dismissed Wolveridge's manual as 'plagiarised' from Jacob Rueff's *The Expert Midwife* of 1637, while other authors claimed the content was copied from Rueff, and more recently from the midwifery text of James Guillemeau.[46]

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[43] Rowland Reynolds, *The English Midwife Enlarged* (London, 1682) (henceforth cited as Reynolds, *The English Midwife Enlarged*; John Barnard and D. F. McKenzie (eds), *The Cambridge History of the Book* (vol iv, Cambridge, 2002), p. 10 (henceforth cited as Barnard and McKenzie, *The Cambridge History of the Book*); Thomas Sawbridge, *The English Midwife Enlarged* (London, 1682) (henceforth cited as Sawbridge, *The English Midwife Enlarged*).

[44] Percivall Willughby, *Observations in Midwifery,* Henry Blenkinsop (ed.) from the original MS., (Warwick, 1863) with an Introduction by John L. Thornton (Yorkshire, 1972), pp. 213, 337 (henceforth cited as Willughby, *Observations*); Willughby, *Observations,* 'honoured good friend' p. 257; Antoine Portal, *Tableau Chronologique Des Ouvrages et des Principals decouvertes D'Anatomie de Chirurgie*, tome sixieme, secondie parte (Paris, 1773), p. 776 (henceforth cited as Portal, *Tableau Chronologique)*; Robert Watt, *Bibliotheca Britannica,* (Vol. 2, Edinburgh, 1824), p. 980 (henceforth cited as Watt, *Bibliotheca Britannica*); James Granger, *A Biographical History of England,* fifth edition (Vol. 5, London, 1824), p. 226 (henceforth cited as Granger, *History of England*; John H. Aveling, 'A Lost Medical Work,' *The British Medical Journal*, March 1, (1884), p. 436 (henceforth cited as Aveling, 'A Lost Medical Work,'; *Wolveridge, Speculum Matricis or, the expert midwives handmaid*, 1671 (Royal Society of Medicine Library. Manuscript MSS. 298).

[45] Raymond Gillespie & Andrew Hadfield, *The Oxford History of the Irish Book Vol III, The Irish Book in English 1550-1800* (Oxford, 2006), p. 342 (henceforth cited as Gillespie and Hadfield, *The Oxford History of the Irish Book*).

[46] Spencer, 'Wolveridge's "Speculum Matricis" pp. 1080-1086; Erik Essen-Moller, 'A Rare Old Irish Medical Book' in *Irish Journal of Medical Science*, Vol. 7, No. 6 (June 1932), pp. 312-14, (p. 313) (henceforth cited as Essen-Moller, 'A Rare Old Irish Medical Book'); Edgar F. Kiser, 'Speculum Matricis by James Wolveridge, One of the Rarest books in Midwifery' in *The American Journal of Surgery,* Vol. 32, Issue 1, (1936), pp. 182-193 (p. 189) (henceforth cited as Kiser, *Speculum Matricis*); John F. O'Sullivan, 'Some Highlights of Obstetrics in Ireland' in *The Ulster Medical Journal,* Vol. 49, No. 4 (1980), pp. 105-16, (p. 106) (henceforth cited as O'Sullivan, *Highlights*); Declan Devan and Jo Murphy Lawless, 'Scene and Obscene: Childbirth in Ireland, 1650-1750', in Gerard M. Fealy (ed.), *Care to Remember, Nursing and Midwifery in Ireland,* (Cork, 2005), pp. 138-57, (p. 144) (henceforth cited as Devan and Murphy, *Childbirth in Ireland*); Davis Coakley, *Medicine in Trinity College Dublin* (Dublin, 2014), p. 27 (henceforth cited as Coakley, *Medicine in Trinity*); Elaine Hobby, 'Early Modern Midwifery Manuals and Herbal Practice' in Susan Francia and Anne Stobart (eds), *Critical*

Regarding the title, a definition for a speculum matricis was offered by the French surgeon Ambroise Paré who described it as a dilator to view the womb while Jacob Rueff considered it meant a looking glass.[47] Harvey mentioned the device so there are several sources Wolveridge could have derived that part of his title from.[48] However the later subtitle *The Expert Midwife* clearly points to Rueff's *The Expert Midwife* as a source.

In the prefatory pages Wolveridge wrote that his manual, written in English, would be of 'practical assistance' to midwives. Wolveridge named ten authors from antiquity, quoted Biblical passages, and cited Harvey's anecdote apropos an Irish Soldier's wife who bore twins, as did Willughby who also cited Harvey as a source for this anecdote.[49] Five encomiums in the prefatory pages were penned by four of Wolveridge's friends. As detailed in chapter three, standard biographical and medical history sources (such as the *Oxford Dictionary of National Biography* and the Alumnui Registers of the Universities of Cambridge, Oxford and Trinirty College Dublin and many other sources) were carefully checked to identify these individuals as part of situating Wolveridge; scanty details were discovered for two. Jonathan Ashe M.A. Oriel College Oxford, joined the Inner Temple in 1664 and settled in Clanwilliam, Co. Tipperary. Aquila Smyth may be the person who matriculated on 15th November 1639 at Queen's College Oxford; the records do not show academic advancement although he signed his encomium as Aquila Smyth M.D.

Approaches to the History of Western Herbal Medicine (London, 2014), pp. 67-85 (henceforth cited as Hobby, *Early Modern Midwifery Manuals*); Jacob Rueff, *The Expert Midwife*, printed by E. G. for S. E. and are to be sold by Thomas Alehorn at the signe of the Greene Dragon in Saint Paul's Church-yard, 1637 (New York, 1997) (henceforth cited as Rueff, *The Expert Midwife*); James Guillemeau, *Childbirth, or, The Happy Delivery of Women* (London, 1635) (henceforth cited as Guillemeau, *Childbirth*).

[47] Thomas Johnson, The Works of that famous chirurgion Ambrose Parey, translated out of Latine and compared with the French (London, 1634), p. 956 (henceforth cited as Johnson, Ambrose Parey); William John Stewart McKay, The History of Ancient Gynaecology (London, 1901), p. 39 (henceforth cited as McKay, Ancient Gynaecology); Rueff, The Expert Midwife, p. 104.

[48] Harvey, *Anatomical Exercitations*, p. 507.

[49] Wolveridge, *Speculum Matricis* 1670, sig A5v; Harvey, *Anatomical Exercitations*, pp. 276, 509; Willughby, *Observations*, pp. 34-5.

Concerning the midwifery elements of the *Speculum Matricis* there are sections devoted to conception and growth of the fetus, and the time of birth, followed by a dialogue between Eutrapelia the midwife, and Philadelphos the Doctor, on the qualities of the best midwife, normal childbirth and the use of the birth stool. Eighteen paragraphs are devoted to difficult births and non-natural presentations in singleton and twin pregnancy. To follow there are sections on molar pregnancy, the secundine (placenta), and delivery of a dead child. The next chapters are based upon the signs of conception, the sex of the infant and signs of thriving or not; of abortion; and rules for child-bearing women. Tracts on retention of the lochia and milk fever precede a miscellany of medicines for difficult births, for flux of the courses, to facilitate birth, to prevent abortion, for after-pains, for convulsion-fits in the new-born, for diarrhoea, and for sore breasts in women. Of nurses, and the best milk is the next section. Finally, mother fits and prolapse of the womb are dealt with.

In this chapter each section of the *Speculum Matricis* is presented in epitome form, with comments on the text, and a search for possible origins. In summary, the midwifery portion relies on the precepts of midwifery laid down in antiquity but retold by the authors Wolveridge cited (William Harvey, Rodrigo de Castro, Jean Fernel, Johannes Pulverini, Wilhelm Fabry, Francisco Valles), and derived in part without citation from Jacob Rueff, and perhaps Jacques Guillemeau and Nicholas Culpeper.

The main objectives of chapter four were to determine whether and to what extent the illustrations of Wolveridge's *Speculum Matricis* derived from published midwifery or anatomical texts or manuscripts, and the provenance and antiquity of those images. The number and types of illustration in the *Speculum Matricis* were ascertained; Wolveridge's images were compared to those already published; a search for comparable images in medical manuscripts of the medieval era was performed; and the text of Soranus' *Gynecology* was considered as a source from antiquity.

Thirty-three images are present in Wolveridge's manual and it was possible to assess and categorise the various types of images and their totals, the eighteen birth figures being the commonest. It is clarified that twenty-six of thirty-three (or 79 percent) of the *Speculum Matricis* images were likely derived from Jacob Rueff. Wolveridge cited a birth figure and a pudendal medical 'bagg' to Hildanus (Wilhelm Fabry). One anatomical image was cited to Thomas Bartholin. The two frontispiece illustrations I deemed original to Thomas Cross the manual's illustrator. Finally, I traced a non-accredited image of a fourteen-day fetus to Severinus Pineau. The provenance of birth figures is traced through manuscripts and the images matched those of the *Speculum Matricis* in 47 to 67 percent. However, it is likely that printed materials were his inspiration rather than MS sources. In another novel procedure the birth figures in Wolveridge were compared to the relevant text in Soranus' *Gynecology* and a match of 67 percent was discovered. In summary, while the *Speculum Matricis* illustrations derived from sixteenth century publications almost all the knowledge that gave rise to them was available from antiquity.

The materia medica are investigated in chapter five, and it is notable that a comprehensive review of Wolveridge's medical materials has not been published to date. Consequently, the aim of this section is to ascertain the remedies appropriate to midwifery in Wolveridge's *Speculum Matricis*, and to establish in what era their provenance lay. Did Wolveridge's materia medica reflect antiquity, or replicate that of his era, or both? Two hundred and twenty-one ingredients were identified in Wolveridge's manual and a glossary of his materia medica is presented as an Appendix. The dietary advice essential to pregnancy is revealed and a variety of prescriptions and their constituents is featured within chapter five. The modes of application of the medications, the weights and measures, and the frequency of administration are presented.

Wolveridge cited the treatises of Galen, Hippocrates, Johannis Pulverinii, Hildanus (William Fabry), Rodrigo de Castro and Jean Fernel and

their influence on the *Speculum Matricis* materia medica was validated. The ingredients of Wolveridge's medical materials were compared to those in chosen medical and midwifery publications; and to Pharmacopoeiae and well-being books from the 15th to the 17th centuries; to two seminal works from the 12th century; and directed studies were undertaken into the popular midwifery publications by Jacob Rueff, Jacques Guillemeau, Francois Mauriceau and Nicholas Culpeper. No evidence was found that the *Speculum Matricis* materia medica derived from Rueff, Culpeper or Mauriceau, nor from the texts of Daniel Sennert or Philip Barrough which were also examined; nor from that of Guillemeau. The materia medica of four edited translations of the Graeco-Roman treatises by Dioscorides, Soranus, the *Alphabet of Galen* (author unknown, pre-2nd century A.D.) and a tract from Aetius of Amida were compared to the *Speculum Matricis*.

A provenance for Wolveridge's materia medica by era is presented. This does not indicate that Wolveridge used the texts chosen for this study as his sources, as he could have relied on notes from his lectures, or the therapeutics of the recent physicians he cited. It was established that Wolveridge shared c. 67 percent of his medical ingredients in common with ancient Greece, as in Dioscorides *De re medicina*. A further c. 23 percent were common to the sources studied from the twelfth to seventeenth centuries; a miscellaneous c. 9 percent included Arabic sources. The premier treatises quoted by Wolveridge indicated that he was conversant with the medical knowledge of antiquity but aware of current trends in medicine and midwifery. The analysis of the *Speculum Matricis* is complete by the end of chapter four.

Midwifery Manuals like the Speculum Matricis

The rise of male authority pre-modern gynaecology and just how it presaged the upsurge in popularity of male involvement in women's medicine has

been a focus of debate.[50] Nowhere was that ascendancy and acceptance more evident than with the publication of midwifery manuals beginning in the 16th century, most authors being male, but with notable exceptions for example Louise Bourgeois, Jane Sharp and Justine Siegemund.[51] Ortolff van Bayerland's slim volume of obstetrics *Frauenbuchlein* c. 1495 was outshone by the publication of the midwifery manual *Der Swangern Frawen und hebamen Rosegarten* (The Rosegarden for Pregnant Women and Midwives) in 1513. The book was translated into many languages, and its influence reverberated through the centuries; the English version added quite a lot of material not in the original. The author Eucharius Roesslin was town physician and supervisor of midwives at Worms when his book, with its reliance on Soranus, the works of antiquity, and of Michele Savonarola's *Practica*, was published as a manual for midwives.[52]

Translated to various European languages the first English edition appeared as *The byrthe of mankind, otherwise named the woman's booke* in 1540; the versions used in this thesis date from 1545 and 1560.[53] Roesslin's manual, or translations thereof, remained the authoritative text on midwifery for almost two centuries and influenced the authors of midwifery that followed. Next came Jacob Rueff's manual of 1554 published simultaneously in German and Latin and translated to English as *The Expert*

[50] Monica H. Green, *Making Women's Medicine Masculine. The Rise of Male Authority in Pre-Modern Gynaecology* (Oxford and New York, 2008), viii (henceforth cited as Green, *Making Women's Medicine Masculine*).

[51] Louise Bourgeois, *Observations diverses sur la sterilite perte de fruict foecondite accouchements et maladies des femmes et enfants nouveaux naiz* (Paris, 1609) Henceforth cited as Bourgeois, *Observations*; Louise Bourgeois, *The Compleat Midwife's Practice Enlarged* (London, 1663); Elaine Hobby (ed.), Jane Sharp, 'The Midwives Book: or the Whole Art of Midwifery Discovered' in Susanne Woods and Elizabeth H. Hageman (eds), *Women writers in English 1350-1850* (New York, Oxford, 1999), Letter To The Midwives of England, prefatory pages (henceforth cited as Hobby, *Jane Sharp, The Midwives Book*); Lynn Tatlock (ed.), 'Justine Siegemund Court Midwife' in Series Editors Margaret L. King and Albert Rabil Jr., *The Other Voice in Early Modern Europe,* in (Chicago, 2005).

[52] Lawrence D. Longo, 'Der Swangern Frawen und hebamen Rosegarten (Strassburg, 1513)' in Classic pages in Obstetrics and Gynecology in the *American Journal of Obstetrics and Gynecology,* Feb. (1995), pp. 713-4; the sources for Roesslin's manual are clarified by Green, *Eucharius Roesslin*.

[53] Thomas Raynold (Raynalde), *The Byrth of Mankynde, otherwise named the Womans Booke* (London, 1545) (Classics of Medicine Library, New York, 1994) (henceforth cited as Raynold, *The Byrthe of Mankynde;* Hobby, *The Birth of Mankind.*

Midwife in 1637.[54] Rueff was responsible for the instruction and examination of midwives in Zurich.[55] Other influential texts of the sixteenth century were the compendia of midwifery and gynaecology, as exemplified by the *Gynaeciorum libri*, which were published in Latin, or Latin and Greek, and which circulated widely in the late sixteenth century.[56] The compilations included versions of the works of many previous authors that could inform future manuals; their importance continued for centuries.[57]

The printed gynaecological and obstetrical texts between 1474 - 1600 are identified by Monica Green, while the main midwifery manuals published in English between 1500-1700 were reviewed by Eccles who noted that the 'use of English for texts on obstetrics and gynaecology was … sensitive … [there were concerns that they would] pander to the depraved … and encourage disrespect for women.'[58] Midwifery authors including Wolveridge addressed that issue in the prefatory pages of their volumes, being aware of the delicacy of writing on feminine matters, usually only known to a variable extent by medical men and diligent husbands.

Forewords to re-issued midwifery texts such as *The Byrth of Mankynde* of 1545 contain much useful historical information.[59] But it is the publications with modern renderings of five core midwifery manuals by Aarons, Blenkinsop, Burton, Green and Hobby that are particularly relevant to this dissertation. Their publications informed aspects of my analysis of the

[54] Jacob Rueff, *Ein schon Trostbuchle von den Empgengknussen und Gerburten der Menschen* (Zurich, 1554) (henceforth cited as Rueff *Ein schon Trostbuchle*); Jacob Rueff, *De conceptu et generatione hominis* (Tiguri, 1554) (henceforth cited as Rueff, *De conceptu*); Rueff, *The Expert Midwife*.

[55] P. M. Dunn, 'Jacob Rueff (1500-1558) of Zurich and The expert midwife' in *Archives of Diseases in Childhood Foetal and Neonatal Edition*, Vol. 85 (3) (2001), F222-4.

[56] For example, Caspar Wolf, *Gynaeciorum hoc est de Mulierum* (Basilae, 1566); Israel Spach, *Gynaeciorum sive de Mulierum* (Argentiae, 1567);

[57] Helen King, 'Midwifery, Obstetrics and the Rise of Gynaecology' in Series Editors Allyson Poska and Abby Zanger *Women and Gender in the Early Modern World* (London and New York, 2016), p. 9 (henceforth cited as King, Midwifery, Obstetrics and the Rise of Gynaecology).

[58] Green, Making Women's Medicine Masculine, pp. 345-57; Audrey Eccles, 'The Early use of English for Midwiferies' in *Neu Philologische Mitteilungen* (published by Modern Language Society), Vol. 74, No. 4 (1977) pp. 377-385, p. 377 (henceforth cited as Eccles, 'The Early use of English for Midwiferies') www.jstor.org/stable/43343157

[59] Raynold (Raynalde), *The Byrth of Mankynde*.

Speculum Matricis through their rigorous studies of the midwifery texts of Eucharius Roesslin (1513), Percival Willughby (MS 1670s published 1863), Lazare Rivière (1678), Thomas Raynalde (1560) and Jane Sharp (1671).[60]

Each reprinted text of these central midwifery manuals was accompanied by a valuable introduction that included available biographical data, the history of the manual's publications, the influences on its text, explanations and footnotes with additional difficult to discover information, and glossaries or appendices and indexes. The information on Lazare Rivière (calculated only by the number of pages involved) exceeded that of his text on women's diseases. Next (in number of pages) came the data on Raynalde, followed by that on Roesslin, then Sharp and finally Willughby. In most of these critical editions deeper analysis could have examined in more detail the sources from which the manuals drew, and the impact of Vesalius, Paracelsus, Bacon, Harvey, and others, on the Galenic medical model and midwifery.

The *Speculum Matricis* shares with these manuals concepts derived from antiquity concerning conception, maternal and foetal anatomy, growth in utero, methods of delivery in non-natural presentations, breast feeding and so on. However, it became clear during my investigation that variances exist between the *Speculum Matricis* and the midwifery manuals of Roesslin, Raynald, Rueff, Rivière and Sharp. For instance, remarkable points of difference were the encomiums to Wolveridge printed in his text (encomiums were not usual in midwifery manuals) and his occasional use of both Latin and Greek in the marginalia. Wolveridge's book is shorter than the others (except for Roesslin and Rivière's texts) and deserves its secondary title 'handmaid' or handbook. The manuals are laid out in a format of four or six 'books' each with individual chapters but Wolveridge bypasses that convention, as do Roesslin and Rivière. Yet, the order of

[60] Green, 'Eucharius Roesslin,' pp. 167-192; Arons, *Eucharius Roesslin*; Willughby, *Observations*; John L. Burton (ed.), *'Six Hundred Miseries', the Seventeenth Century Womb, Book 15 of 'The Practice of Physick' by Lazare Riviére, translated by Nicholas Culpeper and Published in London in 1678* (London, 2005) (henceforth cited as Burton, *Riviére*); Hobby, 'Jane Sharp The Midwives Book'; Hobby, *The Birth of Mankind*.

Wolveridge's chapters follows a sequence somewhat akin to the manuals whose content is laid out in that 'books' format. Other areas of contrast are noteworthy; Wolveridge did not include a description of male anatomy nor foetal abnormality; he wrote only one item of gynaecology (uterine prolapse post-partum); similarly, one item for the newborn (convulsions).

While written for midwives, grave matrons, and the lest knowing, the authors shared their drug lore without reservation. However, Wolveridge advised that some items should be prescribed by a physician or obtained from an apothecary. The information imparted in the manuals was valid for its time, but evidently reflected the Greek midwifery of Hippocrates and Soranus, complemented by compound prescriptions for various pregnancy related ailments. Complex remedies were a feature of Galen's materia medica.

But the reliance on classical sources to inform midwifery manuals changed in the seventeenth century and thereafter. The manuals published later than Wolveridge's reflected that change, presaged to an extent by Harvey and Willughby's descriptions of their interventions in childbirth. In a break with the writings of the recent past, midwifery cases were recorded, sometimes along with citations to the classical tradition of yesteryear. But we should not overlook that Hippocrates also wrote case histories of pregnancy.[61] Within twenty years of the publication of the *Speculum Matricis* the English translation of Francis Mauriceau's French manual (*The Diseases of Women*) presented 'analysis of the mechanism of labor' that was based on practical experience rather than the theory laid down in antiquity.[62] From the mid-eighteenth century Fielding Ould's *A Treatise on Midwifery* may be used as an example of the change in emphasis wrought in midwifery manuals.[63] The classical past is definitively left behind when Ould

[61] J. Chadwick, W. N. Mann, 'Epidemics, Book III' in G. E. R Lloyd (ed.) *Hippocratic Writings* (Reprint, London, 1983), pp. 113-138.
[62] Francis Mauriceau, *The Diseases of Women with Child: and in Child-bed Translated by Hugh Chamberlen* (London, 1683), ii.
[63] Fielding Ould, A Treatise on Midwifery. In Three Parts (Dublin, 1742) (henceforth cited as Ould, *Treatise*); Robert Woods, Chris Galley, *Mrs Stone & Dr Smellie* (Liverpool, 2014), pp. 471-73.

cites the surgeon/man-midwives of his era, and the text is based on practical experiences gained by Ould in the Hôtel-Dieu Paris and the Rotunda Hospital Dublin.[64]

Notes on historiography of midwifery and medicine

Although Greek medicine was viewed in older medical history as the font of the Western model, it is evident that 'only a portion of the literature of ancient Greece' survived.[65] This is an attempt to situate an early modern text within (or partly outside) a Galenic tradition which raises a troubling question. By bestowing a name on an abstraction, one is necessarily reifying it or, in this case, endowing Galenic tradition with a coherence and heft that is illusory. More fundamentally, the invariant traditional history is open to question, for instance it is written that the singular Graeco-Roman medicine may be a myth as there was a plurality of medical understanding in ancient times.[66] I recognise the flexibility and fluidity of the Galenic tradition which explains its survival, but also follow mainstream historiography in accepting that such an abstraction retains an explanatory usefulness.

A second historiographical problem is more acute. This is an analysis of a medical and midwifery text; both the text and the analysis are written by medical doctors focussed on obstetrics. Such insider history can treat medical history as a 'heroic chronicle of medical progress' in which the practitioner is central. It is essential to include the 'insight of social and cultural historians' and avoid Whig historiography and presentism.[67] This could form an account that 'does not abandon' the more heroic chronicle of

[64] Peter M. Dunn, 'Bartholomew Mosse (1712-59), Sir Fielding Ould (1710-89), and the Rotunda Hospital, Dublin' in *Archives of Diseases in Childhood Foetal and Neonatal Edition* Vol. 81, (1998), F74-F76.

[65] Vivian Nutton, *Ancient Medicine* (London and New York, 2004), p. 7 (henceforth cited as Nutton, *Ancient Medicine*); Nutton, *Ancient Medicine*, p. 1.

[66] Frank Huisman and John Harley Warner (eds), *Locating Medical History. The Stories and Their Meanings* (Baltimore and London, 2004), p. 4; Mark Jackson (ed.), *The Oxford Handbook of the History of Medicine* (Oxford, 2011), p. 10.

[67] Mark Jackson (ed.), *The Oxford Handbook of the History of Medicine* (Oxford, 2011), pp. 3-4; Janette C. Allotey, 'Writing midwives' history: problems and pitfalls' in *Midwifery* Vol. 27, Issue 2 (April 2011), pp. 131-37, p. 132.

medical progress but a fact-based non-biased union of the older method with 'the new emphasis on social, cultural, and ideological analysis.'[68] Certainly, while embarking on my account of midwifery history the intention is to avoid bias, prejudice, distortions of priority, and finalistic interpretations.[69]

A crucial issue centred on just who provided essential medical care for the ailments and conditions specific to females? The roles of midwives, and their education and licensing arrangements were queried. Then, controversy about the evolution of man-midwifery (which began in earnest in the seventeenth century) was resolved, to an extent. Some of those debates continue but a great amount of clarity has emerged. With the foregoing topics in mind, the history of the theory and practice of midwifery will be examined as a background in which Wolveridge wrote his midwifery manual. The history of midwifery (also referred to in the literature as the history of obstetrics or obstetrics and gynaecology) was written by a host of medical writers characterised as 'insiders' and considered 'amateur scholars, including many ex-doctors, eager to plot the story of the "triumph of Western medicine over disease" which vaunted medical men but marginalised other medical care-givers.[70] Implicit in that assertion is that 'insider' histories are biased; it is acknowledged that the 'problem of bias in history is fundamental … the discovery of facts ought to be the truly scientific element in the historian's task. [71] My own approach is to incorporate some of this critique and to include women's medicine, female physicians and

[68] Nutton, *Ancient Medicine*, p. 316; Gerald N. Grob, Book review 'Problems and Methods in the History of Medicine' Roy Porter and Andrew Wear (eds), in *Bulletin of the History of Medicine* Vol. 62, No. 2 (1988), pp. 287-8; Andrew Wear, *Medicine in Society* (Cambridge, 1992), p. 1.

[69] Ernst Mayr, 'When is Historiography Whiggish?' in *Journal of the History of Ideas* Vol. 51, No. 2 (Apr-Jun., 1990), pp. 301-09, p. 309; F. Clifford Rose (2002) 'Historiography: An Introduction' in *Journal of the History of the Neurosciences*, Vol. 11 No. 1 (2002) pp. 35-6.

[70]Brockliss and Jones, *The Medical World of Early Modern France*, p. 1; John C. Burnham, *What is Medical History?* (Cambridge, 2005), p.21 (henceforth cited as Burnham, *Medical History*).

[71] E. H. Carr, *What is History?* R. W Davis(ed.) (2nd. Edition, Hampshire, 1986), p. 16; G. M. Trevelyan, 'Bias in History' in *History New Series*, Vol. 32, No. 115 (March 1947), p. 1.

midwives, the perceived neglected areas in medical history, in addition to the traditional male and subject oriented exposition.[72]

A selection of 'insider' histories of midwifery illustrates the number of topics related to women's medicine.[73] Some texts are specific to the British Isles and afford an insight to midwifery in Ireland.[74] To this list of publications on midwifery may be added translations of, and commentaries on, the ancient texts, such as those of Hippocrates, Aristotle, Galen, Herophilus, Soranus, Aetios, Paul, Muscio, the Arabic writers, and others who are cited in this and subsequent chapters.[75] The medieval medical manuscripts carried sections on midwifery, as did *The Method of Physick,* the first printed medical book in English (with its sixteen chapters on women's ailments and childbirth) and a citation to Soranus.[76] A potted proto-history of midwifery was published in the eighteenth century.[77]

A criticism of some of the earlier histories of midwifery penned by medical writers is that their treatises are mainly physician or subject

[72] Brockliss and Jones, *The Medical World of Early Modern France,* pp. 4, 263-273.

[73] Palmer Findlay, *Priests of Lucina. The Story of Obstetrics* (Boston, 1939) (henceforth cited as Findlay, *Priests of Lucina)*; James V. Ricci, *The Genealogy of Gynaecology* (Philadelphia 1943) (henceforth cited as Ricci, *The Genealogy of Gynaecology*); Harvey Graham, *Eternal Eve, The History of Gynaecology & Obstetrics* (New York, 1951) (henceforth referred to as Graham, *Eternal Eve*); Harold Speert, *Obstetrics and Gynecology: A History and Iconography* (San Francisco, 1994) (henceforth cited as Speert, *Obstetrics and Gynecology*); T. K. A. B. Eskes, L. D. Longo, *Classics in Obstetrics and Gynecology* (Carnforth, UK, 1994); Michael J. O'Dowd, Elliot E. Philipp, *The History of Obstetrics and Gynaecology* (New York and London, 1994) (henceforth cited as O'Dowd and Philipp, *The History of Obstetrics and Gynaecology*); Harold Speert, *Obstetric and Gynecologic Milestones Illustrated* (New York and London, 1996); Thomas F. Baskett, *On the Shoulders of Giants: Eponyms and Names in Obstetrics and Gynaecology* (London, 1996); Bryan Hibbard, *The Obstetrician's Armamentarium. Historical Obstetric Instruments and Their Inventors* (San Anselmo, California, 2000); Geoffrey Chamberlain, *From Witchcraft to Wisdom: A History of Obstetrics and Gynaecology in the British Isles* (London, 2007).

[74] Herbert R. Spencer, *The History of British Midwifery from 1600 to 1800* (London, 1927); T. D. O'Donel Browne, *The Rotunda Hospital 1745-1945* (Edinburgh, 1947); J. M. Munro Kerr, R. W. Johnstone, Miles H. Phillips, *Historical Review of British Obstetrics and Gynaecology* (Edinburgh and London, 1954); Alan Browne (ed.), *Masters, Midwives and Ladies-in-Waiting: The Rotunda Hospital* (Dublin, 1995);

[75] James V. Ricci, *Aetios of Amida* (Toronto, 1950) (henceforth cited as Ricci, *Aetios of Amida*); Francis Adams, *The Medical Works of Paulus Aeginata* (London, 1834) (henceforth cited as Adams, *Paulus Aeginata*).

[76] Philip Barrough, *The Method of Physick* (London, 1583) (henceforth cited as Barrough, *Physick*).

[77] John Leake, *A Lecture Introductory to the Theory and Practice of Midwifery: Including the History of that Science* (London, 1782) (henceforth cited as Leake, *A Lecture Introductory*).

oriented. An example of the latter type would be 'The Chamberlen family (1560– 1678) and the introduction of the obstetric forceps.' Such (insider) histories are criticized for lacking details of female physicians and midwives.[78] But some of those histories carried specific chapters on midwives and midwifery while clarifying in other sections the advances in care that eventually reduced maternal and infant mortality and morbidity.[79] From the 1980's we learn that 'much of the evidence about them [women] … was compiled or invented by men and rests on male assumptions' and research on the lives of women remained to be done.[80] Now, historical aspects of midwifery and childbirth by social historians and researchers of women's studies are available.[81]

Medical history should be 'as much about the midwife, the nursing sister, and the village healer … as about groups of physicians or surgeons.'[82] I believe the scarcity of women's voices in the history of midwifery (written by male authors) was due to unconscious assumptions rather that active disregard. A reading of Soranus' *Gynecology* or the prefatory pages of the

[78] Peter M. Dunn, 'The Chamberlen family (1560-1728) and the introduction of the obstetric forceps' in *Archives of Diseases in Childhood Foetal Neonatal Edition,* Vol. 81 (1999), F 232-35 (henceforth cited as Dunn, 'The Chamberlen family').

[79] Graham, *Eternal Eve;* Findlay, *Priests of Lucina;* O'Dowd and Philipp, *The History of Obstetrics and Gynaecology.*

[80] Olwen Hufton, James McMillan, Natalie Zemon Davis, Linda Gordon, Sally Humphries, Angela John, Jane Rendall, Anna Davin, 'What is Women's History?' in *History Today,* Periodicals Archive Online, Vol. 35 No. 6, (Jun 1, 1985), pp. 38, 39, 42 (henceforth cited as Hufton et al., 'What is Women's History?').

[81] For example; Devan and Murphy, *Childbirth in Ireland,* pp. 138-57; Jo Murphy Lawless, 'Childbirth 1742-1955' in Angela Bourke et al (eds), *The Field Day Anthology of Irish Writing* Vol. IV Irish Women's Writing and Traditions (New York, 2002), pp. 896-914 (henceforth cited as Lawless, *Childbirth 1742-1955*); Silvia De Renzi, 'Women in Medicine,' in Peter Elmer (ed.) *The Healing Arts, Health, Disease and Society in Europe 1500-1800* (Manchester, 2004), pp. 196-227 (henceforth cited as Renzi, 'Women in Medicine'); Doreen Evenden, *The Midwives of seventeenth-century London* (Cambridge, 2000) (henceforth cited as Evenden, *The Midwives of seventeenth-century London*; Hilary Marland, *The Art of Midwifery, Early Modern Midwives in Europe* (London, 1993) (henceforth cited as Marland, *The Art of Midwifery*; Wendy Perkins, *Midwifery and Medicine in Early Modern France, Louise Bourgeois* (Exeter, 1996) (henceforth cited as Perkins, *Louise Bourgeois*); Audrey Eccles, *Obstetrics and Gynaecology in Tudor and Stuart England* (Ohio, 1982) (henceforth cited as Eccles, *Obstetrics and Gynaecology in Tudor and Stuart England*); Adrian Wilson, *The Making of Man-Midwifery: Childbirth in England, 1660-1770* (Harvard, 1995) (henceforth cited as Wilson, *Man-Midwifery*).

[82] Brockliss and Jones p. 4

Speculum Matricis demonstrate physicians' respect for midwives and women. It is therefore notable that many histories of medicine written by historians are not sufficiently cognisant of childbirth, female ailments and women's medicine. One essential academic work on the history of medicine has little on childbirth and obstetrics; and the segmented bibliography has a section 'Irregular Medicine and Quackery' but no section on women's medicine.[83] Another two volume historical encyclopaedia has a core chapter on 'Women and Medicine' but the section 'Childbirth' opens in the nineteenth century.[84] The *Western Medical Tradition* as revealed by a team of respected authors relegates 'Women's problems' to the Medieval era with little before or thereafter, and no specific section on childbirth.[85]

A fourth tome on historical aspects of world diseases compiled by historians and clinicians has chapters on puerperal fever, eclampsia, rubella and venereal disease but missed the opportunity to explore Rhesus disease (a major pregnancy related problem until the late 20th century); and women's diseases such as diabetes in pregnancy along with other women's reproductive ailments; and there are no sections on foetal anomalies such as hydrocephalus (which can cause difficult labours, manual interventions, and often poor outcomes for mother and child, related to the abnormality).[86] Different but complementary perspectives are enriching while the model of physician-led medicine has the advantage of more adequate source materials.[87]

A history of midwifery

Having set out some of the historiography debate, a history of midwifery will now follow. The name midwife came from Middle English 'Mid-wif, sb.,

[83] Porter, *The Greatest Benefit to Mankind*, p. 748.
[84] W. F. Bynum, Roy Porter (eds), *Companion Encyclopedia of the History of Medicine* (2 vols., London, 1993).
[85] Lawrence I. Conrad, Michael Neve, Vivian Nutton, Roy Porter, Andrew Wear (eds), *The Western Medical Tradition* (Cambridge, 1995), pp. 168-174.
[86] Kenneth F. Kiple (ed.), *The Cambridge World History of Human Disease* (Cambridge, 1993).
[87] Burnham, *Medical History*, p. 141.

midwife, '*obstetrix.*'[88] From *obstetrix* (Latin, *obstare*, to stand in front or against) come the terms obstetrics and obstetrician. Green wrote of the Latin, *obstetrix*, as a function of "standing by" at birth although the definition was a 'variable concept.' She discussed whether midwives' roles in the medieval era were limited to childbirth, or to responsibility for '*all* gynaecological and obstetrical concerns.'[89] From *Gynaecia* comes the term 'gynaecology,' and the eponymous title of the tract on midwifery by Soranus (1st cent. A.D.) and the *Gynaecia* of Moscio (Muscio, c. 6th cent. A.D.). *Gynaecia* was sometimes defined as the 'Accidents incident to Women; but Hippocrates takes them more strictly for the courses [periods].' However, the term could also refer to women's conditions or remedies for women's complaints.[90] The three terms midwifery, obstetrics and gynaecology are intertwined and sometimes transposable when reading the history of childbirth and women's medicine, as distinct from the maladies that are common to both sexes. This can lead to confusion as the modern sense of gynaecology tends to exclude pregnancy and childbirth and focuses on ailments specific to the reproductive system in women.

The history of Western midwifery typically begins in ancient Egypt. The hieroglyph for childbirth was an infant emerging head first from the mother but notable was the 'absence of any special word for "midwife" in the ancient Egyptian language.[91] Many aspects of women's medicine are contained in the Kahun, Petrie, Ebers and other Egyptian papyri.[92] The Ebers

[88] Henry Bradley, *A Middle-English Dictionary* (Oxford, 1841), p. 428.
[89] Monica Green, 'Women's Medical Practice and Health Care in Medieval Europe' in *Signs*, Vol. 14, No. 2, Working Together in the Middle Ages: Perspectives on Women's Communities (Winter, 1989), pp. 454-5 (henceforth cited as Green, 'Women's Medical Practice').
[90] Lesley Annette Bolton, *An Edition, Translation and Commentary of Mustio's Gynaecia* (Ph.D. Thesis, University of Calgary, 2015) (henceforth cited as Bolton, *Mustio's Gynaecia*).
[91] J. Worth Estes, *The Medical Skills of Ancient Egypt*, Canton, MA, 1989), p. 59 (henceforth cited as Estes, *Ancient Egypt*); Sheldon Watts, *Disease and Medicine in World History* (New York and London, 2003), p. 19 (henceforth cited as Watts, 'Disease and Medicine').
[92] F. L. Griffith, *The Petrie Papyri, Hieratic Papyri from Kahun and Gurob* (London, 1898) (henceforth cited as Griffith, *Kahun*); B. Ebbell, *The Papyrus Ebers* (Copenhagen, 1935) (henceforth cited as Ebbell, *Papyrus Ebers*); James Henry Breasted, *The Edwin Smith Surgical Papyrus* (Chicago, 1930), pp. 490 & 505 (henceforth cited as Breasted, *Edwin Smith Papyrus*); and others; Estes, *Ancient Egypt*, pp. 55-61.

papyrus for instance offers remedies to hasten birth, for a prolapsed uterus, and for diseases of the vulva and uterus.[93] Women physicians taught the art of midwifery and gave instructions in gynaecology, one such was named Peseshet.[94] From Mesopotamia (c. 2nd millennium B.C.) come references to midwifery, a 'womb-goddess' and 'midwife to the gods,' and in the worldly sphere it was related that the midwife shall 'rejoice in the house of the woman who gives birth' in the tenth month.[95] Also, as told in the Bible, there are many instances of pregnancy and birth, for example Eve exclaimed in relation to the birth of Cain 'I haue gotten a man from the LORD.' [96] In Exodus the Hebrew midwives Shiprah and Puah were 'dealt well with' by God, and the use of the birth stool is featured.[97]

Approximately a quarter of the Hippocratic *Corpus* is about women's medicine as contained in the *Diseases of Women,* the *Epidemics*, the *Aphorisms*, *The Seed* and *The Nature of the Child* and other tracts.[98] Aristotle (384-322 B.C.) and his text *De Generatione Animalium* was of great significance to our understanding of reproduction and early growth of the fetus.[99] Herophilus (335-280 B.C.) wrote *Midwifery,* the first such treatise on the subject from antiquity, and the reasons he attributed for difficult childbirth were broadly similar to those of Wolveridge's *Speculum Matricis* two millennia later, some are sensible, others not.[100] The *Gynecology* of

93 McKay, *Ancient Gynaecology*, pp. 9-14.
94 Ricci, *The Genealogy of Gynaecology*, p. 26 ; Watts, 'Disease and Medicine', p. 19.
95 Stephanie Dalley (trans.), *Myths from Mesopotamia, Creation, the Flood, Gilgamesh, and Others* (Oxford, revised edition 2008), pp. 13, 15, 17.
96 Genesis 4:1, *The Holy Bible* (London, 1611).
97 Exodus 1:20 and 1:16, *The Holy Bible* (London, 1611).
98 Lesley Ann Dean-Jones, *Women's Bodies in Classical Greek Science* (Oxford, 1994), p. 11 (henceforth cited as Dean-Jones, Greek Science); Helen King, *Hippocrates' Woman: Reading the Female Body in Ancient Greece* (London and New York, 1998), p. 1; Conrad J. Sprengell, *The Aphorisms of Hippocrates, and Sentences of Celsus; with Explanations and References to the Most Considerable Writers in Physick and Philosophy, both Ancient and Modern* (London, 1708) (henceforth cited as Sprengell, *Aphorisms*); Elias Marks (ed.), *The Aphorisms of Hippocrates, from the Latin Version of Verhoofd with a Literal Translation on the Opposite Page and Explanatory Notes* (New York, 1817) (henceforth cited as Marks, *Aphorisms*); Francis Adams, *The Genuine Works of Hippocrates* (Baltimore, 1939) (henceforth cited as Adams, *The Genuine Works of Hippocrates*), pp. 292-322.
99 Platt, *De Generatione Animalium*, pp. 714-89.
100 Heinrich von Staden, *Herophilus, The Art of Medicine in Early Alexandria* (Cambridge, 1989), pp. 296-99 (henceforth cited as Staden, *Herophilus*); Rafael Romero Reveron,

Soranus (1st cent. A.D.) embodied ancient gynaecological and obstetrical practice at its zenith and became a model for subsequent practitioners and writers.[101] Soranus' first requirement of a midwife was literacy, so he wrote a catechism for midwives 'in the form of questions and answers.'[102] Soranus' *Gynecology* informed the writings of the Byzantine physicians Aetius and Paul, and the *Gynaecia* of Moscio (Muscio).[103] Galen wrote sparingly on women's medicine for example his treatises on the uterus and the formation of the foetus.[104]

Agnodice (c. 4th cent. B.C.) may have been a Greek midwife and it is related that she dressed as a man 'in order to learn medicine' and midwifery. Her story was printed in the sixteenth century and became an essential part of the debate concerning women's roles in midwifery and medicine, but whether Agnodice existed is open to question.[105] The mothers of Hippocrates and the philosopher Socrates were midwives and would surely have had a lasting influence on both. In later times the Greek female physician, gynaecologist and midwife Cleopatra Metrodora (c.2-6 cent. A.D.) may have been a contemporary of Soranus and it is written that she was very capable with a great love for 'science'. Metrodora wrote mainly on gynaecological aspects of women's health but was forgotten for many centuries and little mentioned in historical medical textbooks.[106]

Another 'unappreciated historical figure' was the female midwife and surgeon Aspasia (4th Cent. A.D.) who may have made important

'Herophilus, the great Anatomist of Antiquity' in *An International Journal of Experimental and Clinical Anatomy,* Vol. 9 No. 2 (2015), pp. 108-111.

[101] Temkin, *Soranus' Gynecology*, xxv.

[102] Temkin, *Soranus' Gynecology*, xxxvii.

[103] Ricci, *Aetios of Amida*; Adams, *Paulus Aeginata*; Bolton, *Mustio's Gynaecia*; Brussels MS 3701-15 p. 34 (http://lucia.kbr.be/multi/KBR_3701-15Viewer/imageViewer.html

[104] Dean-Jones, Greek Science, p. 24.

[105] Vernon A. Rosario, 'Fustigating the "One-Sex-Body" thesis, an Essay Review' in *Studies in History and Philosophy of Biological and Biomedical Sciences,* Vol. 48 (2014), pp. 112-4; Helen King, Mistaking Histories https://mistakinghistories.wordpress.com/2017/10/18/agnodice-reading-the-story/ [accessed 3 November 2017].

[106] Gregory Tsoucalas, Marianna Karamanou, Georgios Androutsos, 'Metrodora, an Innovative Gynecologist, Midwife, and Surgeon' in *Surgical Innovation* 20 (6) (2013), pp. 648-9; Lilian R. Furst, *Women Healers and Physicians: Climbing a Long Hill* (Kentucky, 1999), pp. 138-9.

contributions to obstetrics, and was cited by the eminent physician and medical compiler Aetius of Amida, but it is disputed whether she wrote a treatise on women's medicine.[107]

While humoral medicine and Greek philosophy were adopted in Islam new medical compendia evolved based on the ancient authors, but women were conspicuously absent from the bibliographies.[108] The favoured author was Galen who became the father figure for Arabic medicine. The Arabic physician Avicenna (980-1037) arranged the entirety of medical practice in his *Canon*, or The Medical Code, in five books, Book II of which deals with materia medica, Book III includes tracts on conception and pregnancy, Book V deals with compound drugs.[109]

Another remarkable physician (among others) was Albucasis (963-1013) who wrote 'On the training of midwives in how to treat living foetuses when not brought forth in the natural manner.'[110] The Arabic midwifery owed much to Paul of Aegina who was known to them as "The Obstetrician."[111] When the medical schools of Salerno and Montpellier were founded (12th-13th centuries) 'the doctrines of the Arabian physicians were principally taught.'[112]

With regards to the transmission and reception of Greek medicine it is evident that a portion of their texts was translated to Latin from the fifth century A.D. As a result, rational and empirical medicine with its importance on prognosis and treatment became available and informed medical practice in the West.[113] After the fall of the Roman Empire, the ancient traditions of the East passed to the Byzantine world and thence to Islam. In

[107] Gregory Tsoucalas, Antonis A. Kousoulis, Georgios Androutsos, 'Innovative Surgical Techniques of Aspasia, the Early Greek Gynecologist' in *Surgical Innovation* 19(3) (2012), pp 337-8; Dean-Jones, *Greek Science*, p. 33.
[108] Nancy E. Gallagher, 'Islamic and Indian Medicine' in Kenneth F. Kipple (ed.) *The Cambridge World History of Human Disease* (Cambridge UK, 1993), p. 29.
[109] Porter, *The Greatest Benefit to Mankind*, pp. 95, 98-9.
[110] M. S. Spink, G. L. Lewis, *Albucasis On Surgery and Instruments* (London, 1973), pp. 468-9.
[111] Graham, *Eternal Eve*, pp. 103 and 105.
[112] Leake, *A Lecture Introductory,* p. 40.
[113] Siraisi, *Medicine*, p. 6.

the West some of the Greek treatises were translated to Latin. Then in the eleventh century the two paths of transmission were re-united.[114] The number of medical manuscripts increased through Arabic treatises (based on the Greek and Byzantine sources) and later from the original Greek.[115] Although the reception of the new texts did not demand a major change in medical thought or techniques the material was only slowly absorbed over 'several generations.'[116]

The Renaissance saw a revival of Galen's works and Greek medicine and this 'rebirth' of medical knowledge was revolutionised by the advent of printing.[117] In 1525 the Aldine Press in Venice published the complete works of Galen in Greek, which physicians read and assimilated, or the Latin translations thereof.[118] Midwifery lore (based on Muscio/Soranus) circulated in the Medieval Period, as an example *De arte phisicali et de cirurgia* (*Of the physical arts and surgery*) from the original by John of Arderne (1307–70 A.D.). Four manuscripts of the era with midwifery information are noted later in my chapter on 'Illustrations.' Replicas of Soranus' *Gynecology* and Muscio's *Gynaecia* were popular; the transmission of Soranus's *Gynecology* and its reception is featured in many publications.[119]

Meanwhile, with regards to midwives and female healers of the medieval era, and despite their undoubted importance to families and society, little was recorded of their history compared to that of physicians and surgeons, and their view 'is largely absent' from the medieval

[114] Monica Helen Green, *The Transmission of Ancient Theories of Female Physiology and Disease through the Early Middle Ages (Gynecology, Medicine, Galen, Soranus, Hippocrates)* (Ph.D. Thesis Princeton University, 1985).
[115] Nancy Siriasi, *Medicine* p. 14.
[116] Siraisi, *Medicine*, p. 15.
[117] Elizabeth L. Eisenstein, *The Printing Revolution in Early Modern Europe* (2nd ed., New York, 2013), p. 3; Wear, Medicine in Early Modern Europe, p. 251; Vivian Nutton, 'Medicine in Medieval Western Europe, 1000-1500' in Lawrence I. Conrad, Michael Neve, Vivian Nutton, Roy Porter, Andrew Wear, *The Western Medical Tradition* (Cambridge, 1995), p. 199 (henceforth cited as Nutton, 'Medieval Medicine').
[118] Wear, Medicine in Early Modern Europe, p. 253.
[119] Temkin, *Soranus' Gynecology*, xliv-xlix; Ingerslev, 'Roesslin's Rosengarten', pp. 1-25, (p. 7); Green, 'Eucharius Roesslin', pp. 167-192; Arons, *Eucharius Roesslin.* pp. 4-5; and others.

literature.[120] There was a paucity of female authors and women's history was mainly an oral tradition. It appears that midwives were 'trained empirically by other midwives through experience and practice' and they were 'doing the best job their knowledge would allow.'[121] Women who were literate, and who had access to manuscript sources, read the theory of midwifery as laid down in ancient Greece with subsequent commentary and amendments from Byzantine or Arabic authors.

The Benedictine nun Hildegard of Bingen (1098-1179), wrote on menstruation, conception, childbirth and breast milk.[122] She also completed tracts on herbs and animal parts as medications for childbirth, but examination reveals her writings (in general) were not of practical nature for midwifery.[123] At the close of the 12th century a text on women's medicine was written in Salerno that became known as the *Trotula*, being named for Trota or Trocta a local female physician.[124] The *Trotula* name carried through to the *Liber Trotularis* (MS Sloane 2463), the first text on gynaecology in English, but the text differs in content to that of Salerno being dependent on Soranus.[125]

From the origins of the universities in the 12th century the institutions were closed to women as were the professions of law, the church and

[120] Nutton, 'Medieval Medicine', p. 172.
[121] Ginger Lee Guardiola, *Within and Without: The Social and Medical Worlds of the Medieval Midwife 1000-1500* (Ph.D. Thesis University of Colorado, 2002), p. 2.
[122] Priscilla Throop (trans.), *Hildegard of Bingen, Causes and Cures* (Charlotte, Vermont, 2008), pp. 56-7 and 65.
[123] Priscilla Throop (trans.), *Hildegard von Bingen's Physica* (Rochester, 1998), pp. 30, 41, 144, 147, 180, 208, 225.
[124] Monica H. Green, *Women's Healthcare in the Medieval West* (Aldershot, 2000), pp. 89-178.
[125] Faith Wallis, 'Medieval Medicine, A Reader', in Paul Dutton (ed.), *Readings in Medieval Civilizations and Cultures: XV* (Toronto, 2010), pp. 185-90 (henceforth cited as Wallis, *Medieval Medicine*); Monica H. Green (ed.), *The Trotula, An English Translation of the Medieval Compendium of Women's Medicine* (Philadelphia, 2002) (henceforth cited as Green, *The Trotula*); Beryl Rowland (ed.) *Medieval Woman's Guide to Health, the First English Gynecological Handbook, Middle English Text, with an Introduction and Modern English Translation* (USA, 1981), xvi, pp. 48, (henceforth cited as Rowland, *Medieval Woman's Guide to Health*).

medicine.[126] Doubtless the centuries old gloomy view of woman prevailed, being a defective persona, who required firm governance.[127] And so, in the late Middle Ages English women who previously acted as 'medica' were restricted in their practice to 'nursing, midwifery and home physic.' Proposals for the instruction and licensing of midwives began in England in 1547, while Continental European licensing began in 1452 in Regensburgh.[128] Paris led the way in midwifery education and female students were admitted to the Hôtel-Dieu for instruction from at least the 1630's.[129] Meanwhile, in England the licensing of midwives remained under the control of the local Bishops until in 1642 (as part of the attack on episcopacy) the licensing transferred to the physicians and surgeons at Surgeons Hall London. In Ireland the regulation of midwives passed to the King and Queen's College of Physicians Dublin, as late as 1696.[130]

Criticism appeared in the writings concerning midwives when church, civil, and medical authorities sought increased control over their practise.[131] For instance the clerical authors of the infamous 15th century *Malleus Maleficarum* condemned 'witch midwives (who) commit most Horrid Crimes when they either Kill Children or Offer them to Devils.'[132] The theme was explored in Shakespeare's writing.[133] Even more sobering was the case of the midwife Agnes Sampson who was executed for offering remedies to

[126] Londa Schiebinger, 'Women of Natural Knowledge,' in Katharine Park and Lorraine Daston (eds) *Early Modern Science,* The Cambridge History of Science, (Vol. 3, Cambridge, 2006), p. 193.
[127] Hufton, et al., 'What is Women's History?', p. 39.
[128] Porter, *The Greatest Benefit to Mankind*, pp. 129-30; James Hobson Aveling, *English Midwives their History and Prospects* (London, 1967 reprint of the 1872 Edition), p. 183 (henceforth cited as Aveling, *English Midwives*); Green, 'Women's Medical Practice,' p. 450.
[129] McTavish, Childbirth, p. 85.
[130] Thomas R. Forbes, 'The Regulation of English Midwives in the Sixteenth and Seventeenth Centuries' in *Medical History,* Vol. 8, 3, (July 1, 1964), pp. 235-44, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1033389/pdf/medhist00158-0041.pdf (18 Nov. 2016).
[131] Silvia De Renzi, 'The Sick and Their Healers,' in Peter Elmer (ed.) *The Healing Arts, Health, Disease and Society in Europe 1500-1800* (Manchester, 2004), pp. 34-7.
[132] *Malleus Maleficarum*, part 2, Chapter 13 http://www.sacred-texts.com/pag/mm/mm02a13a.htm (10 Oct. 2016).
[133] Caroline Bicks, *Midwiving Subjects in Shakespeare's England* (Aldershot, 2003), pp. 137-46.

relieve labour pains during an infamous 16th century witch trial.[134] However, despite the reproach and societal strictures it is evident that some English women were highly educated and wrote on women's topics.[135] This was enabled by the introduction of the print medium in the sixteenth century when medical authors made clear that women played a vital role in 'primary medical care' as in domestic medicine.[136] Despite that circumstance 'it was no small feat to be published at this time' according to Hannah Wolley (b.1623) the successful author of many books on cookery and household management.[137] One such book, *A Choice Manual of Rare and Select Secrets* was published in 1653 on behalf of Elizabeth Grey, the Countess of Kent, and outlined treatments for female complaints and childbirth, along with cookery and household recipes.[138] Grey and other women who wrote in similar vein made 'little distinction between medicine and food preparation' in their works.[139] Among the other texts that broached women's medicine came the first series of almanacs specifically for women published on behalf of Sarah Jinner (1657-1664) which dwelt on female conditions and sexuality.[140]

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[134] S. Lurie, 'Euphemia Maclean, Agnes Sampson and pain relief during labour in 16th century Edinburgh' in *Anaesthesia* Vol. 59, Issue 8 (August 2004), pp. 834-5.

[135] Elizabeth Lane Furdell, "A Way to Get Wealth": Women, Print and Medicine in *Publishing and Medicine in Early Modern England* (Rochester, New York, 2002), pp. 92-112.

[136] Susan Broomhall, *Women's Medical Work in Early Modern France* (Manchester, 2004), p. 127.

[137] Leigh Whaley, *Women and the Practice of Medical Care in Early Modern Europe, 1400-1800* (Hampshire, 2011), p. 68 (henceforth cited as Whaley, *Women and the Practice of Medical Care*).

[138] Elizabeth Grey, *A choice manual of rare and select secrets in physick and chirurgery collected and practiced by the Right Honorable, The Countess of Kent, late deceased; as also most exquisite ways of preserving, conserving, candying, &c.;* published by W.I., Gent (London, 1653), pp 74-5 (http://quod.lib.umich.edu/e/eebo) (01 March 2016) (henceforth cited as Grey, *A choice manual of rare and select secrets*).

[139] Mihoko Suzuki (ed.) *The History of British Women's Writing 1610-1690*, in Jenny Batchelor, Cora Kaplan (General Editors), (Vol. 3, Hampshire and New York, 2011), p. 240.

[140] Louis Hill Curth, 'The Medical Content of English Almanacs 1640-1700' in *Journal of the History of Medicine and Allied Sciences*, Vol. 60, No. 3 (2005), pp. 255-282 (henceforth cited as Curth, English Almanacs); A. S. Weber, 'Womens Early Modern Medical Almanacs in Historical Context' in *English Literary Renaissance,* Vol 33 (3) (Nov. 2003), pp. 358-401 (henceforth cited as Weber, Almanacs); Chantelle Thauvette, 'Sex, Astrology, and the Almanacs of Sarah Jinner' in *Early Modern Women: An Interdisciplinary Journal*, Vol. 10, (Fall, 2010), pp. 243-49 (henceforth cited as Thauvette, Sarah Jinner).

Meanwhile, the new published midwifery manuals circulated widely, and their authors Thomas Raynold (Raynald, Raynalde) and Jacob Rueff sought to educate midwives with their writings.[141] The French midwife Louise Bourgeois and the English Jane Sharp both published midwifery manuals and were to the forefront of early midwifery education, and their texts were read in lay society.[142] It seems probable that some midwives were ill-educated and others well-educated, however Wolveridge held a high opinion of the 'unwearied pains and skill of dextrous midwives' and wrote his *Speculum Matricis* 'to inform the less knowing' with the aid of his fictitious midwife Eutrapelia (denoting kindness and wit), a further demonstration of his admiration for midwives.[143] The education for midwives proposed in midwifery manuals remained a topic long thereafter as evidenced by Aveling in the nineteenth century who wished 'to raise them to a more refined and intellectual position.'[144]

The question of male involvement in midwifery and women's medicine is a debate that lingered. Although childbirth was under the control of midwives in ancient Greece 'some physicians … treated female illnesses … Moreover, in complicated obstetrical cases, the male physician was called in.'[145] This model of care was replicated over the centuries with physicians or surgeons involved to a variable extent in both practical and theoretical aspects of women's medicine, and in some cases of difficult childbirth when called upon. In the late thirteenth and early fourteenth centuries the treatment of gynaecological problems was 'often a fundamental part of the

[141] Raynold, *The Byrthe of Mankynd.*
[142] Hobby, *Jane Sharp, The Midwives Book,* Letter To The Midwives of England, prefatory pages (henceforth cited as Hobby, *Jane Sharp, The Midwives Book*); Rueff, *The Expert Midwife*, A 4.
[143] Audrey Eccles, 'The Early use of English for Midwiferies,' p. 377; Lianne McTavish, 'Childbirth and the Display of Authority in Early Modern France' in *Women and Gender in the Early Modern World,* Series Editors Allyson Poske and Abby Zanger (Hampshire, 2005), p. 8 (henceforth cited as McTavish, Childbirth): Wolveridge, *Speculum Matricis*, 1670, A4v and A26v; Daphna Oren-Magidor 'Literate Laywomen, Male Medical Practitioners and the Treatment of Fertility Problems in Early Modern England' in *Social History of Medicine*, Vol. 29 (2) (May 2016), pp 290-310.
[144] Aveling, *English Midwives*, sig. A6v.
[145] Temkin, Soranus' Gynecology, xxxvii.

medical care of north Italian male physicians.'[146] Also 'In early modern Europe, medical men (sometimes known as "man-midwives") became increasingly involved in the traditionally female-dominated sphere of childbirth.'[147] Willughby was one such.

In ancient time physicians practised medicine and surgery but that situation changed later when physicians were educated in universities where their curricula centred on diagnosis and therapeutics rather than manual skills. Additionally, physicians were a rarity in communities, not readily available for consultation, and their services were costly. Indeed, they were forbidden to practice midwifery in Ireland in the eighteenth century.[148] Surgeons served an apprenticeship in which surgical procedures and manual interventions were to the fore. Thus, they were more likely to become involved in midwifery, as evidenced by the French *chirurgiens accoucheurs* (surgeon-men-midwives) of the Hôtel-Dieu de Paris.[149] As an example, the French surgeon Ambroise Paré is his sixteenth century tract on midwifery wrote 'for by putting my hand into the womb, I have felt the infant comming forth'; he re-introduced the practical method of podalic version and breech extraction known in antiquity but apparently forgotten.[150]

The German surgeon Hildanus (William Fabry, 1560-1634), whose spouse was a midwife, also described how he conducted complex cases of childbirth.[151] In the early seventeenth century man-midwifery was recorded in England by the Chamberlen family.[152] In 1637 the English translator of Rueff's the *Expert Midwife* wrote 'perhaps also a great deale more worke might be made for men-midwives, then yet is, although there be too too much already.'[153] The topic of man-midwifery was also raised in an

[146] Green, 'Women's Medical Practice,' p. 457.
[147] Katherine Phelps Walsh, *Parturition and Print in Seventeenth-century London,* (Ph.D. Thesis University of Pittsburgh, 2014).
[148] Widdess, *Royal College of Physicians,* p. 65.
[149] McTavish, Childbirth, p. 1.
[150] Johnson, *Ambrose Parey,* pp. 900, 902.
[151] Ellis W. P. Jones, 'Guilhelmus Fabricius Hildanus (1560-1634)' in *Medical History*, Part II, Vol. 4 (Jan 1 1960), pp. 199-210.
[152] Dunn, 'The Chamberlen family'.
[153] Rueff, *The Expert Midwife*, Sig. A4v.

encomium to the *Speculum Matricis* by Aquila Smyth M.D. with the words 'man-midwives out a birth' although his statement does not indicate that he or Wolveridge were involved in practical midwifery.[154] Percivall Willughby, possibly the first medical man in England to devote his practice entirely to obstetrics, completed a manuscript of midwifery (in the 1670's) which featured childbirth cases he was involved with from the 1630's onwards.[155] In the MS he wrote 'Every delivery hath taught me something, or, at least, hath confirmed my practice.'[156]

The man-midwife, defined as one who 'acted in lieu of a midwife, the medical man who delivered normal births' (non-natural ones also of course), became more prominent from the eighteenth century.[157] Controversy raged among the medical and lay communities for many years concerning the presence of men-midwives at childbirth. The introduction of the obstetric forceps in the early 1730's had a remarkable impact in (certain cases of) difficult childbirth, a boon to midwifery, and to the practice of man-midwives in particular, as midwives did not often use the instrument.[158] The establishment of 'lying-in hospitals staffed by both midwives and medical men' in the mid-eighteenth century led to an era of increased medical involvement in childbirth and women's diseases.[159] Yet, in nineteenth century England *Man-midwifery Exposed* (written by a prominent physician) was addressed to the Society for the Prevention of Vice in which the author stated the practice was 'a silent piece of well-dressed vice.' [160]

While many essential sources are cited in this review of midwifery history there are many other central writings on women's roles in medicine

[154] Wolveridge, *Speculum Matricis* 1670, sig. a2.
[155] Peter M. Dunn, 'Dr. Percivall Willughby, MD (1596-1685): pioneer "man" midwife of Derby' in *Archives of Diseases in Childhood*, Vol. 76 Issue 3 (1997), F212-3.
[156] Willughby, *Observations*, p. 12.
[157] Wilson, *Man-Midwifery*, p. 1.
[158] Wilson, *Man-midwifery* p. 66.
[159] W. F. Bynum, *Science and the Practice of Medicine in the Nineteenth Century* (Cambridge, 1994), pp. 202-3; Wilson, *Man-midwifery*, p. 66.
[160] John Stevens, *Man-Midwifery Exposed or the Danger and Immorality on Employing Men in Midwifery Proved and the Remedy found For the Evil* (London, 1849), dedication p. 2 Henceforth cited as Stevens, *Man-Midwifery*).

and midwifery, mainly by female authors, which clarified our understanding of the roles of female physicians, midwives and healers over the millennia.[161] Recently it is claimed that the historiography of early modern midwifery in Britain dealt mainly with midwives as practitioners and much less so on women as patients.[162]

With regards to the limits of current findings and materials, much is achieved in midwifery history, as evidenced in the foregoing description. The scarcity of women's publications has been a major drawback to a fuller appreciation of their roles, but examination of available texts and of personal journals, and diaries, or other non-published or printed sources leads to greater understanding. Another restriction in the past was the apparent lack of a unified approach between those classified as traditionalists and the social historians.

In this Introduction a review of the new science and medicine, and its key personalities, that antedated the publication of Wolveridge's *Speculum Matricis* of 1670 is presented. This is followed by an appraisal of chapter outlines in the dissertation, along with their themes, key questions, and summaries, to further clarify the central and subsidiary queries of the thesis. The research on similar texts to the *Speculum Matricis* is examined. Additionally, there are comments about the historiography of midwifery and medicine. Finally, elements of the theory and practice of midwifery from antiquity to the Wolveridge's time is presented to inform and contextualise what are regarded as neglected areas in medical aspects of women's history.

[161] Whaley, *Women and the Practice of Medical Care*; Silvia De Renzi, 'Women in Medicine,' pp. 196-227; Evenden, *The Midwives of seventeenth-century London*; Marland, *The Art of Midwifery*; Perkins, *Louise Bourgeois*); Eccles, *Obstetrics and Gynaecology in Tudor and Stuart England*; Gerard M. Fealy (ed.), *Care to Remember, Nursing and Midwifery in Ireland* (Cork, 2005); and others mentioned herein in relation to midwifery and herbal medicine.
[162] Wendy D. Churchill, 'Female Patients in Early Modern Britain. Gender Diagnosis, and Treatment' in *The History of Medicine in Context*, Series Editors Andrew Cunningham and Ole Peter Grell (Surrey and Burlington, 2012), p. 39.

Chapter One - Galenic medicine

Introduction

'Wolveridge's *Speculum Matricis:* a mirror on antiquity?' considers whether his midwifery manual draws mainly or exclusively on the Galenic medicine of antiquity. In this chapter a résumé of that medical model is considered, with reference to midwifery. Later chapters will examine links to ancient and current medicine and midwifery during Wolveridge's education, and as established from his text.

The medicine of antiquity in the West flourished in the era prior to the 6th century A.D. and was epitomised by Galen whose aim as a physician was to heal the sick 'for the love of mankind' and to rescue medicine from what he considered was decrepitude.[163] But to appreciate the impact of the tenets of Galen during the seventeenth century, and of the other medical authorities of antiquity he exemplifies, the first essential is to clarify who these authorities were with reference to the *Speculum Matricis*.

Early Greek medicine

In Western medicine it is 'customary for us to look upon Hippocrates' as a very ancient scientific figure but Egyptian medicine flourished for millennia prior to the 'dawn of Hellenistic civilization.'[164] In consequence some of the earliest observations on women's medicine are found in ancient Egyptian Papyri some of which informed Greek medicine.[165] By the sixth century B.C. ancient Greek medical practice could deliver accurate observation of the sick person and prognosis of her or his outcome. Efforts were made to categorise various ailments and their likely remedies and the responses to such treatments. This early medical knowledge was recorded in what later

[163] *Cambridge Dictionary* http://dictionary.cambridge.org/dictionary/english/antiquity (9 March 2017); Susan P. Mattern, *The Prince of Medicine, Galen in the Roman Empire* (Oxford, 2013), p. 289 (henceforth cited as Mattern, *Prince of Medicine*); R. J. Hankinson (ed.), 'The man and his work' in *The Cambridge Companion to Galen* (Cambridge, 2008), p. 24.
[164] Ricci, *The Genealogy of Gynaecology*, p. 9.
[165] Griffith, *Kahun*; Ebbell, *Papyrus Ebers*; Breasted, *Edwin Smith Papyrus*, pp. 490 & 505; Estes, *Ancient Egypt*, pp. 55-61.

became known as the 'Hippocratic' writings which had a major impact on the precepts of Galenic medicine.[166]

Hippocrates (460-370 B.C.), later termed the Father of Medicine, was born on Kos into an Asclepiad family.[167] Hippocrates was taught by his father and then travelled extensively to centres of healing to gain further knowledge. In time, he developed the art of clinical observation and described many illnesses and disease patterns. Hippocrates became a prominent practitioner and teacher. He kept records of his cases, and came to personify the ideal physician.[168] A 17th century chronicler wrote that Hippocrates was 'our great master.[169] Hippocrates is still acknowledged nowadays as the 'foremost representative of classical Greek medicine.'[170] A great body of medical tracts known as the *Corpus Hippocraticum* or *Opera Omni* was attributed to Hippocrates. Some texts were written by him, while others were penned by associates or former pupils of the Hippocratic School. A summary will highlight some of my observations on translations of portions from the *Corpus*.[171]

The Hippocratic collection included reflections on *Air, Waters, Places* in which it was established that some diseases were influenced by seasonal changes and geographic locations. Within that segment of the works, the effects of climate and locality on women's reproductive cycles, pregnancy and birth were featured. In the tract entitled *Epidemics*, the environmental factors in causation of diseases were also a theme and Hippocrates related medical case histories of forty-two patients of whom twenty-five did not

[166] McGrew & McGrew, *Encyclopedia of Medical History*, pp. 118-22.
[167] Anton Sebastian, *A Dictionary of the History of Medicine* (New York and London, 1999), pp. 393-4.
[168] Garrison, *History of Medicine*, pp. 92-105; Guenther B. Risse, 'History of Western Medicine from Hippocrates to Germ Theory' in Kenneth F. Kiple (ed.), *The Cambridge World History of Human Disease* (Cambridge, 1993), p. 11; Guenther B. Risse 'Medical Care' in W. F. Bynum and Roy Porter (eds), *Companion Encyclopedia of the History of Medicine* (Vol 1, London and New York, 1997), pp. 1-9 (henceforth cited as Risse, *Medical Care*).
[169] Walter Charleton, *Two Discourses* (London, 1669), p. 194.
[170] Risse, *Medical Care*, p. 51.
[171] Adams, *The Genuine Works of Hippocrates*); W. H. S. Jones (ed.), *Hippocrates Collected Work* (Cambridge, 1868); J. Chadwick, W.N. Mann (eds), *Hippocratic Writings* (London, 1983), p. 68 (hencefort cited as Chadwick & Mann, *Hippocratic Writings*).

survive. Included among the case histories were those of fourteen women of whom seven died, one following a twin pregnancy. Illness complicated pregnancy in eight of the women whose cases were discussed. In another book entitled *Precepts*, Hippocrates offered advice and recommendations to physicians about their everyday practice and how to be an effective healer. In the *Book of Prognostics* Hippocrates detailed the techniques of patient observation and clinical examination and wrote that 'he will manage the cure best who has foreseen what is to happen from the present state of matters.'[172]

Aphorisms is thought to be genuine Hippocratic writing. The aphorisms were short statements on various matters of medical import. The maxims proved very popular and were available in manuscript form until the advent of printing when they were translated to Latin, French and English.[173] The aphorisms printed in three distinct publications in English from the early 18th to the mid-19th centuries proved on examination to be almost identical. Each aphorism was numbered and contained within a specific section matched to the opinions articulated. Within section five of the *Aphorisms* there are thirty-five that related to women and pregnancy and a further five were contained in other segments.[174] One of the three translations of the aphorisms mentioned above contained fewer aphorisms while another carried both the Latin and literal English translation of each aphorism. The most detailed, with an explanation of each aphorism and references to expert commentary on each from other authors, is based on an edition of *Hippocrates Opera Omnia* in Greek and Latin published the year

[172] Charles Darwin Adams (ed.), *Hippocrates, Prognosticon*, http://www.perseus.tufts.edu/hopper/text?doc=Hp.%20Prog [Accessed 5 September 2017].

[173] William Thomas Lowndes, *The Bibliographer's Manual of English Literature: Containing an Account of Rare, Curious, and Useful Books, Published in or Relating to Great Britain and Ireland, from the Invention of Printing; with Bibliographical and Critical Notices, Collations of the Rarer Articles, and the Prices at Which They Have Been Sold* (Vol 3, London, 1834), p. 394.

[174] Sprengell, *Aphorisms*; Marks, *Aphorisms*; Adams, *The Genuine Works of Hippocrates*, pp. 292-322.

after Wolveridge graduated from Trinity College Dublin.[175] The *Opera Omnia* contains more than 1,000 pages, and detailed the essential knowledge that students of medicine should be conversant with. Among other writings in the *Corpus Hippocraticus* is the *Oath* which is not generally believed to be genuine Hippocratic writing but an expression of the medical ethics championed by the school at Kos and administered to medical graduates in many Continental universities over the centuries.[176] The works of Hippocrates influenced medical text books to the mid-nineteenth century.

The doctrine of the humours originated in Greece and found its first expression in the Hippocratic writings.[177] The system sought to explain illness by its relationship to four body humors, primarily chymoi or fluids.[178] The doctrine led to a definitive medical system and was heavily influenced by Galen in the second century A.D. Humoralism remained the authoritative system of Western medicine until its gradual decline during the sixteenth and seventeenth centuries. However, it continued as an influential mode of medical thought until the nineteenth century. The doctrine of the humors involved four elements, four qualities and four humors. It was believed that all existing matter was composed of the four elements, earth, air, fire and water. Each element had a dominant or subordinate quality. The elements and their qualities were as follows: earth could be cold and dry; air was hot and moist; fire could be hot and dry, and water was cold and moist. In the body the four elements were represented by the four humors, blood, phlegm, black bile and yellow bile, and all should be in balance. It was believed that illness was due to imbalance among the elements, qualities and humours. The balance or imbalance could be treated by diet, by exercise or natural cure, for Hippocrates believed in Vis Medicatrix Naturae, the

[175] Johannis Anton Vander Linden, *Hippocratis Coi Sive Magni Opera Omnia Graece Et Latine* (Lugduni, 1665).
[176] Garrison, *History of Medicine*, p. 96.
[177] Siraisi, *Medicine*, p. 104.
[178] Nutton, 'Medicine in the Greek World', p. 24.

healing power of nature, and made little use of medications.[179] The remedies availed of had various 'qualities' being temperate, hot, cold, moist, or dry in one of four categories of 'degrees'. Medicines were then appropriated to different body parts, for instance those for the womb (Greek, hysteros) being classed as 'Hystericals'. The medications were further sub-divided into twenty-four classes such as emollient, drawing, scarifying and purging while special attention was shown to those stimulating menstruation and for increasing or reducing lactation.[180]

Later the concept of 'degrees' was added to the doctrine of humors by Galen. For instance, a food substance could have a first or second-degree influence on the humors. Thus, sugar could be cold in the first degree, warm in the second degree, moist in the first degree and dry in the second degree. Even personality traits and temperaments could be described in the humoral system, such as sanguinary, choleric, splenetic or bilious.[181] In the following centuries the Greek dominance on the practise of medicine and philosophy remained with humoral medicine firmly in place as a device for both diagnosis and treatment.

A second intellectual who informed elements of Galenic medicine was Aristotle (384-322 B.C.) the son of a physician from Stagira in Thrace who studied with Plato at the Academy in Athens. When Plato died Aristotle travelled in Asia Minor and Macedonia and there, by invitation of the King of Macedon, he became tutor to his son Alexander, later styled The Great.[182] When Aristotle returned to Athens he established the Lyceum (an academy) close to the site of the temple dedicated to Apollo Lyceus, the God of healing.[183] Although he was not a physician, Aristotle laid the foundations of comparative anatomy and embryology while agreeing with the doctrine of

[179] Douglas Guthrie, *A History of Medicine* (London, 1947), p. 57 (henceforth cited as Guthrie, *A History of Medicine)*; P. N. Singer, *Galen. Selected Works* (Oxford, 1997), x (henceforth cited as Singer, *Galen. Selected Works*).
[180] Nicholas Culpeper, *Pharmacopoeia Londinensis, or, the London Dispensatory of 1654* (Boston, 1720), pp. 271-308 (henceforth cited as Culpeper, *Pharmacopoeia Londinensis*).
[181] McGrew & McGrew, *Encyclopaedia of Medical History*, pp. 142-4.
[182] Porter, *The Greatest Benefit to Mankind*, p. 64.
[183] Lloyd, *Aristotle,* pp. 3-18.

humors. His influence in the fields of philosophy and medicine continued apace with that of Hippocrates. Aristotle's intellectual development may be divided into three phases, the first Athenian period, the period of his travels and the second Athenian period.[184]

Aristotle's works include those that were circulated but now lost and those extracted from unpublished manuscripts recovered after his death. At or about 60 B.C. the latter treatises were arranged in Rhodes, taken to Rome, edited and disseminated later that century.[185] In the Middle Ages Aristotle was acknowledged as the true representative of philosophy from antiquity.[186] Aristotle systematically observed nature and for almost two millennia his methods were the basis for scientific investigation. His practical and theoretical writings on the study of anatomy, embryology, and zoology were of vital importance in the development of medicine and midwifery. The *Corpus Aristotelicum* included a tract entitled *De Generatione Animalium* which is of great significance to our understanding of human reproduction.[187]

De Generatione Animalium contained very detailed scrutiny and discussion on the parts of animals, on their movements and on their generation. Within the tract there are references to human biology, particularly relating to reproduction, many of which are accurate and keenly observed. A notable example is Aristotle's model of development of the fetus in utero, based on his observations in animals. Aristotle developed the classic concept referred to as 'epigenesis' which theorised that the embryo developed from a seed or egg through a sequence of events while growing in the womb. His concept is close to the current view. A later competing theory of 'preformation' suggested that a miniature person was present in sperm, a homunculus, from which the embryo matured. The debate on

[184] Ibid., p. 20.
[185] Anselm H. Amadio, Anthony J. P. Kenny, *Aristotle*, *Encyclopedia Britannica* (Encyclopedia Britannica Inc.) (http://www.britannica.com/biography/Aristotle) (15 March 2014).
[186] Richard Robinson, *Aristotle. Fundamentals of the History of His Development* (2nd ed., Oxford, 1962), pp. 368-9.
[187] Platt, *De Generatione Animalium,* pp. 714-89.

epigenesis continues in genetics and philosophy.[188] In his topics on generation Aristotle included the organs of reproduction, the menstrual cycle, the qualities of semen, fertility and the optimum time for conception, and fetal development. Aristotle also related that Aphrodite the Greek Goddess of love, beauty and procreation was named after 'semen (which) is of the nature of foam (on sea water), at least it was from this they named the goddess who presides over union.'[189] Aristotle's writings on generation retained their influence through the 19th century.

Of major importance to the development of midwifery was the Greek physician Soranus who studied at Alexandria and practised medicine and midwifery in Rome. He lived in the 2nd century A.D. and died about the time Galen was born. At that period there were three medical sects: the 'dogmatists' who believed in rational scientific investigation as the basis of medicine; the 'empiricists' who made experience their main principle; and the 'methodists' who rejected both aetiological research and experience, as well as the humoral causes of disease. While Soranus was a 'methodist' he referred to humours in his writings and offered some therapies of similar nature to Hippocrates.[190]

In his writings Soranus cited, debated, sifted and enlarged the materials of his predecessors (especially Herophilus who wrote the first book on midwifery). Soranus added practical and theoretical information while evaluating the precepts of the extant knowledge on midwifery and women's ailments, and his *Gynecology* represented ancient gynaecological and obstetrical practice at its zenith.[191] Soranus's *Gynecology* was quoted by the Byzantine physicians Aetius of Amida and Paul of Aegina. Paraphrased into Latin, most notably by Moscio (Muscio) about 500 A.D., the text was popular

[188] Jane Maienschein, 'Epigenesis and Preformationism' in Edward N. Zalta (ed.), *Stanford Encyclopedia of Philosophy* (Stanford, 2012) (http://plato.stanford.edu/entries/epigenesis/) (16 March 2014).
[189] Platt, *De Generatione Animalium,* p. 736a.
[190] Owsei Temkin, *Soranus' Gynecology* (Baltimore, 1956), xxv-xxx, pp. 50, 53, 123, 160.
[191] Temkin, *Soranus' Gynecology,* xxv.

during the medieval period. The transmission of Soranus's *Gynecology* and its reception is featured in many publications.[192]

The Prince of Medicine was Galen of Pergamum (c.129-200 A.D.). Born in Roman Asia Minor he lived during the Graeco-Roman Period (156 B.C.-576 A.D.).[193] Galen's works became the unimpeachable authority on medicine for almost fifteen hundred years and thus he was probably the most influential writer on medical topics of all time.[194] By the age of fourteen Galen was immersed in the studies of anatomy, the doctrines of Hippocrates, philosophy and natural science. He travelled widely to further his medical education and studied at Alexandria, a renowned centre of medicine, where he had the opportunity to observe clinical practice. Meanwhile he developed a profound interest in the healing properties of plants and minerals. Galen became physician to Emperor Marcus Aurelius (121-180 AD) and gained a reputation as a skilful physician and surgeon while living in Rome. Galen's medicine was based on the humoral tradition. In treatments he used bloodletting, purging and cuppings but also advocated dietary measures, rest and exercise, in the Hippocratic convention. The prevention of illness through correct diet and hygiene were important to his practice.

Galen's understanding of anatomy was principally based on observations of the structure of the Barbary ape and other animals, as human dissections were forbidden at that time. The misconceptions in his understanding of human anatomy were not detected until Vesalius sought to correct them in his *De Fabrica Humani Corporis* of 1543. Galen wrote voluminously on the topics of anatomy, medicine, dietetics, hygiene and philosophy in his native tongue, Greek being the language of science and medicine. He provided a complete medical system and his doctrinaire style, accompanied by the inclusion of previous Greek medical knowledge

[192] Temkin, *Soranus' Gynecology*, xliv-xlix; Ingerslev, 'Roesslin's Rosengarten, No.1, pp. 1-25, (p. 7); Green, 'Eucharius Roesslin', pp. 167-192 (pp. 175-80); Arons, *Eucharius Roesslin,* pp. 4-5; and others.
[193] Garrison, *History of Medicine*, p. 112.
[194] Lyons and Petrucelli, *Medicine, an Illustrated History*, pp. 251-61.

(particularly that of Hippocrates), delivered in a doctrinal fashion, endeared him to the renowned medical writers who followed. Galen became enshrined as a source of all worthwhile knowledge in medicine, accompanied by his great predecessor Hippocrates. In Western medicine Galen became the final authority in all things medical for over fourteen hundred years.

The titles of the works in Galen's Corpus were clarified in the nineteenth century and again in recent times.[195] In his *On the Natural Faculties* Galen wrote of the genesis, growth, and nutrition of animals. Genesis required that the seed be cast into the womb following which the generation of parts of the body would occur. Fetal development was then compounded by alteration and shaping of the body structures with subsequent growth, all of which required adequate nutrition.[196] Galen debated philosophical points of view that related to the role of semen or nature in determining the development of body parts. In his view semen was the active principle of the animal, the material principle being the menstrual blood.[197]

Dealing with the uterus as a hollow organ and its ability to retain the fetus throughout pregnancy Galen wrote that Hippocrates was the first observer to discover that the 'os uteri' (the entry to the womb) was closed in pregnancy.[198] During birth the 'os uteri' opened and the uterus, aided by expulsive forces of surrounding structures, expelled the foetus. The progress of labour and gradual opening of the 'os uteri' was recorded by the attending midwife. When it was time for the birth the woman was moved to a birthing chair.[199] Galen was aware of the presence of oblique muscle fibres in the

[195] Carl Gottlob Kuhn, *Galen Opera Omni* (Leipzig, 1833); Christopher Jon Elliott, 'Galen Rome and the Second Sophistic' (Ph.D thesis, Australian National University, 2005), vi-ix; Susan P. Mattern, *Galen and the Rhetoric of Healing* (Baltimore, 2008), pp. 11, 63; Vivian Nutton, *Karl Gottlob Kuhn and His Edition of the Works of Galen* (Oxford, 1976).
[196] Arthur John Brock, *Galen on the Natural Faculties* (Vol 2 and 3, Cambridge Mass., 1952), pp. 19-27.
[197] Ibid., pp. 127-39.
[198] Ibid., pp. 227-9.
[199] Ibid., pp. 229-35.

uterine wall that allowed the retentive capacity of the uterus despite continued fetal growth.[200] When the uterus could no longer bear to be stretched due to excessive bulk, weight, or due to the escape of uterine liquor, then either miscarriage or labour, accompanied by pain, could supervene.[201] Galen wrote on the topic of infertility in his commentary on Hippocrates' *On the Nature of Man* and he was clear that either the womb or the semen could be at fault. A certain well-balanced combination of the uniting partners, being appropriate to each other, was required for generation.[202]

Although Galen's works were previously available as English and Latin translations, two new versions were published the decade prior to Wolveridge graduating as a physician, of which he would have been aware. A translation by Culpeper with medicines appropriate to the womb, to promote the terms (menses), to increase or take away milk, and regarding the seed was titled *Galen's Art of Physic*.[203] Four years later a translation of *Galen's Method of Physic* was published, with additional commentary. This was a book on therapeutics with nostrums and their modes of application being addressed. There was little of interest for midwifery, the brief remarks being confined to inflammation in the 'Matrix (womb) and Privities' and how to 'recall' the menstrual flux by application of cupping-glasses to the 'Groins and Privities.' However, a personal insight to Galen's beliefs was afforded by his conviction that 'Half of his work is done, who hath it well begun.'[204]

The early history of medicine is described in eras, beginning with ancient Greece as outlined. This was followed by the era of Hellenism in Alexandria (331 BC-146 A.D.) which is renowned for its anatomists and the

[200] Ibid., pp. 281-2.
[201] Ibid., pp. 283-9.
[202] W. J. Lewis, *Galen: On Hippocrates on the Nature of Man* (Medicina Antiqua, 2004), pp. 47-9 (http://www.ucl.ac.uk/~ucgajpd/medicina%20antiqua) (20 March 2014).
[203] Nicholas Culpeper, *Galen's Art of Physic* (London, 1652).
[204] Peter English, *Galen's Method of Physick: Or, his Great Master-Peece* (Edinburgh, 1656), pp. 286, 288-9, 298, 129.

botanist Crateus who became the first illustrator of plants and includes the fore-mentioned Herophilus who wrote a text on midwifery.[205]

Name	Associated with
Hippocrates (460-377 B.C.)	*Corpus Hippocraticus*, Humoral medicine
Aristotle (384-322 B.C.)	*Historia Animalium*, *De Generatione Animalium*
Theophrastus (370-287 B.C.)	*De Historia Plantarum*, Biology and Botany *On Stones*
Herophilus (335-280 B.C.)	The first anatomist
Erasistratus (304-250 B.C.)	Founded anatomy school with Herophilus
Crateuas (1st cent. B.C.)	Rhizotomikon, medical botany
Celsus (1st cent. B.C.)	*De re Medicina*, notes on Hippocrates' Aphorisms
Dioscorides (c. 40-90 A.D.)	*Materia Medica*, a pharmacopoeia
Soranus (1st cent. A.D.)	*Gynecology*
Galen (131-201 A.D.)	*Corpus Galeni*, over 100 books on medicine

Table 1.1: Greek, Alexandrian and Graeco-Roman physicians and their associations.

When the Roman armies defeated the Greeks at Corinth in 146 B.C. the next era began, that of Graeco-Roman medicine. Greek peripatetic physicians introduced their medical practise to Rome and the Roman Empire whose domestic health system was poorly developed. Soon the great era of Graeco-Roman medicine flourished.[206] The main authors from the eras of ancient Greece (776-330 B.C.), Alexandria (founded 331 B.C.) and Graeco-Roman antiquity (156 B.C.-567 A.D.), and their associations are included for ease of reference in Table 1.1.[207]

[205] Garrison, *History of Medicine,* pp. 102-5.
[206] Ibid., pp. 105-20.
[207] Charles Singer, *A Short History of Medicine* (New York, 1928), pp 1-82; Garrison, *History of Medicine*, pp. 79-193; Guthrie, *A History of Medicine*, pp. 39-134; Porter, *The Greatest Benefit to Mankind,* pp. 44-134.

In the Byzantine Era (330 B.C. -1453) the compilers of medicine, Oribasius of Constantinople, Aetius of Amida, Alexander of Tralles and Paul of Aegina kept the precepts of Greek medicine alive.[208] Much of this knowledge went to the West via Jewish and Arab scholars (736-1096 A.D.).[209] Ibn Sina or Avicenna (980-1037 A.D.) became the best known; his *Canon of Medicine* owes much to Galen and Aristotle and was popular in a Latin translation of the Middle Ages.

Name	**Comments**
Celsus (2nd cent. A.D.)	*De Re Medicina* (encyclopaedia of medicine)
Oribasius (325-403 A.D.)	*Synagoge*, anthology of medicine
Aetius (502-575)	*Tetrabiblion*, compilation of Soranus and others
Alexander (525-c605)	Twelve Books on Medicine
Paul (c.625-690)	*Epitomae medicae libri septem*, obstetrics, paediatrics
Isaac (c. 855-955)	A book on Uroscopy, and other treatises
Rhazes (860-932)	*Continens*, a medical encyclopaedia
Haly ben Abbas (d. 994)	*Liber Regis* a canon of medicine
Avicenna (980-1037)	*Canon*, medicine akin to Aristotle and Galen
Albucasis (1013-1106)	*Collection*, surgery based on Paul of Aegina
Pseudo-Mesue	*Grabadin*, apothecary's manual of c 1400 drugs

Table 1.2: The authors from Rome, and the Byzantine, Muslim and Jewish Periods.

In time, many Arabic translations of the ancient Greek texts found their way to Italy and were compiled at Monte Casino and transcribed to Latin at Salerno during the eleventh and twelfth centuries.[210] The medical school at Salerno originated about the 9th century A.D. and the municipality became known as Hippocratica Civitas, the City of Hippocrates, and an honour that

[208] Ibid., pp. 121-39.
[209] Ibid., pp. 121-39.
[210] Siraisis, *Medicine*, p. 188.

reflected the scholarship of its translators of the Greek medical writings of antiquity. The principles and practice of medicine of ancient Greece, much of it already lost or forgotten, thus found its way back to Europe.

Greek medicine of antiquity became the dominant medical system based on the ancient canons of Hippocrates, Aristotle and Galen and on the diverse commentaries on those works by a panoply of authors and compilers, as shown in table 1.2. In the sixteenth and subsequent centuries new translations of the original ancient Greek manuscripts became available and aroused further and continuing great interest, particularly among Humanists.[211] The advent of printing exerted an enormous influence on medicine and the intellectual development of the 16th century and thereafter. A revival in the learning of the Greek language in the 15th century meant that original works could be accessed thereby by-passing many of the Arabic and Latin translations which were to some extent altered by the additions and commentaries of their translators.[212] Almost six hundred new editions and translations of Galen's works were published in the sixteenth century.[213] The introduction of medical botanical gardens in the late 16th century allied with the alchemical works and many new scientific discoveries gradually impacted on medical teaching in the 17th century. However, the writings and influence of Hippocrates and Galen were still pre-eminent and 'Galenic medicine' held its place on the medical curricula. The influence of ancient Greek medicine continued to the 19th century and some elements are present still.

The transmission of knowledge through the ages and its reception in Europe was evident in all the books cited in this thesis. That tradition was reinforced much later when the Sydenham Society was established in 1843 to translate and publish classic European medical books from years gone

[211] Siraisi, *Medicine*, p. 88; Brockliss and Jones, *The Medical World of Early Modern France*), p. 95.
[212] Hare, *Medical Education*, pp. 285-91.
[213] Eve Keller, *Generating Bodies and Gendered Selves. The Rhetoric of Reproduction in Early Modern England* (Seattle and London, 2007), p. 47 henceforth cited as Keller, *Rhetoric of Reproduction*).

by.[214] Thomas Sydenham (1624-1689), the so-called 'English Hippocrates', was a renowned physician after whom the society was named, and was a contemporary of James Wolveridge.[215] In 1847 during a meeting of the American Medical Association the Sydenham Society's recent publications were offered for review.[216] Eventually The Loeb Classical Library was established by 1911 in America to 'capture all the fugitive texts of the ancient world.'[217] Numerous texts from bygone eras are available due to the tradition of transmission.

Conclusion

In this chapter are comments on the medical authorities of antiquity, the medicine of the era being epitomised as Galenic medicine, along with résumés on humoural medicine and aspects appropriate to midwifery which would have influenced Wolveridge's medical knowledge, with reference to the *Speculum Matricis* of 1670. While Hippocrates and Galen were the leading figures on the medicine in antiquity, Aristotle and his writings on embryology and biology also played a significant role. However, the *Gynecology* of Soranus was the leading source on midwifery and formed the basis for the authors of midwifery manuals in the 16th century from which Wolveridge would derive information.

[214] Geofrey Guy Meynell, *The two Sydenham Societies. A history and bibliography of the medical classics by the Sydenham Society and the New Sydenham Society (1844-1911)* (Acrise, Kent, 1985).
[215] John Dixon Comrie, *Selected Works of Dr Thomas Sydenham, M. D. with a short Biography and Explanatory notes* (New York, 1922).
[216] *Proceedings of the National Medical Conventions, held in New York, May 1846, and in Philadelphia, May, 1847* (Philadelphia, 1847), p. 44.
[217] Loeb Classical Library (http://www.hup.harvard.edu); Buried History (http://www.hup.harvard.edu) (02 March 2016).

Chapter two – Intellectual influences

Introduction

As the details of his education are unknown the aim of this chapter is to provide details of Wolveridge's life and to reconstruct the intellectual influences and likely academic formation of a physician prior to graduation from Trinity College Dublin in 1664. His presumed education to the attainment of his M.D. is examined through the oculus of physician training at Oxford and Cambridge Universities and continental Europe; the early years of medical education at Trinity College and the introduction of Laud's 'Statutes'; and the influence of John Stearne. The education of Irish physicians of the era who did not attend Trinity College is also presented.

Biography

Born in England 'the Kingdom of his Nativity', Wolveridge graduated M.D. from Trinity College in 1664.[218] At that time the medical course took fourteen years to complete so if Wolveridge matriculated at age 16 years in 1650 he was 30 years old at graduation and his probable year of birth was 1634. In his year of graduation from Trinity College Wolveridge also entered a marriage licence bond with Brigitt Fisher in the diocese of Cork and Ross.[219] New information reveals that Wolveridge's son Joseph (surname spelled as Woolveridge in the record) was apprenticed to the London Goldsmith Philip Treherne in 1667 but there the record ceases.[220] In 1669 Wolveridge completed his *Speculum Matricis* in Cork during a turbulent time in the history of the city and the manual was published the following year in London.[221] A Dr James Wolveridge was buried in Odiham Hampshire in 1681/2 but the tombstone inscription apparently showed he was 96 years

[218] Wolveridge, *Speculum Matricis* 1670, sig A6v; Burtchaell & Sadlier, *Alumni Dublinenses,* p. 892; Kirkpatrick, *Speculum Matricis,* pp. 577-8.
[219] Gillman, *Index to the Marriage Licence Bonds*, p. 139.
[220] *London's Livery Companies Records of Online*.
[221] Wolveridge, *Speculum Matricis* 1670; *Cork city past and present* http://www.corkpastandpresent.ie/history/historyofcorkcity/1400-1700/corkcity1645-1700/ (14 March 2017).

old, an unlikely event, and that he was married to a Bridget Draper rather than Brigitt Fisher (Wolveridge's spouse), his brother was also noted as married to Bridget Draper.[222] Transcription errors may have occurred.

Standard biographical history sources were examined for details on Wolveridge's life.[223] Additionally, the midwifery history texts cited in the Introduction were studied, as were the histories of Trinity College Dublin, The Royal College of Physicians and The Royal College of Surgeons Dublin, academic publications with citations to Wolveridge, and information available through the Wellcome and other collections. However, little was

[222] Madden et al, *Collectanea*, p. 228.

[223] H. C. G Matthew, Brian Harrison (eds.), *Oxford Dictionary of National Biography* (Oxford and New York, 2004) (henceforth cited as ODNB); Wellcome Library https://wellcomelibrary.org/search-the-catalogues/ (accessed 26 September 2017) (henceforth cited as, Wellcome); Alumni Cantabrigienses http://venn.lib.cam.ac.uk/Documents/acad/2016/search-2016.html (accessed 26 September 2017) (henceforth cited as Cantabrigienses); Alumni Oxoienses http://www.british-history.ac.uk/alumni-oxon/1500-1714 (accessed 26 September 2017) (henceforth cited as Oxienses); Burtchaell and Sadlier, *Alumni Dublinenses*; Margaret Pelling, Francis White, *Physicians and Irregular Medical Practitioners in London 1550-1664 Database* (London, 2004) (henceforth cited as Pelling); W. P. N. Phillmore and Gertrude Thrift (eds) *Indexes to Irish Wills, 5 vols in 1* (vol. 2, Cork and Ross, London, 1910) (henceforth cited as, Phillmore and Thrift); N. Marshall Cummins, *Some Chapters of Cork Medical History* (Cork, 1957) henceforth cited as Cummins, *Cork*); Patrick O'Flanagan, Cornelius G. Buttimer, *Cork History and Society. Interdisciplinary Essays on the History of an Irish County* (Dublin, 1993) henceforth cited as O'Flanagan, *Cork*); Maighread Ni Mhurchadha (Ed.) *The Vestry Records of the Parish of St. Audoen, Dublin 1636-1702* (Dublin, 2012) henceforth cited as Mhurchadha, *Vestry Records*); M. J. McEnery, Raymond Refausse (eds), *Christ Church Deeds* (Dublin, 2001) (henceforth cited as McEnery and Refausse, *Christ Church*); John Thomas Gilbert, *A History of the City of Dublin* (3 vols, Dublin, 1861) henceforth cited as Gilbert, *Dublin*); John O'Hart, *The Irish and the Anglo-Irish Landed Gentry* (Shannon Ireland, 1969) henceforth cited as O'Hart, *Gentry*); Margaret Curtis Clayton (Ed.), *The Council Book for the Province of Munster c. 1599-164* (Dublin, 2008) henceforth cited as Clayton, *Munster*); Robert Pentland Mahaffy (ed.), *Calendar of the State Papers relating to Ireland preserved in the Public Record Office. Adventures for Land 1642 – 1659* (London, 1903) henceforth cited as Mahaffy, *State Papers*); James Mills (ed.), *Registers of the Parish of St. John the Evangelist, Dublin 1619-1699* (Dublin, 2000) henceforth cited as Mills, *Registers*); Patrick Hanks, Richard Coates, Peter McClure, *The Oxford Dictionary of Family Names in Britain and Ireland* (Oxford, 2016) henceforth cited as Hanks et al *Family Names*); Aiden Clarke et al (eds), *Dictionary of Irish Biography* (Cambridge, 2009) henceforth cited as Clarke et al, *Irish Biography*); Richard J. Hayes, *Sources for the History of Irish Civilisation: Articles in Periodicals* (Boston, 1970) (henceforth cited as Hayes, *Sources*); *Journal of the Cork Archaeological Society* http://www.corkhist.ie/search.php#index (titles of articles are searchable; accessed 26 September, 2017) (henceforth cited as *J. Cork Archeology*).

added to that already known, apart from the reference to his son, and the possibility that Wolveridge may, or may not, be interred in Odhiam.

Academic development

The educational requirements for physician training in Trinity reflected those already in vogue in Oxford and Cambridge Universities and the continental Universities and their curricula. So, what were the main course materials and how were they presented to undergraduates? Furthermore, was the medical instruction in those institutions based on translations of the writings of the medical authors of antiquity, or were the authors of antiquity displaced or abandoned because of more recent advances in medical and scientific theory and practice? Answers to the queries posed in this section required research into medical education at Oxford and Cambridge Universities, that available at Continental Universities, and the education of Irish physicians of the era who did not attend Trinity College.

Until the foundation of the Universities of Oxford and Cambridge the art of medicine was largely within the province of the Church.[224] The Royal College of Physicians was formed in London in 1518 and the Royal College then subsumed the power to licence physicians, along with the Universities. Only doctors who were educated at Oxford and Cambridge were eligible for election to the College of Physicians.[225] The first medical lecture appears to have been given at Oxford by Thomas Linacre in 1514 and a lectureship in physic began 40 years later. The appointments of readers in medicine were followed by that of a Regius Professorship in 1546. At Cambridge the lectureship and appointment of a Regius Professor antedated those of Oxford by 30 and 6 years respectively. The medical tutors were expected to teach both theory and practical matters from the texts attributed to

[224] Hare, *Medical Education*; George Clark, *History of the Royal College of Physicians* (Vol. 1, Oxford, 1964); Vivian Nutton, Roy Porter (eds), *The History of Medical Education in Britain* (Amsterdam & Atlanta GA, 1995); 'Early Modern Practitioners' (<http://practitioners.exeter.ac.uk/ >) (15 April 2014).

[225] F. N. L. Poynter, 'Medical Education in England since 1600' in C. D. O'Malley (ed.), *The History of Medical Education* (Los Angeles, 1970), p. 237.

Hippocrates, Galen and other writers and compilers from antiquity whose writings could not be challenged. The manuscript works of those great authors were often bound together to form an Articella, a collection of medical treatises as itemised in table 2.1, often short versions of the original texts, and the method of teaching being by extended instruction.[226] Printed versions of the Articella became available in the 16th century but were gradually replaced by classical texts newly printed and translated from the original ancient Greek versions to Latin. These readily available editions further promoted the classical works of Galen and Hippocrates.[227]

Author	**Book**
Hippocrates (460-370 B.C.)	*Liber aphorismorum*, Aphorisms; *Liber Regiminte Acutorem*, regimen for acute diseases
Galen (131-201 A.D.)	*Liber Tegni* / *Ars Medica*, the art of medicine
Philaretus (7th cent. A.D.)	*De Pulsibus*, from Galen
Theophilus (7th cent. A.D.)	*De Urinis*, short version of Hippocrates and Galen
Johannicus (809–873 A.D.)	*Isagoge,* an outline of Galen's system
Isaacs (855-955 A.D.)	*Liber Febrium*, a book on fevers, a translation
Nicolas (13th century)	*Antidotarium*, a formulary, one of the first medical books printed in 1471 with new drugs from the East

Table 2.1: Articellae for Doctor of Medicine at Oxford and Cambridge.

Although Oxford repealed their (Caroline) Statutes in 1833 the writings of Hippocrates and Galen, complemented by those of the Greek physician Arateus (1st century A.D.) and the Roman encyclopaedist Celsus (1st century

[226] C. H. Talbot, 'Medical Education in the Middle Ages' in C. D. O'Malley (ed.), *The History of Medical Education* (Los Angeles, 1970), pp. 73-88; Harley, 'Harley Ms Articella' (http://www.bl.uk/manuscripts) (11 March 2014).
[227] C. D. O'Malley, 'Medical Education During the Renaissance' in C. D. O'Malley (ed.), *The History of Medical Education* (Los Angeles, 1970), p. 93.

B.C.) were still included in the curriculum, any two of the authors being made use of in the examinations.[228]

The English medical education was like that available to an aspiring physician at Dublin's Trinity College. Oxford granted two medical degrees, the Bachelor of Medicine and the Doctor of Medicine. Licenses to practise medicine and surgery could be conferred on both, or in the absence of an M.D. degree provided the candidates were assessed as suitable and had spent a requisite time in the study of medicine. If those admitted by incorporation and per Literas Regias are omitted it was estimated that during the years 1500-1859 some 1,400 men graduated in medicine and/or surgery at Oxford University, or four graduates per annum, while from Cambridge University there were 1,300 medical graduates or approximately four each year.[229]

The medical courses at the Universities of Leyden and Rheims were acceptably like each other and to those available at Oxford and Cambridge. Founded in the sixteenth century, just before Trinity College, they were of importance to Irish Catholics who wished to study medicine.[230] The candidate first graduated in Arts and then entered the medical faculty, as was also the case in Paris.[231] The theoretical teaching consisted of the works of Galen including his anatomy and the *Ars Parva* (the Art of Medicine), and those of Hippocrates including the *Aphorisms* with commentaries by Arabic and Italian compilers and translators.[232] For Hippocrates alone there were fifty lectures devoted to the *Aphorisms*, thirty-eight on *Acute Diseases*,

[228] Chaplin, Arnold, 'The History of Medical Education in the Universities of Oxford and Cambridge, 1500-1850' in *Proceedings of the Royal Society of Medicine 12 (supplement)* (1919), p. 6.
[229] Ibid., pp. 88, 106.
[230] Hare, *Medical Education* pp. 197-237.
[231] O'Boyle, *The Art of Medicine,* p. 56.
[232] Hare, *Medical Education*, p. 239; O'Boyle, *The Art of Medicine, pp. 82-127; L. W. B. Brockliss, French Higher Edcation in the Seventeenth and Eighteenth Centuries. A Cultural History* (Oxford, 1987), pp. 391-440; Brockliss and Jones, *The Medical World of Early Modern France*, pp. 90-107.

thirty-six on the *Prognostics*, and thirty on *De Regimine*.[233] The available medical literature comprised writings of the ancient Greeks with commentaries and explanations by the later compilers. Medical manuscripts were rare and extremely valuable as many years of strenuous application could be spent making copies.

Trinity College Dublin and Laud's Statutes.

In the era under study only a few Irish Physicians graduated from Trinity College. The tradition of the healing arts for students of medicine in Ireland during the seventeenth century and before is detailed in Irish medical history texts.[234] Prior to the foundation of Trinity College higher education was provided in the monasteries, the Bardic schools and by the Gaelic Princes and Anglo-Norman nobles. Manuscripts were collected, copied and handed down.[235] However the college at Youghal, and the libraries of Maynooth and Clonmacnoise could not compare to the English and Continental Universities.[236] Medical practice was one of the hereditary arts and education by apprenticeship systems in Gaelic Ireland into the early modern period. The Gaelic medical practitioners were located within a Galenist framework.[237]

Those practitioners who were Roman Catholic and non-hereditary had to by-pass Trinity College (from which they were excluded) to seek out their university education at Continental locales. Among those Irish physicians frequently alluded to in the literature who graduated from the French

[233] O'Boyle, *The Art of Medicine,* pp. 189-263; Ellwood P. Cubberley, *Readings in the History of Education. A Collection of Sources and Readings to Illustrate the Development of Educational Practice, Theory, and Organisation* (Cambridge, 1920), pp. 174-5.
[234] Kirkpatrick, *Speculum Matricis*; John F. Fleetwood, *The History of Medicine in Ireland* (Dublin, 1983) (henceforth cited as Fleetwood, *History of Medicine*); Eoin O'Brien, Anne Crookshank, *A Portrait of Irish Medicine* (Dublin, 1984); Charles A. Cameron, *History of the Royal College of Surgeons in Ireland* (Dublin, 1916).
[235] Winifred Wulff, (ed.), *A Medieval Handbook of Gynaecology* (Cork: The Corpus of Electronic Texts Edition: G600011, 2007) (http://www.ucc.ie) (12 March 2017).
[236] Robert Brendan McDowell, David Allardice Webb, *Trinity College Dublin 1592-1952, an Academic History* (Dublin, 2005), p. 1 (henceforth cited as McDowell & Webb, *Academic History*).
[237] James Kelly, Fiona Clark, 'The History of Medicine in Context' in J. Kelly and F. Clark (eds), *Ireland and Medicine in the Seventeenth and Eighteenth Centuries* (Surrey, 2010), pp. 1-17.

University of Rheims were Gerard Fennell in 1614; Dermod O'Mara in 1616 (author of the first printed medical work in Ireland, the *Pathologia Hereditaria*, of 1619); Christopher Talbot in 1618; and Thomas Arthur (1593-1674) of Limerick who graduated in 1619 (he was also educated at Bordeaux and Paris).[238] Another famous Irish physician was Nial O'Glacan who was born in the latter half of the sixteenth century and received his medical education from one of the Irish families of hereditary physicians. His training largely consisted in learning the *Aphorisms* of Hippocrates and certain of the works of Galen. He later became Physician to the King of France and Professor of Medicine at Toulouse.[239]

University	**1640-49**	**1650-59**	**1660-69**	**Graduates**
Angers	10	2	5	17
Leiden		1	1	2
Leuven		2	2	4
Rheims	1	2	3	6
Dublin		2	3	5
Totals	11	9	14	**34**

Table 2.2: Irish graduates in medicine 1640-69.

Despite the availability of medical education at institutions in the Spanish Netherlands, France, The United Provinces and Ireland the scarcity of University trained Irish physicians from 1640 to 1670 is evident. There were only thirty-four Irish physician graduates in that period, an average of one per year, as documented in Table 2.2.[240] Graduation as a physician from Trinity College was uncommon with only five Irish graduates during the entire thirty-year interval of 1640 through 1669. As already mentioned the records from the Universities of Oxford and Cambridge show only four graduating doctors per year for each University between 1500 and 1859.

[238] Mary Ann Lyons, 'The Role of Graduate Physicians in Professionalising Medical Practice in Ireland c. 1619-54' in J. Kelly and F. Clark (eds), *Ireland and Medicine in the Seventeenth and Eighteenth Centuries* (Surrey, 2010), pp. 1-38.
[239] Samuel Simms, 'Nial O'Glacan of Donegal' in *Ulster Medical Journal,* Vol. 4 No. 3 (1935), pp. 186-9.
[240] Laurence Brockliss, 'Medicine, Religion and Social Mobility in Eighteenth-and Early Nineteenth-Century Ireland' in J. Clark, F. Lyons (eds), *Ireland and Medicine in the Seventeenth and Eighteenth Centuries* (Surrey, 2010), pp. 73-108.

Because of the low graduate numbers, the hereditary physician tradition continued, and with surgical doctors, midwives, apothecaries, herbalists, healers, and irregular practitioners, allied with the widespread use of home remedies, they provided medical services for most of the population.

The requirements for physician education in Dublin reflected those already in vogue at Oxford and Cambridge Universities, and the medical student in Trinity College studied similar classical medical writings, as was also the case at the continental Universities. The recent advances in medical and scientific thought from the sixteenth and early seventeenth centuries were only slowly accepted and during the era under study (1650-1664) had not displaced the writings from antiquity.

The scant details of Wolveridge's medical and personal lives were recorded in the early 20th century.[241] No details of Wolveridge's undergraduate life in Trinity College Dublin are known apart from his year of graduation in 1664. Based on the early history of the foundation of the University, the early years of medical education there, and the introduction of the new Statutes by Archbishop Laud in 1637 it proved possible to develop an outline of the academic formation of a Trinity Doctor of Medicine. Trinity College was the sole constituent College of the University of Dublin, founded in 1592 by the Royal Charter of Queen Elizabeth 1.[242] In the preamble to her Charter and her Letters Patent the Queen declared that Trinity College would henceforth be

> A College for learning, whereby knowledge and civility might be increased by the instruction of our people there, whereof many have usually heretofore used to travaile into Ffrance, Italy, and Spaine to gett learning in such forreigne Universities, whereby they have been infected with Popery and other ill qualities.[243]

[241] Kirkpatrick, *Speculum Matricis*.

[242] Corporate Secretary, Trinity College Dublin, 'Trinity College Is the Sole Constituent College of the University of Dublin' (<https://www.tcd.ie/Secretary/corporate/legal-faq/>) (10 March 2014); Corporate Secretary, 'Charter of Queen Elizabeth I', Trinity College (www.tcd.ie/Secretary/assets/pdf/Charter%20Elizabeth%20I.pdf) (10 March 2014).

[243] John Pentland Mahaffy, *An Epoch in Irish History: Trinity College, Its Foundation and Early Fortunes, 1591-1660* (London,1903), p. 49.

The original title of 'Collegium Sanctae et individuae Trinitas Juxta Dublin a Serenissima Regina Elizabeth fundatum' (the College of the Holy and Undivided Trinity near Dublin founded by the Most Serene Queen Elizabeth) was included in the Charter of Queen Elizabeth I in 1592 which established the College and was restated in the Charter of Charles I in 1637. 'On the 13th March 1592, the first stone of Trinity College Dublin was laid with great solemnity by Thomas Smyth, Apothecary and Mayor of the city'.[244] The original students were received in 1594 and academic work began in January of that year.[245] The first inauguration was held on 24th of February 1601 when a number 'of the Fellows and Students commenced Doctors, Masters, or Bachelors in the various faculties'.[246] By the 1620s the annual intake of students was about sixteen but the full record of entrants only began in 1637.[247]

The original Trinity College statutes were codified by William Temple during his time as Provost (1609–1627) and revised by Provost William Bedell in 1628/29.[248] Archbishop William Laud, Chancellor of the University of Oxford (1630-1640), compiled new University statutes in 1636 at the behest of Charles I. Known thereafter as the Caroline Code or Laud's Statutes, the new Oxford statutes also took effect in Trinity College Dublin in June 1637.[249] The 'Statutes' promoted the proper and ideal life of a university and its populace. The requirements of the university officers, the graduates who remained for further studies and those of the student body were recorded in depth.[250]

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[244] William Benjamin Sarsfield,Taylor, *History of the University of Dublin, (Founded by Queen Elizabeth,) Its Origin, Progress, and Present Condition, with Biographical Notices of Many Eminent Men Educated Therein* (London and Dublin, 1845), p. 22 (henceforth cited as Taylor, *History of the University of Dublin)*.

[245] J. V. Luce, *Trinity College Dublin, The First 400 Years* (Dublin, 1992), p. 4 (henceforth cited as Luce, *The First 400 Years*.

[246] Taylor, *History of the University of Dublin, p. 13.*

[247] Luce, *The First 400 Years,* p. 6.

[248] Ibid., p. 13.

[249] Constantia Maxwell, *A History of Trinity College Dublin 1591-1892* (Dublin, 1946), p. 39 (henceforth cited as *A History of Trinity College*); G. R. M. Ward (ed.), *Oxford University Statutes, a Translation Containing the Caroline Code or Laudian Statutes Promulgated A.D. 1636* (Vol. 1, London, 1845) (henceforth cited as Ward, *Oxford University Statutes)*.

[250] McDowell & Webb, *Academic History,* p. 13.

As the wars of 1641-53 came to an end, college life underwent a slow revival under the Commonwealth with graduation in both Bachelors and Masters of Arts in 1654.[251] Although no special mention was made of the faculty of medicine in the Elizabethan Charter it was undoubtedly intended that the art of physic should be taught within the halls of the College.[252]

> [A student of medicine] shall be a Master of Arts, and after taking the degree of Master, he shall have diligently devoted seven years to the study of Medicine before he comes forward to seek that degree. Moreover we require that he must on six occasions prelect [lecture] in the School of Physicians, that he must be present at three anatomical dissections; that he must on four occasions successfully carry to a conclusion the cure of different diseases; that after frequent attendance in the laboratories of the apothecaries he must thoroughly know and keep clearly in his mind all the simples and the drugs compounded from those simples that are met with in the laboratories; and lastly that he must on three occasions respond and as many times oppose [as a form of rhetorical training] in his faculty.[253]

Once these requirements were fulfilled the medical student could proceed for the degree of Doctor of Medicine. Much greater emphasis was placed on the knowledge of medications and the cure of different diseases compared to anatomical dissection. Although the regulations for medical studies were codified only a handful of students graduated in medicine over the first quarter century. In a description of the public commencements held in St. Patrick's Cathedral in 1616, it was reported that during the twenty-three years since the foundation of the University of Dublin only one Doctor of Medicine and two Bachelor of Medicine degrees was conferred, as confirmed in Table 2.3.[254]

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[251] Luce, *The First 400 Years,* p. 24.
[252] Thomas Percy Claude Kirkpatrick, *History of the Medical Teaching in Trinity College Dublin and the School of Physic in Ireland* (Dublin, 1912), p. 17 (henceforth cited as Kirkpatrick, *Trinity College Dublin and the School of Physic*).
[253] Ibid., p. 23.
[254] Ibid., p. 26; Constantia Maxwell, *A History of Trinity College,* p. 19.

Graduates	**Total 109**
Doctors	9 Medicine 1, Divinity 7, Law 1
Masters	38
Bachelors	62 Medicine 2, Divinity 7, Arts 53

Table 2.3: Graduates of Trinity College Dublin 1591-1614.

That was the single doctorate in medicine recorded in the first half of the seventeenth century at Trinity College; and only 28 students graduated in medicine before 1700.[255] Following the 1641 Rising matriculations became infrequent and there was a break in the Admission Book during the years 1644-1652.[256]

From the foundation of Trinity College an annual sum of forty pounds was set aside as physician's pay but it is unclear whether this was for a Professorship or for anticipated medical services. However, it became obvious that Trinity College would have little effect on medical teaching or practice in Ireland for some considerable time.[257] The Irish Physician Dermod O'Meara, educated in Oxford and who practised in Dublin, wrote as follows to the Lord Deputy of Ireland in 1619.

> There are certainly more persons in Dublin at the present day practising the Art of Medicine than any other art, yet there are very few of them who have the six qualifications which Hippocrates requires in a Medical Doctor [a natural disposition for it, the necessary instruction, favourable circumstances, education, industry and time.[258]]. Here, not only cursed mountebanks, ignorant barbers, and shameless quack compounders, but also persons of every other craft whatsoever, loose women, and those of the dregs of humanity who are either tired of their own proper art and craft or inflamed

[255] Davis Coakley, *Medicine in Trinity College Dublin* (Dublin, 2014), pp. 19, 26 (henceforth cited as Coakley, *Medicine in Trinity*); McDowell & Webb, *Academic History,* pp. 3, 17, 23.
[256] Trinity College Dublin, *Admission Book TCD 1637-1725,* pp. 5, 21-28 (http://digitalcollections.tcd.ie) (21 June 2016) (henceforth cited as TCD, *Admission Book*).
[257] Kirkpatrick, *Trinity College Dublin and the School of Physic,* p. 18.
[258] Chadwick & Mann, *Hippocratic Writings,* p. 38.

> with an unbridled passion for making money, all have free leave to profane the holy temple of Asculapius.[259]

In 1626 Charles I was prepared to issue letters patent for a college, fraternity, society or corporation of physicians in Dublin, upon recommendation. The intended College would make laws for the government of physicians practising in Dublin, or within twenty miles thereof.[260] The Provost of Trinity College Dublin commented in 1628 that 'it hath been an Error all this while, to neglect the Faculties of Law and Physick.' Nevertheless, despite the Monarch's concerns and the Provost's regrets, the Trinity College records contain little on medical matters over the next thirty years apart from the introduction of the Caroline Code in 1637 with its regulations for medical education. An anatomy room was built only as late as 1711 and the medical school at Trinity College Dublin did not formally open until 1715.[261]

The matriculation of students, the time required for taking degrees, the formal exercises and disputations to be performed and the general form of petitioning for graces were clarified and laid down as university laws and regulations. Prior to matriculation a student who had reached the age of 16 years subscribed to the Articles of Faith and Religion (the thirty-nine doctrinal statements of the Church of Ireland), taking an oath to acknowledge the supremacy of the King, be faithful to the University and to observe its statutes and other privileges. A new student presented himself for matriculation within two weeks of arrival at Trinity College. A general inception to the university faculties was held annually in the second week of July.[262] The novice was accompanied by a selected Tutor who introduced the student to the Chancellor.

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[259] Kirkpatrick, *Trinity College Dublin and the School of Physic,* p. 30.
[260] Ibid., p. 26.
[261] Ibid., pp. 27-8.
[262] Ward, *Oxford University Statutes,* p. 57.

The tutor, a graduate of the faculty, remained as mentor to the student for around four years, offering instruction on the authors and texts approved for the course of study embarked upon and tuition in morals and religion. Another aspect of his role was to supervise the general welfare of his student who lived and lodged within the confines of the university.[263] Four years of study or sixteen terms were required from the date of matriculation, as junior and then senior freshman followed by junior and senior sophister, before a student could acquire a Bachelor of Arts.

Lecturers were usually chosen for each faculty from among the master's 'regent', those masters who remained in post-graduate education during the next three years after their degree.[264] All lectures were conducted in Latin and lasted for three-quarters of an hour. Lectures were catechetical in nature, part being exposition and part questioning of students.[265] Throughout the freshman year there were discourses on the 'Grammatical Foundations' articulated by Priscian of Lydia, the Latin grammarian who flourished c. 500 A.D. and on a companion text entitled 'On the Pure and correct Structure of Latin Prose' by Thomas Linacre, the humanist scholar and physician.[266]

Complementary lectures on rhetoric were based on the works of Aristotle whose views on 'natural philosophy' or science profoundly influenced scholastic scholarship. The sophomore's syllabus dwelt on the study of logic from the Aristotelian texts and the *Isagoge* or Introduction to logic and philosophy of the sophist Porphyry of Tyre (c. 234-c. 305 AD). Lectures in moral philosophy were founded on the works of Aristotle and other philosophers from ancient Greece.[267] The properties of shapes were explored in geometry while the celestial bodies and the mysteries of the firmaments constituted the lectures in astronomy. The curriculum as

[263] Ibid., pp. 5-6.
[264] Maxwell, *A History of Trinity College,* p. 12; Ward, *Oxford University Statutes,* pp. 17-8.
[265] McDowell & Webb, *Academic History,* p. 5.
[266] Robert Graves (ed.), *John Noble Johnson, The Life of Thomas Linacre: Doctor in Medicine* (London, 1835).
[267] Maxwell, *A History of Trinity College,* p. 50.

outlined continued for a further three years until the student presented for the degree of Bachelor of Arts. In the meantime, on completion of two years in the University and prior to supplication for a bachelor's degree, each student was bound to be a formal opponent or respondent at disputations.[268] Bachelors of Arts graduates who aspired to a master's degree read formal lectures and delivered declamations from memory delivered in loud and lofty style. They attended lectures in 'natural philosophy' whose content was based upon Aristotle's *Physics*, in which the natural sciences were interpreted. Other lectures on the syllabus included those on the central nature of existence and the world that embraces it and were revealed by reference to Aristotle's *Metaphysics*. The glories of ancient Greece and Rome were retold from the writings of Lucius Florus the Roman historian, or others of repute (Table 2.4).[269] The theory of music was delivered several times each term, accompanied by intervals of instrumental music. A thorough grounding in the Greek and Hebrew languages completed the curriculum, both languages being taught with a view to Biblical criticism.[270]

Name	**Subject materials**
Aristotle (384-322 B.C.)	Logic, Moral Philosophy, Rhetoric, Metaphysics
Lucius Florus (74-130 A.D.)	An Epitome, Histories of Titus Livy
Porphyry (234-305 A.D.)	Logic
Priscian (6th cent. A.D.)	Grammatical foundations
Linacre (c. 1460-1524)	Latin prose

Table 2.4: Authors on the curriculum for B. A. and M. A. degrees

According to Laud's Statutes the post graduate could then enter the faculties of divinity, law, music or medicine for further studies. Once he had obtained

[268] Ward, *Oxford University Statutes,* p. 32.
[269] Ibid., pp. 31-47.
[270] Maxwell, *A History of Trinity College,* p. 50.

his Master of Arts degree the pupil who engaged in the study of medicine registered for the three-year course leading to a Bachelor of Medicine degree.[271] His education was theoretical in nature and based on obligatory tracts from the medical writings of Hippocrates of Kos, and on the teachings of the revered Galen of Pergamum, the Graeco-Roman anatomist, philosopher, physician and surgeon of the second century A.D. Upon completion of his three-year medical course, and with an examiners' testimonial in his favour, the party who sought to be awarded the degree of Bachelor of Medicine had to 'solemnly respond once and oppose once in two questions for the form' at the bi-annual disputations, being advertised seven days in advance, and at the annual Vesperial disputations. He could then 'be admitted to lecture in every book of the *Aphorisms* of Hippocrates.'[272] Prior to inception in the faculty for the degree of Doctor of Medicine the bachelor was directed to deliver up to six lectures on the writings of Galen in as many days, from any part of the student's choice or based on the Temperaments, the Differences of Fevers, the Uses of the Parts, or on Local Affections.[273] Four years of medical studies, of attending and delivering lectures, of exercises and disputations, were required by the bachelor of medicine to attain doctorate level.

The candidate had also to attend at an entire anatomical dissection during which the main body organs and the brain were demonstrated, and a lecture on the skeleton, although a dispensation could be granted for those requirements.[274] Evidently practical anatomy was not regarded as quite so crucial as the mandatory Galenic theories on the composition of the body. However, it should be noted that the university would probably have difficulty in making dissection available from time to time due to hitches in obtaining cadavers. On production of a testimonial that all statutory requisites were performed the candidate could supplicate for his degree. At

[271] Ward, *Oxford University Statutes,* p. 52.
[272] Ibid., p. 108.
[273] Ibid., pp. 53-4.
[274] Ibid., p. 103.

graduation the newly elected Doctor of Medicine, dressed in his scarlet robes, received the book, the cap and the ring, the insignias of his new status as physician, accompanied by a kiss of fellowship.[275] Thereafter the Doctor was expected to act as a Regent Master for one or two years. The titles for the various degrees awarded to a Doctor of Medicine are shown in their original and more recent forms in Table 2.5.

Original	**Modified**
A.B. Artium Baccalaureas	B.A. Bachelor of Arts
A.M. Artium Magister	M.A. Master of Arts
M.B. Medicinse Baccalaureas	M.B. Bachelor of Medicine
M.D. Medicinse Doctor	M.D. Doctor of Medicine

Table 2.5: Titles of degrees taken by physicians.

The influence of John Stearne

Stearne was born in 1624 at Ardbraccen Co Meath at the home of his grand-uncle James Ussher and entered Trinity aged fifteen in 1639. The entry in the Admissions Book TCD revealed he was a pensionarius, a fee-paying student, indicating that his father was of modest means. He was the first son of John Stearne who came to Ireland as an officer to the Bishop of Dromore.[276] Stearne matriculated at Trinity College Dublin in 1639 but re-located to England at the outbreak of the rebellion in 1641. By 1642 he had entered Sidney-Sussex College, Cambridge and was conferred with the degrees of B.A. in 1642/3 and M.A. in 1646.[277] After a further interlude at Oxford, he returned to Dublin in 1651 to continue his medical studies during which time James Wolveridge was presumably a student.

Stearne graduated M.D. from Trinity College in 1658 when Wolveridge was possibly in his first year of medical studies there. Stearne founded the College of Physicians in Dublin in 1660, an event that would have impacted positively on Wolveridge's career and academic development, and became

[275] Ibid., p. 65.
[276] TCD, *Admission Book,* pp. 5, 21-28*;* Widdess, *Royal College of Physicians* p. 7.
[277] John Venn, J. A. Venn, *Alumni Cantabrigienses, a Biographical List of All Known Students, Graduates and Holders of Office from the earliest Times to 1900, Part 1 from the Earliest Times to 1751* (Cambridge, 1922) (https://archive.org/details/alumnicantabrigi) (20 March 2014).

Trinity's first Regius Professor of Physic in June 1662. Both as a postgraduate Master of Arts undertaking medical studies, and as a physician and Professor, his life at Trinity College would be inevitably intertwined with that of James Wolveridge until the latter's graduation in 1664.

Year	Wolveridge	Stearne
1650	Admission?	
1651		Returns from Oxford. Cambridge M.A.
1652		
1653		Book, *Animi Medela*
1654	B.A.	Tutor; Fraternity of Physicians
1655		
1656		Hebrew Lecturer; book *Thanatologia*
1657	M.A.	
1658		M.D. and LL.D.
1659		
1660	M.B.	College of Physicians, Professor of Laws; book *Adriani*; Medicus
1661		
1662		Regius Professor of Physic; book *Aphorismi*
1663		
1664	M.D.	Book *Aphorismi Felicitate*

Table 2.6: Wolveridge and Stearne at Trinity College Dublin.

After his decade away, Stearne was restored to his previously held fellowship at Trinity College Dublin by order of Henry Cromwell, then Chancellor of Trinity College Dublin, and Governor of Ireland, to whom he dedicated his first book.[278] In Table 2.6 the important academic achievements of Stearne at Trinity College over the fourteen-year interval are compared to Wolveridge's putative academic progress during his tenure. Examination of the Admission Book reveals that John Stearne was first named in his role of tutor at Trinity College in 1654 some three years after his return and through the years 1654-57 he was teacher to nineteen students, none of whom graduated in medicine. Stearne was not cited in the

[278] Davis Coakley, 'Stearne, John 1624-1669' in H. C. G Matthew and Brian Harrison (eds.) *Oxford Dictionary of National Biography* (vol. 52., Oxford and New York, 2004), pp. 335-6 (henceforth cited as Coakley, Stearne).

Admission Book as a tutor to Wolveridge which would tend to indicate that Wolveridge had already entered Trinity College in 1650, the year before Stearne's return. The entries in the Admission Book begin in 1637 and Wolveridge's name does not appear anywhere up to and including the year 1664. There is a gap in the Admission Book as entries ceased in the years between 1644 and 1652, during the time when Wolveridge was most likely to have been admitted to Trinity College. Wolveridge's actual admission date and year cannot be verified from that source, nor did he feature in the records as a tutor.[279]

Stearne in 1660 became Medicus, a Fellow appointed to lecture in medicine, and Professor of Laws. In 1662 he was appointed Regius Professor of Physic to Trinity College. Stearne was Medicus for the first two years and Professor of Physic for the final two years during the four years when Wolveridge would have progressed from Bachelor of Medicine to Doctor of Medicine. During Wolveridge's time in Trinity College Stearne wrote four books, none of which dealt with midwifery and one which was based on the scientific study of death, but Wolveridge did not acknowledge Stearne in his midwifery manual.

During his impressive academic career Stearne formed a Fraternity of Physicians in 1654 that evolved into the College of Physicians Dublin. In 1660 Stearne proposed to the University that Trinity Hall, a college or hall affiliated to the University and situated in Back Lane, Dublin, should be set apart for ever as a fraternity, later college, of physicians. Stearne's proposal was accepted and seven years later a charter was granted to the College of Physicians, with Stearne elected President for life. Sir William Petty was one of fourteen Fellows of the Governing body. The other Fellows mentioned in the charter are Edward Dynham, Abraham Yarner, Joseph Waterhouse, William Currer, Robert Waller, Thomas Margetson, Nathaniel Henshaw, Samuel Seiclamore, Jeremiah Hall, Charles Willoughby, John Unmusique,

[279] TCD, *Admission Book,* pp. 5, 21-28.

and John Cusacke.[280] Only three of the fourteen early Fellows received their primary M.D. degree from Trinity College, John Stearne in 1658, John Cusack in January 1661 and James Wolveridge in the summer of 1664.[281] Wolveridge was admitted as a Fellow of the College of Physicians in 1660, the year in which he would have graduated as a Bachelor of Medicine.[282] The remaining fellows graduated from Oxford, Cambridge, Leyden or Montpellier and some were incorporated M.D at Trinity College. No records or minutes remain of the early years of the fraternity of Physicians apart from some entries in the Trinity College Register.[283] Sir John Stearne died in Dublin on 18 November 1669 in his forty-fourth year. Wolveridge, a graduate of a university that contained at least one physician of intellectual repute, completed his *Speculum Matricis* the same year.

Conclusion

In this chapter the likely academic progress and intellectual influences of the 17th century physician James Wolveridge was explored. The themes for the chapter were laid out as; details of Wolveridge's life; physician training at Oxford and Cambridge Universities and elsewhere; perspectives from the history of the foundation of Trinity College Dublin, the early years of medical education there, and the introduction of Laud's Statutes; and the putative influence of John Stearne on Wolveridge's medical education.

By exploration of materials related to Trinity College Dublin, Oxford, Cambridge, Paris and the Continental Universities, and to non-university education of hereditary physicians, and other resources, it was possible to develop a curriculum and University degree programme for a student of medicine at Trinity College for the years 1650 to 1664 which would have been appropriate to Wolveridge whose 'expectations for his life as a doctor can be framed in the context of the recorded lives and works of

[280] J. T. Gilbert, *History of the City of Dublin* (Vol. 3, Dublin, 1859), pp. 10-4.
[281] Burtchaell & Sadleir, *Alumni Dublinenses*, pp. 77, 204, 892.
[282] Personal communication from the archivist, Royal College of Physicians, Dublin.
[283] Widdess, *Royal College of Physicians,* p. 15.

contemporary physicians in Ireland and England.'[284] The facts were researched and drawn together from both small and large fragments of evidence culled from the Trinity College Admission Book, Alumni Dublinenses, academic sources in the history of University and medical education, the history of medicine and that of English translations of the writings of the great medical authors of antiquity.

While no details were found about Wolveridge's undergraduate life it became evident that when he graduated as M.D. in 1664 he was one of only a few physicians who was educated at Trinity College up to that point in time. The University Statutes laid down by Archbishop Laud offered detailed clarification of the necessary curricular and examination regulations for the undergraduate courses toward Bachelor and/or Doctor of Medicine. An integral component of the syllabus was a thorough grounding in Classical Literature leading to a Master of Arts degree after seven years of study. There followed a further seven years to achieve the necessary standard of a candidate's knowledge to allow him to supplicate for the degree of Doctor of Medicine. The curriculum for an aspiring physician was dominated by the medical writings of antiquity.

It is proposed that the physician John Stearne could have had a major influence on Wolveridge's academic career and intellectual influences. Stearne returned to Trinity College as a classically educated Master of Arts from Cambridge in 1651 and continued his medical studies during Wolveridge's proposed time as a student (1650 to 1664). There were few students at that time, so it was inevitable that both men would have been acquainted, particularly as Stearne became Medicus in 1660 and then Regius Professor of Physic in 1662. It was likely that Stearne's ability as an author fired Wolveridge's enthusiasm to write his own *Speculum Matricis*. In 1660 Stearne founded the College of Physicians in Dublin and Wolveridge became a fellow of the new college in that year, a boost for the aspiring physician. A novel display of Stearne's known academic career compared to a physician

[284] Fleetwood, 'The Seventeenth Century', pp. 203-8.

in training at Trinity College during the years 1650 to 1664 and appropriate to James Wolveridge was prepared for this chapter and serves to highlight the importance of what would have been the close professional relationship of both men.

The academic life of a student of medicine as laid out in this chapter portrays in an original form the specifics of the fourteen years of University studies in arts and medicine and the educational essentials for the candidate to attain before supplicating for the grace of Doctor of Medicine at Trinity College in the years 1650 to 1664. The foregoing commentary is therefore a novel contribution to the intellectual influences of a physician during those years, to the history of medical education at Trinity College, and to the general history of medicine and midwifery.

A critical appraisal of Wolveridge's book and consideration of the thesis 'Wolveridge's *Speculum Matricis:* a mirror on antiquity?' is enabled by the understanding of his intellectual influences.

Chapter three - Midwifery

Introduction

In this chapter the analysis of the *Speculum Matricis* itself commences. At the outset the provenance of the manual is discussed, with attention to publication matters and key citations from the literature. The remainder of the chapter is devoted to investigation of the title page, the prefatory pages and the midwifery elements of the *Speculum Matricis*. The key questions are whether the information in the manual reflected the inherited classical knowledge, or recent (or post-medieval) discovery, or both. The numerous illustrations and the repository of materia medica in the Speculum Matricis are likewise assessed in later chapters.

In 1669 Wolveridge completed his midwifery manual the *Speculum Matricis Hubernicum; or, The Irish Midwives Handmaid* from his 'study in Cork.'[285] Published the following year in London it was the first midwives' manual in English that was penned in Ireland and according to the author was 'sufficient to direct and inform Midwives in their office.'[286] The manual was reprinted in 1671 with change of title to S*peculum Matricis, or, the Expert Midwives Handmaid*, a name apparently more appealing to the book trade and Wolveridge's intended English audience.[287] According to a recent paper the books were popular and frequently reprinted.[288] Parts of the *Speculum Matricis* were quoted (along with Galen, Hippocrates and William Harvey) by the respected Percivall Willughby in his manuscript *Observations on Midwifery* written in the 1670's.[289] In 1682 Wolveridge's publisher Rowland Reynolds released an enhanced version of the original with the title *The English Midwife Enlarged*, as did the publisher and bookseller Thomas

[285] Wolveridge, *Speculum Matricis,* 1670, A6v.
[286] Wolveridge, *Speculum Matricis,* 1670, A6v.
[287] Wolveridge, *Speculum Matricis,* 1671; Wolveridge, *Speculum Matricis*, 1670, sigA6r.
[288] Gillespie and Hadfield, *The Oxford History of the Irish Book*, p. 342.
[289] Willughby, *Observations,* pp. 213, 337; Peter M. Dunn, 'Dr Percival Willughby MD (1596-1685): pioneer 'man' midwife of Derby' in *Archives of Diseases in Childhood Fetal Neonatal Edition* (1997), 76: F212-F213.

Sawbridge, presumably both shared production costs.[290] The original *Speculum Matricis* was cited in the 18th century *Tableau Chronologique,* a timeline of books and discoveries from surgery and anatomy, and also in the *Bibliotheca Britannica* of 1824.[291] In the same year Wolveridge was mentioned in the section entitled 'Men of Genius and Learning, Physicians' in Granger's *Biographical History of England*.[292] However, at the close of the 19th century the *Speculum Matricis* was considered 'a lost medical work' with a single known copy in existence.[293] In consequence the Royal Society of Medicine, London, commissioned hand-written replicas, true to the original, as found on a recent inspection. Wolveridge's manuals still exist in library collections and his *Speculum Matricis Hybernicum* of 1670 was microfilmed in 1964, and later printed by Early English Books Online in 2011.[294]

In 1927 the medical historian Herbert Spencer wrote 'Wolveridge's *Speculum Matricis or The Expert Midwives Handmaid* is one of the rarest books on midwifery.' He acknowledged that the volume was described as 'the earliest original work on midwifery in the English language' but despite his apparent commendation concluded that the *Speculum Matricis* 'for the most part is a sheer plagiarism' from Jacob Rueff's *The Expert Midwife* of 1637, itself an English translation and adaptation of the original which was published simultaneously in German and Latin in 1554.[295] Spencer was aware that Rueff in turn derived material from Eucharius Roesslin's *Rosengarten* of 1513 whose text and illustrations were based on ancient

[290] Reynolds, *The English Midwife Enlarged*; Sawbridge, *The English Midwife Enlarged*.
[291] Portal, *Tableau Chronologique,* p. 776; Watt, *Bibliotheca Britannica*, p. 980.
[292] Granger, *History of England*, p. 226.
[293] Aveling, 'A Lost Medical Work,' p. 436; *Wolveridge, Speculum Matricis or, the expert midwives handmaid*, 1671 (Royal Society of Medicine Library. Manuscript MSS. 298).
[294] ESTC http://estc.bl.uk/F/?func=file &file_name=login-bl-estc (accessed 26 September 2017); Wolveridge, *Speculum Matricis*, 1670, microform http://www.worldcat.org/title/speculum-matricis-hybernicum-or-the-irish-midwives-handmaid-with-a-copious-alphabetical-index/oclc/911849322?ht=edition&referer=di.

[295] Spencer, 'Wolveridge's "Speculum Matricis" pp. 1080-1086; Rueff, *The Expert Midwife*; Rueff, *De conceptu*; Rueff, *Ein schon Trostbuchl*.

Greek midwifery; Roesslin thereby resurrected a classical source untapped for almost fifteen hundred years.[296] Spencer's accusation of plagiarism set the tone for subsequent medical authors.[297] Spencer also claimed that portions of Wolveridge's text were copied almost verbatim from William Harvey's book on the generation of living creatures of 1653, but that claim gained little notice.[298] The translated midwifery text of the French surgeon James Guillemeau from 1635 was another recently proposed source for Wolveridge's text.[299]

While Wolveridge cited contemporary sources, Rueff was not included among them. However, in his prefatory materials Wolveridge inserted an oblique reference to Rueff's manual in the following words 'Thou shew'st no monstrous births that may affright, though thou might'st do't, but such as may delight' (sig.a4r) since Rueff's *The Expert Midwife* had included a section on 'unperfect children, and of monstrous births.' On the face of it the *Speculum Matricis* derived not only from Rueff, Guillemeau, and Harvey in addition to the authors cited by Wolveridge, but possibly from Culpeper, and maybe others yet undiscovered.

On inspection, it was clarified that the *Speculum Matricis* comprised 221 pages of which 55 were prefatory and a further 166 were substantive. There were 35 chapters devoted to elements of generation, pregnancy, childbirth, puerperium and related ailments. The images that complemented the *Speculum Matricis* were engraved by Thomas Cross of London who had many title-pages and book illustrations to his credit, among

[296] Eucharius Roesslin, *Der Swangern Frawen und Hebammen Rosengarten* (Strasburg, 1513); Eucharius Roesslin, *Der swangern Frawen und hebammen roszgarten* (Cologne, 1518) https://www.sophiararebooks.com (20 Sept. 2016).
[297] Essen-Moller, 'A Rare Old Irish Medical Book', pp. 312-14, (p. 313); Kiser, *Speculum Matricis*); O'Sullivan, *Highlights*; Devan and Murphy, *Childbirth in Ireland,* pp. 138-57, (p. 144); Coakley, *Medicine in Trinity,* p. 27.
[298] Harvey, *Generation of living creatures*, p. 471; Murphy Lawless, *Childbirth 1742-1955*, p. 896.
[299] Hobby, 'Early Modern Midwifery Manuals, pp. 67-85; James Guillemeau, *Childbirth*.

them a portrait of Nicholas Culpeper.300 It is likely that the bookseller Rowland Reynolds appointed Cross to illustrate the Speculum Matricis.

Title page and prefatory materials

The title page contained the long title *Speculum Matricis Hybernicum, or, The Irish Midwives Handmaid* complemented by other elements that provide valuable information. A speculum matricis was defined by the famous French surgeon Ambroise Pare as a 'dilator for the inspection of the matrix' and was in use in various forms since antiquity.[301] The instrument was essential in midwifery during inspection of the vagina and cervix uteri. Rueff described the apparatus as a 'looking-glass on the Matrix' (womb).[302] Book titles and texts with speculum/mirror-imagery such as *Speculum Mundi* with its medico-herbal section and *The sick womans private looking-glasse* of 1636 were common in the era while many other publications with *Speculum* titles were printed in the decade that Wolveridge's books were produced.[303] Wolveridge derived the *Speculum Matricis* portion of his book title from Rueff, or Harvey who also mentioned the instrument.[304] He did not appear to copy from Pare's text although a translation from the French was available. Returning to the next three terms within the title it is evident that they feature both ancient and more contemporary linguistics. However, no solutions to the question of the book's origin from sources are apparent in the terms 'midwife' derived from 'Mid (with) - wif' and 'handmaid.'[305] The remainder of the title yields few clues, the 'Hybernicum' (sea) being the Latin

[300] Thomas Cross, *National Portrait Gallery* http://www.npg.org.uk/collections/search/person/mp10604/thomas-cross, (18 Nov. 2016); Thomas Cross, 'British Printed Images to 1700,' *Directory of Printmakers* http://www.bpi1700.org.uk/resources/directory_printmakers_C.html (19 Sept. 2016); Nicholas Culpeper, *A Directory for Midwives* (London, 1651), prefatory pages.

[301] Ambroise Pare, 'Of the Generation of Man,' p. 956; McKay, *Ancient Gynaecology*, p. 39.

[302] Rueff, *The Expert Midwife*, p. 104.

[303] Herbert Grabes, *The Mutable Glass, Mirror-imagery in titles and texts of the Middle Ages and English Renaissance* (Cambridge, 1973); Bernard Capp, *Astrology & the Popular Press: English Almanace 1500-1800* (London and Boston, 1979), p. 206; John Sadler, *The sick womans private looking-glasse* (Amsterdam, 1636).

[304] Harvey, *Generation of living Creatures*, p. 507.

[305] Aveling, *English Midwives,* p. 1 http://www.merriam-webster.com/dictionary/handmaiden (19 Sept. 2016).

term for the Irish sea, and indicated Wolveridge's education/knowledge of Latin.[306]

With regards to the 'Catechistically Composed' element of the title page it became apparent that about 84 percent of the text of the *Speculum Matricis* was laid out in question and answer form, associated with Socrates, the son of a midwife.[307] Soranus wrote his ancient *Gynecology* for physicians and it is proposed that a shorter catechism was written for midwives, in the form of questions and answers.[308] Wolveridge framed his 'catechistically composed' text as a literary device, a conversation between the pleasant and witty midwife Eutrapelia and the physician Philadelphos. The name 'Eutrapelia' embodied one of the virtues of the 'golden mean' outlined by Aristotle, while Philadelphos was about Ptolomy II who developed Alexandria as a centre for learning. He married his older sister Arsinoe to create her co-regent, after which they adopted the epithet Philadelphus, brother/sister loving.[309] The question and answer format was also availed of by Nicholas Culpeper in his second volume on midwifery of 1662 (an epitome of Daniel Sennert's *Operum Tomus Quartus* of 1656), by Nicholas Sudell in *Mulierum Amicus: Or, The Womans Friend* of 1666, and became the basis for instruction in Justine Siegmund's *The Court Midwife* of 1690.[310]

The 'copious Alphabetical Index' ran to 20 pages, unusually long for a midwifery manual of the era, and outmatched only by Nicholas Culpeper in 1662 who had two additional pages in his index.[311] A chronogram, or time

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[306] Chr.Wilkinson, T. Burrell (publishers), *The Present State of Ireland* (London, 1673), p. 82.

[307] Timothy Chappell, *Reading Plato's Theaetetus* (USA, 2005), pp. 42-7.

[308] Temkin, *Soranus' Gynecology*, xxxvii.

[309] Matthew Arnold, 'Eutrapelia' in Henry Craik (ed.) *English Prose 19th century* (Vol. 5, New York, 1916) http://www.bartleby.com/209/1189.html (26 Sept. 2016); Philadelphus, http://virtualreligion.net/iho/ptolemy_2.html. (26 Sept. 2016).

[310] Nicholas Culpeper, *Culpeper's Directory for Midwives, or, A Guide for Women.* The Second Part (London, 1662) (henceforth cited as Culpeper, *Directory for Midwives, the Second Part,* 1662); Hobby, *The Birth of Mankind*; Nicholas Sudell, *Mulierum Amicus: Or, The Womans Friend* (London, 1666); Daniel Sennert, *Operum Tomus Quartus* (Lugduni, 1656) (henceforth cited as Sennert, *Quartus*); Justine Siegemund, *The Court Midwife,* Lynne Tatlock (ed.), (Chicago, 2005).

[311] Danny Leigh Chalk, *Managing Midwives in Early Modern English Literature* (PhD thesis, Pennsylvania State University, 2009), p. 231 (henceforth cited as Chalk, *Managing Midwives*).

writing, on the title page reads as follows 'IVXta MagnaLIa DeI sCrIptor'. The chronogram was a sentence or inscription in which specific letters, interpreted as numerals, stood for a date, in this instance 1669 the year in which the book was written.312 A four-line excerpt in Latin from an ode by Horace was prominent on the title page and allows an insight to Wolveridge's apparent belief that the world was decaying.[313]

> What do the harmful days not render less?
> Worse than our grandparents' generation,
> Our parents' then produced us, even worse,
> And soon to bear still more sinful children.

As to the final elements on the title page the printer Edward Oakes and the bookseller Rowland Reynolds were well known in London being recorded in the *Dictionary of Printers and Publishers* 1668-1725.[314] Wolveridge's book was reprinted in 1671 as S*peculum Matricis, or, the Expert Midwives Handmaid*, a title presumably more appealing to the English book trade than the earlier one which reflected Ireland (*Hybernicum* and *Irish*). Either Wolveridge or Rowland Reynolds decided to incorporate Jacob Rueff's *The Expert Midwife* as a secondary portion of Wolveridge's title in the otherwise unchanged edition of 1671.[315] This occurred at a time when midwifery manuals became ever more available and a catchy title correspondingly more important.[316]

Included in the prefatory pages were three poems in English and one in Latin by Wolveridge himself. While most authors dedicated their texts to patrons or colleagues Wolveridge's former professor John Stearne of Trinity College Dublin (who wrote five books during Wolveridge's putative years as a student there and died the year the *Speculum Matricis* was written) was

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[312] Kiser, *Speculum Matricis.*
[313] Horace, Liber 3, Carminum, Ode 6 http://www.thelatinlibrary.com/horace/carm3.shtml; http://www.poetryintranslation.com/PITBR/Latin/HoraceOdesBkIII.htm (19 Sept. 2016).
[314] Henry R. Plomer, *A Dictionary of the Printers and Booksellers who were at work in England, Scotland and Ireland from 1668 to 1725* (Oxford, 1922), Edward Oakes p. 222; Rowland Reynolds, pp. 251-2.
[315] Wolveridge, *Speculum Matricis,* 1671.
[316] Isabelle Clairhout, *Midwifery, Kitchen Physick, and the Medicatrix* (M Litt thesis, Engel, 2013), p. 165.

not mentioned at all throughout the text, which was unusual.[317] If not in imitation of Stearne why did Wolveridge write his midwifery manual since he would only have had limited contact with childbirth? It appears that his was a theoretical discourse rather than one based on personal experience**.** Wolveridge did not indicate that he was affected by infant deaths unlike Culpeper and his wife Alice Field, those harrowing events were the London author's stimulus to write his midwifery texts.[318] Finally, whether he required to boost his medical profile in Cork or considered a return to England were not mentioned. Wolveridge's motives are presented as altruistic. His 'small tract' would be of 'practical assistance' to midwives rather than 'presuming to instruct the learned.' [319] Thus, Wolveridge's aims to educate and to direct midwives was like that of Jacob Rueff, the city physician of Zurich charged with the regulation of midwives, in his publication of 1554, later translated as *The Expert Midwife*.[320]

Wolveridge, in common with the translated version of Rueff's *The Expert Midwife*, stressed that he wrote in 'plain' English as to be understood by his country-folk, men and women. Like Culpeper he avoided Latin, the language of medicine. Wolveridge praised Irish women for their 'hardiness and facility in bringing forth' which compared them favourably to the Hebrew women in Exodus 'for they are liuely, and are deliuered ere the midwiues come in vnto them.'[321] Wolveridge cited William Harvey who in turn reported the anecdote of George Carew, Earl of Totnes (1555-1629), Lord President of Munster (1600-1604), concerning an Irish Soldier's wife and the the birth of her twins. 'The next day after, it pleased Lord Deputy Montjoy … and the Lord Carew to be godfathers to the children, being much admirers of the novelty of the thing' (sigs A5v-A6r).[322] The same story was

[317] Coakley, 'Stearne,' pp. 335-6.
[318] Benjamin Woolley, *The Herbalist* (London, 2005), p. 305.
[319] Wolveridge, *Speculum Matricis*, 1670, extracts from 'The Author to the Reader' 'The Author to his Book' and 'The Preface'.
[320] Jacob Rueff, *Ein schon Trostbuchle*.
[321] Exodus 1:19, *The Holy Bible* (London, 1611).
[322] Harvey, *Generation of living Creatures*, pp. 276, 509.

cited to Harvey by Percivall Willughby in his *Observations on Midwifery*.[323] But Wolveridge's midwifery manual had 'an English dress under an Irish mantle; it being never intended for the Irish' although he allowed that 'it may be serviceable to them also, if occasion be.'

In his 'Author to his Book' Wolveridge turned to the topic of the decline in morality and whether portions of the *Speculum Matricis* could be viewed as less than chaste. He wrote that his manual was not meant 'to please lascivious, wanton eyes.' The subject of public morals was also commented upon by midwifery authors such as Roesslin in 1604 who advised that men should learn neither lewdness nor knavery from his midwifery book and that women would not gladly hear of such matters (female anatomy being spoken of) unless by physicians or their discreet husbands.[324] In 1615 The Bishop of London condemned the inclusion of explicit nude male and (particularly) female figures in Helkiah Crooke's book on anatomy which the prelate considered were indecent and which led to censure in subsequent editions; Crooke was Court physician to King James I of England.[325] Thirty years later Jacob Rueff advised 'young and raw heads and profane fidlers' to 'avant, pack hence' because his text was meant for modest and discreet women and medical men, while in 1671 Jane Sharp pleaded lest the intimate details in her midwifery book should be converted into evil.[326]

Wolveridge dedicated his book 'to the Patronage of the most Grave and Serious Matrons of England and Ireland, the first being the Kingdom of his nativity the latter his country, whil'st obliged to it. Farewell.' The dedication was essentially like Rueff's 'To all grave and modest Matrons' and the goodbye mirrors Jacob Rueff's 'Fare you well' at the closure of his

[323] Willughby, *Observations,* pp. 34-5.
[324] Eucharius Roesslin, *The Birth of Mankinde, otherwise named The Woman's Book,* Thomas Raynald (trans.) (London, 1604), p. 13.
[325] Helkiah Crooke, *Microcosmographia* (London, 1615) (subsequent references: Crooke, *Microcosmographia*); Crooke http://www.christies.com/lotfinder/books-manuscripts/crooke-helkiah-microcosmographia-in-greek-a-4959883-details.aspx (19 Sept. 2016).
[326] Rueff, *The Expert Midwife,* prefatory pages not paginated; Hobby, *Jane Sharp, The Midwives Book*), p. 13.

prefatory pages in *The Expert Midwife*. Wolveridge's prefatory pages refer to midwives and women with respect and admiration.

Wolveridge quoted from only one contemporary in his prefatory pages, namely William Harvey, and that was in his 'Author to the Reader.' However, from ancient times Wolveridge included Aristotle, Ovid, Plato, Phydias and Apelles, Pliny, Pythagoras, Synefius, Theophrastus and 'Tully' (Cicero). There were also biblical allusions and quotes from Genesis, Exodus, Ezekiel, Psalms and the Septuagint. Not explicitly credited by Wolveridge were Jacob Rueff and Helkiah Crooke. When Wolveridge wrote that mankind is 'a Microcosm, a little world in a bigger' he was reflecting ancient Greek philosophy, but he may also have been making an oblique allusion to Helikah Crook's anatomy book *Microcosmographia*.[327] Among other references to antiquity Wolveridge clarified that The Owl of Athens was Noctuas Athenas, being sacred to Athena, the goddess of wisdom.[328]

There were five encomiums in the *Speculum Matricis* penned by four of Wolveridge's friends and colleagues, three of whom signed their verses in Cork during September and October of 1669. Potentially the list of authors who wrote the verses would yield a snapshot of Wolveridge's social milieu or context. It became clear that Wolveridge was embedded in what must have been a small circle that included a fellow physician and lawyers. Jonathan Ashe, wrote one commendatory verse in English which he signed 'e Coll. Oriell, Oxon. A.M.' and a second in Latin signed 'Dabam Cork. 17 Calendas Octobris, 1669.' Aquila Smyth, M.D. 'delivered' a three-page encomium signed 'Septemb. 9th. 1669. Cork.' Danielis Colman J.V.D. (Juris Utriusque Doctor, Doctorate in Canon and Civil Law) wrote his tract in latin 'Ex Musaeolo meo in Suburbiis Borealibus Corcagiae, Idibus Septembris, 1669.' Richard Samson (Wolveridge's 'Obliged Friend') did not indicate the time nor place of writing his 'An Achrostick.' Great efforts were made to

[327] Crooke, *Microcosmographia*.
[328] *Through the ages, Athenian Owls,* http://athenianowlcoins.reidgold.com/ (accessed 19 Sept. 2016).

discover and track down details for Wolveridge's friends, thus standard biographical and medical history sources were examined to identify these individuals and situate them with respect to Wolveridge.[329] Little was discovered apart from the following details. Jonathan Ashe matriculated at Oxford age 16 in 1661, gained B.A. Oriel College 1666, M.A. 1668, and was admitted to the Inner Temple in 1664. Descended from a Somerset family he settled in Clanwilliam, Co. Tipperary.[330] At Oxford Ashe may have known Robert Lovell (M.A. 1653), an author and botanist 'who professed physic' and wrote on materia medica and on midwifery.[331] Could Ashe have made Wolveridge aware of those details when he was planning the *Speculum Matricis*? If so, Lovell could have been an additional unacknowledged source for the midwifery manual. But this is an unproven link.

Aquila Smyth may be the person who matriculated on 15th November 1639 at Queen's College Oxford; the records do not show academic advancement although he signed his encomium as Aquila Smyth M.D.[332] Smyth did not graduate from Trinity College Dublin nor from Cambridge. Could Richard Sampson (alias Hawkins?) have written the achrostic to Wolveridge? His Oxford College entry places him as 'perhaps vicar of Cadbury, Devon', born 1599 and 70 years of age when Wolveridge completed his *Speculum Matricis*. No details were discovered for Daniel Colman.

Commendatory verses such as these in the *Speculum Matricis* were common practice in 'literary' works of the era but not so in midwifery manuals. Perhaps Wolveridge was presenting his credentials to be taken

[329] ODNB; Wellcome; Cantabrigienses; Oxienses; Dublinenses; Pelling; Phillmore and Thrift; Cummins, *Cork*; Cummins, *Cork;* O'Flanagan, *Cork;* Mhurchadha, *Vestry Records;* McEnery and Refausse, *Christ Church;* Gilbert, *Dublin;* O'Hart, *Gentry;* Clayton, *Munster;* Mahaffy, *State Papers;* Mills, *Registers;* Hanks et al *Family Names;* Clarke et al, *Irish Biography;* Hayes, *Sources; J. Cork Archeology*.

[330] *Alumni Oxoienses* http://www.british-history.ac.uk/alumni-oxon/1500-1714/pp29-50 (accessed 26 September 2017); Jonathan Ashe of Clanwilliam http://www.ashefamily.info/ashefamily/237.htm (accessed 26 September 2017).

[331] Joseph Foster, *Alumni Oxonienses* (Vol. 3, Oxford and London, 1891), p. 941

[332] *Alumni Oxoienses* http://www.british-history.ac.uk/alumni-oxon/1500-1714/pp1368-1394 (accessed 26 September 2017).

seriously as an author – not just the writer of a handbook. The dedications were rendered in lyric style, one of which was judged in recent times to be ingenious, while another in acrostic form was thought inept.[333] Each of the tributes praised Wolveridge and his endeavours such as that from Aquila Smyth of which an abstract conveys the flavour of the piece.

> Here's one doth teach to mitigate a pain,
> Sets open Natures Gate, so that the birth
> Walks from mother-womb to mother-earth:
> No throwes we have in this, no skreaks,
> No Cryes, No instruments, no cupping of the thighes:
> Here is an Art that after-age will boast,
> And tell how *Wolv'ridge* hath delivered most
> With ease, producing forth what's safe we see,
> To which whole Colledges thy Gossips be (sig. a2r).

The lack of instruments signified that natural or manually assisted childbirth could be anticipated, presumably by following the advice offered by Eutrapelia. Smyth also implied that the gossips, female relatives or friends who supported the midwife, would become so expert because of absorbing the instructions of the *Speculum Matricis* that they could form a College for their further education.[334]

Smyth also opined that 'the production of thy brain shall make midwives themselves produce; and for thy sake Sol teeming [an obsolete term, to produce offspring] for thus, man-Midwives out a birth … we do too bring but an Embrion out.'[335] In this statement Smyth indicated that both he and Wolveridge may have (not proven) practised the art of 'man-midwifery' which is a very early reference to the name for the surgeons or physicians who were involved in obstetrics.[336] The first occurrence of the term 'man-

[333] Andrew Carpenter (ed.), *Verse in English from Tudor and Stuart Ireland* (Cork, 2003), pp. 418-20 (henceforth cited as Carpenter, *Verse in English*).
[334] Wilson, *The Making of Man-midwifery*, p. 25.
[335] Teeming http://www.dictionary.com/browse/teeming (accessed 26 September 2017).
[336] Maurice Onslow, 'Obstetrical Researches' in *The London Medical Repository,* No. 81, Vol. xiv (Sept. 1, 1820), pp. 177-80.

midwife' in midwifery manuals is unclear however 'men-midwives' are mentioned in Rueff's manual of 1637.[337] Prior to that time the terms 'chirurgeon' or 'accoucheur' were in common use for men who practised midwifery. However, the title man-midwife was apparently used in relation to the Chamberlen family in the early 17th century.[338] Peter the Elder Chamberlen was surgeon and accoucheur to Queen Anne, wife of James VI of Scotland in 1596. Both he and his brother Peter the Younger were well known practitioners of midwifery.[339] Man-midwifery aroused condemnation from physicians at that time and a story is told of a physician of Hamburg who was executed in 1522 for attending childbirth while dressed as a woman.[340] Later that century the French 'accoucheur' (man-midwife) was deemed 'caring' and 'strongly motivated' to save women from 'some of the worst horrors of pregnancy and childbirth.'[341] In England as late as 1849 a book written by a prominent physician and entitled 'Man-midwifery Exposed' was addressed to the Society for the Prevention of Vice. The author claimed that man-midwifery was 'a silent piece of well-dressed vice.'[342] However, physicians who dealt with women's illnesses, and who were called in for complicated obstetrical cases, had been a normal feature of midwifery life in ancient Greece.[343]

The encomiums to Wolveridge's manual were replete with classical allusions and what could to be a non-credited reference to Nicholas Culpeper. A prefatory encomium by Aquila Smyth claims the *Speculum Matricis* 'is the key unlocks the cabinet.'[344] The same or similar phrase was present in many publications that pre-date Wolveridge's, but it also appeared in Nicholas Culpeper's midwifery manual of 1651. Could it be that

[337] Rueff, *The Expert Midwife*, sig. A5.
[338] Wilson, *The Making of Man-midwifery*, p. 6.
[339] Dunn, 'The Chamberlen family,' F232-F234; Aveling, *English Midwives*, p. 22.
[340] M. Patricia Donahue, *Nursing, The Finest Art* (St. Louis, 1985), p. 182.
[341] Valerie Worth-Stylianou, 'Pregnancy and Birth in Early Modern France, Treatises by Caring Physicians and Surgeons (1581-1625)' in Margaret L. King and Albert Rabil (series eds), *The Other Voice in Early Modern Europe: The Toronto Series, 23* (Toronto, 2013), xxi.
[342] Stevens, *Man-Midwifery*, dedication p. 2.
[343] Temkin, *Soranus' Gynecology,* xxxvii, p. 129.
[344] Carpenter, *Verse in English*, pp. 418-20.

Smyth borrowed from the words of Jer. Edmondsan who penned 'this little book Of Natures Cabinett, thou hast the Key' in his prefatory tribute to Culpeper's midwifery manual?[345] And, could the 'key and cabinet' simile originate with *The Ladies Cabinet Opened* of 1639 with its remedies for women's ailments?[346] But these ideas are unproven, yet worthy of mention.

Jonathan Ashe's reference to 'that Sicilian [who] was admir'd because he framed the Machin which disclos'd the Laws and motions of the greater World,' meant Greek mathematician Archimedes of Syracuse. He also referred to Jove and Pallas. There was also a reference to 'Tredskin's nut-shell' and the naturalist John Tradescant (the Younger d 1662) whose catalogue of rarieties was dedicated to the Royal College of Physicians London.[347] Was the nut-shell *Juglans Major*, the Great Walnut, which Ashe may have seen on a visit to Tradescant's museum in Lambeth?

Daniel Colman cited Galen, Justinian and Thomas Aquinas. Richard Sampson in an acrostic poem (the first letter of each line when combined read James Wollveridge, a variant of Wolveridge) wrote of Chaldaick, the Babylonian occult sciences. From the context, he was referring to the Caldaic language, and he also mentioned Syriack (Aramaic) a language of the Old Testament (with Chaldaic).[348] Wolveridge's friends were steeped in classical learning with few contemporary references (Tradescant for example).

The text

According to Wolveridge 'very many have not only bestowed their Oyle, but their ink on this subject' of midwifery; a review of his text may clarify his observation.[349] Wolveridge's first section or chapter (pp. 1-13) was captioned 'Of the True generation of the Parts, and increase of the infant in

[345] Culpeper, *A Directory for Midwives*, opposite p. 1.
[346] Anonymous, *The Ladies Cabinet Opened: Wherein is found hidden several Experiments in Preserving and Conserving, Physicke, and Surgery, Cookery and Huswifery* (London, 1639), pp. 12-36.
[347] John Tradescant, *Musaeum Tradescantianum: or, A Collection of Rarities. Preserved at South-Lambeth neer London* (London, 1651), p. 147.
[348] Chalk, *Managing Midwives*, p. 229.
[349] Wolveridge, *Speculum Matricis,* 1670*,* A3v.

the Womb, according to daies and times, till the time of the birth.' The caption is almost identical to that of Rueff's Chapter five 'Of the true generation of the parts, and the increase of the feature [i.e., the foetus], according to the daies and moneths.'[350] Moreover Wolveridge copied Rueff's 'Loadstone attracts iron' simile, either directly or indirectly via Harvey.[351]

> [Wolveridge's version] When the womb (whose property it is naturally to receive seed unto generation, as a Loadstone attracts iron, or as Jeat straw or feathers) hath received the seed of generation, and by its virtue hath shut up the seed for generation.[352]
>
> [Rueff's version] After the matrix naturally apt, and proper, for receiving seed for generation (like unto a Load-stone attracting Iron, and Amber drawing to it hairs and feathers) hath received the begetting seed, by heat hath inclose both seeds together.[353]

The property of jeat (jet) or amber to attract hair or straw when rubbed was also mentioned by Harvey's contemporary Francis Bacon in his *Organum Novum* of 1620, an idea he may have derived from the *De Magnete* of 1600, a treatise on magnetism by his colleague and older contemporary, the Royal physician William Gilbert.[354] In the tract quoted above Wolveridge used the commonly used 'womb' instead of Rueff's Latin 'matrix'; converted 'like unto' to the easier 'as a'; and instead of 'begetting' stayed with 'generation.' Wolveridge mentioned 'seed' but was that singular or plural? Nowhere in his manual did he write that 'both seeds' were necessary for pregnancy, as alluded to by Rueff who imitated Galen.[355] In this first chapter Wolveridge traced the development of the embryo through various stages, accompanied with explanatory diagrams. From day one to six after conception small fibres

[350] Rueff, *The Expert Midwife*, pp. 27-38.
[351] Harvey, *Generation of Living Creatures,* p. 540.
[352] Wolveridge, *Speculum Matricis*, 1670, pp. 1-2.
[353] Rueff, *The Expert Midwife*, pp. 27-8.
[354] Devey, *Novum Organum*; Allan Chapman, 'William Gilbert' in David Gubbins and Emilio Herrero-Bervera (eds), *Encyclopedia of Geomagnetism and Paleomagnetism* (Dordrecht, 2007), pp. 360-1.
[355] Rueff, *The Expert Midwife*, p. 9.

or hairs were recognisable, an observation also recorded by Hippocrates.[356] Shortly afterwards spots akin to curds of milk appeared where the liver, heart and brain would form (Wolveridge, p. 3; Rueff, p. 28). Blood vessels arose and became arteries and veins. In turn the other vital organs, the musculo-skeletal and nervous systems, and the body coverings were fashioned. All were infused with vital spirits. The schema was derived from Rueff but Wolveridge diverged from him in several instances. Rueff included images of eight stages of early growth, six of which were matched in the *Speculum Matricis* but Wolveridge additionally included an illustration and explanatory text of a 14-18 day old 'young one' not present in Rueff (p. 13). The unacknowledged image was traced to Severinus Pineau, 1641.[357]

Wolveridge mimicked Rueff who wrote that the liver was the first essential organ to appear in the embryo, in keeping with the precepts of Galen.[358] William Harvey disagreed with Galen but wrote instead that the pulsating *punctum saliens* (leaping /starting point) from which the heart developed was the first essential organ to appear, much in keeping with Aristotle.[359] Wolveridge, though he admired and copied some text from Harvey, followed Galenic thinking as epitomised by Rueff. With regards to the circulatory system Wolveridge followed Rueff's general outline but introduced terms such as *Vena Coronaria* (p. 7) and *Vena bifurca* (p. 3) not present in *The Expert Midwife,* and likely copied from Culpeper's *Bartholinus Anatomy*.[360] It is also evident that Wolveridge did not follow the scheme of fetal circulation as postulated by Harvey in his *De Motu Cordis*.[361]

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[356] I. M. Lonie, 'The Seed and The Nature of the Child,' in G.E.R. Lloyd (ed.), *Hippocratic Writings* (London, 1983), p. 326 (henceforth cited as Lonie, *The Seed and the Child*).
[357] Severinus Pineau, *De integritatis et corruptionis virginum notis* (Lugduni Batavorum, 1639 & 1641), pp. 113-4 (henceforth cited as Pineau *De integritatis*).
[358] Armelle Debru, 'Physiology' in R. J. Hankinson (ed.), *The Cambridge Companion to Galen* (Cambridge, 2008), p. 279.
[359] Harvey, *Generation of Living Creatures,* pp. 274, 319, 536; A. L. Peck (trans.), *Aristotle Generation of Animals* (London, 1943), pp. 195, 225 (henceforth cited as Peck, *Aristotle, Generation of Animals*).
[360] Nicholas Culpeper, *Bartholinus Anatomy made from the Precepts of his Father, and from the Observations of all Modern Anatomists* (London, 1668), p. 112.
[361] William Harvey, *Exercitatio Anatomica de Motu Cordis et Sanguinis in Animalibus* (Frankfurti, 1628), pp. 55-58.

In relation to the nervous system and the marrow of the back-bone (which was the existing term for the spinal cord) Wolveridge referenced Ecclesiastes with its mention of the 'siluer corde' an instance that showed he was alert to various arguments and terminology, and that he made his choice based on personal judgement (p. 11).[362] That 'the Scripture calls it the Silver Cord' was also asserted in Culpeper's edition of *Bartholinus Anatomy* of 1668, possibly Wolveridge's original source for his biblical reference.[363] The *Speculum Matricis* was completed in 1669.

An anonymous Latin verse appeared in both Rueff and the *Speculum Matricis* as an aide memoire for the stages of embryonic development. The stanza was attributed by Wolveridge to 'The Ancients' but could be be derived from Rodrigo de Castro's Latin version in *De universa mulierum mediciano* on women's ailments of 1604.[364] Wolveridge's verse differed from Rueff and was more readable 'Six daies in milk, thrice three the seed's in blood;/ twice six makes flesh, thrice six makes members good' compared to Rueff's 'Sixe daies to milk by proffe, thrice three / to blood convert the seed. / Twice sixe soft flesh doe forme, thrice sixe / doe massive members breed.'[365] Was Wolveridge's stanza just an improvement on Rueff's more awkward rendition? The verse can be traced to *De propriatibus rerum* (On the Properties of Things) by Bartholomus Anglicus in the 13th century but was of older origin.[366] The ancient Greeks developed embryological calendars that addressed fetal development and foretold the duration of a given pregnancy. Those timetables were still in use in Wolveridge's time (and by other writers on midwifery) to determine possible birth dates.[367]

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[362] Ecclesiastes 12:6, *The Holy Bible* (London, 1611).
[363] Culpeper, *Bartholinus Anatomy*, p. 317.
[364] Wolveridge, *Speculum Matricis*, 1670, p. 12; Rodrigo de Castro, *De universa mulierum medicinano* (Hamburghi, 1604), p. 92 (henceforth cited as Castro, *De universa mulierum*).
[365] Rueff, *The Expert Midwife*, p. 37.
[366] Juris Lidaka, 'Bartholomew the Englishman on Infancy' in *The Medieval Thought Project*, Stanford University, 2013 http://bartholomew.stanford.edu/oninfancybart/intro.html (5 Oct. 2016).
[367] Holt N. Parker, 'Greek Embryological Calendars and a fragment from the lost work of Damantes, On the Care of Pregnant Women and of Infants' in *Classical Quarterly,* Vol. 49. 2. (1999), pp. 513-34.

According to a recent publication the first twenty-five pages of the *Speculum Matricis* provide a synopsis of Rueff. It is evident that Wolveridge availed of Rueff's *The Expert Midwife* as a guide when writing chapter one of the *Speculum Matricis*.[368] However, while some portions were copied directly, his text of 13 pages was not entirely identical to Rueff's 16 pages. Wolveridge modified Rueff's text and/or introduced additional information gleaned without acknowledgement from Castro's *De universa mulierum*, Bartholin's *Anatomy* and Severinus Pineau's *De integritatis* while directly referring to 'The Ancients' and to Ecclesiasticus.

The title of Wolveridge's second chapter (pp. 14-8) 'Of the Nutriment of the child in the womb, by what nourishment it is preserved, and when it growth up to be an Infant' mimics that of Rueff's book one, chapter six.[369] Wolveridge altered just three words within the heading using the more complex 'nutriment' for 'food,' 'child' instead of Rueff's depersonalised 'feature' and 'preserved' for 'nourished.' As recorded, the infant was fed by blood attracted through the navel. Menstruation ceased after conception and the retained blood was re-routed. The purest portion fed the 'young one,' a second aliquot was modified to become breast milk and the third was shed after placental delivery. Rueff wrote 'hence it is that Hippocrates saith, there is much affinity betwixt the flowers and the milk, since the one happeneth to be made out of the other' (p. 15). Wolveridge's version was slightly modified but he included two references to Hippocrates' *Aphorisms* which dealt with breast milk.[370] Because of nourishment in the womb and subsequent breast-feeding infants receive 'more from the mother than from the father' a dictum attributed by both authors to Galen.

Wolveridge and Rueff indicated that after the 45th day the embryo 'receiveth life' (as advised by Hippocrates) and movement would occur by ninety days. Wolveridge copied Rueff in this incorrect interpretation of

[368] Hobby, 'Early Modern Midwifery Manuals,' pp. 72, 75, 84, 73, 84.
[369] Rueff, *The Expert Midwife*, pp 38-42.
[370] J. Chadwick and W. N. Mann, 'Aphorisms,' in G.E.R. Lloyd (ed.), *Hippocratic Writings* (London, 1983), p. 225 (henceforth cited as Chadwick and Mann, *Aphorisms*).

Hippocrates who wrote that the female fetus was formed at 42 days, the male at 30 days maximum, with movement at four months and three months respectively.[371] Childbirth could be expected in the ninth month although females were often born a month later, according to Hippocrates. Throughout chapter two Wolveridge borrowed extensively from Rueff with little alteration of the text but added one direct reference to a couple of Hippocrates' *Aphorisms* and another to Galen. The actual content of the text reflected the concepts of embryonic development laid down in Greek antiquity. However, both authors included a depiction of a fully formed fetus in utero that showed a circumferential placental band, based on canine rather than human anatomy, originally borrowed from Andreas Vesalius.

The title of Wolveridge's third chapter (pp. 19-22) 'How the infant doth in the womb the fifth, the sixth, the seventh, and eight moneth; and also of the difference of sexes, and forms' was a close copy of Rueff's similar chapter.[372] An infant born in the sixth month would not live, but if delivered in the following month could easily survive 'because then it is sufficiently perfect' (p. 19). If not born the infant would move to a different part of the womb. The movement caused a weakening effect so if birth occurred in the eight month the child would rarely live. Harvey related a similar teaching.[373] Hippocrates wrote of premature birth in humans and that a child born in the seventh or eight month had various chances of survival.[374] A confounding problem related to infant survival was the influence of the stars. At seven months, the planets brought forth a dangerous motion hurtful to the infant 'for the Sun is ever standing in an opposite sign at that time.' In the eighth month, the planet Saturn 'an enemie to all that receive life' drew ever closer. Belief in the influence of astrology on health was of ancient origin and continued in the 17th century. For instance, in 1655 Culpeper wrote that the

[371] Lonie, *The Seed and the Child*, pp. 229 & 333.
[372] Rueff, *The Expert Midwife*, pp. 64-66.
[373] Harvey, *Generation of Living Creatures*, pp. 475-6.
[374] Paul Potter (trans.), *Hippocrates* (vol 9, Cambridge Massachusetts and London, 2010), p. 83.

generative organs and breasts fell within the ambit of Venus while 'the secrets of both sexes' were ruled by Scorpio.[375]

Wolveridge cited Hippocrates' *Aphorisms* when he wrote that male children were generated on the right side of the womb but females on the left 'out of the left testicle' (p. 21).[376] At the end of the chapter Wolveridge included an annotated diagram of a fetus in utero placed within the abdominal cavity, with the diaphragm, main organs and blood vessels on display. The image was based on an anatomical plate in Rueff (p. 63) but Wolveridge's diagram was fully annotated whereas Rueff's was not. The illustration can be traced via Thomas Geminus and Walter Rhyff to Andreas Vesalius in the previous century. The text of Wolveridge's chapter three then was imitative of Rueff but included an additional reference to Hippocrates and the annotated anatomic image. Almost all the information in the chapter can be traced to antiquity.

The title of Wolveridge's chapter four (pp. 23-5) was 'Of the due time and form of the Birth; and what are the causes of pains in Child-bearing.' It resembles Rueff's caption for the same subject matter.[377] The text opened with 'the ninth month being now at hand, the nourishment of the infant beginneth to fail' (p. 23). Thereafter the infant required more nourishment than provided in the womb so with great struggling the secundine and other coats break and 'the humors flow down' (p. 24). The infant then proceeded in the manner of a normal birth, the head towards the outlet, hands drawn down by the sides, and laid upon the hips. The midwife was advised to make sure she had 'all necessary conveniences' including a 'stool, a sharp knife, astringent powder, a sponge, swathes &c. and warm oyle of Lillies' (p. 25). The text in Wolveridge's chapter four is essentially like Rueff throughout but with the addition of 'astringent powder' with which to treat the newly cut cord (to constrict and protect it) as part of the necessary conveniences for

[375] Nicholas Culpeper, *Culpeper's Astrologicall Judgement of Disease from the Decumbriture of the Sick* (London, 1655), pp. 95 & 99.
[376] Chadwick and Mann, *Aphorisms*, no. 48, p. 225.
[377] Rueff, *The Expert Midwife*, pp. 75-8.

birth. Both authors included images of a fetus entering labour in the natural form but also as a breech presentation. At the end of the chapter Wolveridge departed from his reliance on Rueff by presaging that he would then continue with a dialogue between a midwife and a doctor. In conclusion, Wolveridge's first four chapters of 25 pages were based in the main on four chapters of 22 pages in Rueff, with additional information.

When Wolveridge embarked on chapter five (pp. 26-32) he put Rueff to one side and used Guillemeau as a main source, adjusting and elaborating on it to meet his own concerns, just as he had done with Rueff. Wolveridge's chapter five was introduced as 'A Dialogue between Eutrapelia the Midwife, and Philadelphos the Doctor.' This literary device was unique to Wolveridge when compared to existing midwifery manuals and provided for the 'catechistically composed' portion of his title page and the text that followed. With his introduction of Eutrapelia, Wolveridge showed appreciation of midwives' expertise, who in turn were more likely to read his manual. Eutrapelia was aware that Doctor Philadelphos sought 'a woman that may make a fit midwife' and declared that she herself would be willing 'to be serviceable to my generation, and to take upon me that employment' (p. 26). Philadelphos responded by enumerating the attributes of the best midwife.

> The best midwife is she that is ingenuous [i.e., ingenious], that knoweth letters, and having a good memory, is studious, neat and cleanly over the whole body, healthful, strong, and laborious, and well instructed in womens conditions, not soon angry, nor turbulent, or hasty, unsober, unchaste; but pleasant, quiet, prudent; not covetous.

Soranus of Ephesus had set out the qualities of the best midwife, noting they should be 'well versed in theory … trained in all branches of therapy' being 'robust on account of her duties' and of a 'quiet disposition' while being well 'disciplined and always sober' and 'not greedy for money.'[378] The 6-7th century compilers of midwifery who followed, namely Aetios of Amida and

[378] Temkin, *Soranus' Gynecology,* pp. 6-7.

Paul of Aegina did not continue the tradition.[379] Nor did the first English handbook devoted to gynaecology and midwifery in the 15th century refer to the ideal midwife.[380] In a prologue to *The Birth of Mankind* from the 16th century Eucharius Roesslin wrote 'that many proud midwives … [are] right expert, diligent, wise, circumspect and tender about such business as appertaineth to their office.'[381] The French Royal Midwife Louise Bourgeois penned a book on obstetrics in 1609 in which she claimed to be the first woman to write on the subject of midwifery.[382] Nine years later an expanded version was published with a prefatory letter that described the qualities required of a midwife.[383]

> I exhort thee to be diligent, and leave nothing unsearched that may tend to the advantage of thy practice. And to this end be always humble; for those that are proud and obstinate, never gain upon the hearts of those that are knowing in secrets. Be sure thou never make trial of any new Remedy or Receipt, either upon poor or rich, if thou be'st not assured of the quality and operation thereof … you must beware, for any treasure in the world, of adhering to one vice, such as they are guilty of who give remedies to cause Abortion … if you find them (mothers) very poor take nothing … a sweet disposition in a midwife is more commendable than a rigorous … never be dismayed if everything go not well … my last advice is, that thou do well, and in so doing, fear nothing but God, that he may bless thee, and thy endeavours.

In addition to Bourgeois the French accoucheur Jacques Guillemeau wrote about the ideal midwife; an entire chapter was devoted to the history of midwives and their desired qualities in his midwifery manual of 1635.[384] While Wolveridge was not alone among contemporaries in highlighting the qualities of an ideal midwife, he did not copy from Bourgeois, nor Guillemeau; he did not mention remedies to cause abortion. Avoidance of

[379] Ricci, *Aetios of Amida*; Adams, *Paulus Aeginata*.
[380] Beryl Rowland, *Medieval Woman's Guide to Health*.
[381] Hobby, *The Birth of Mankind*, p.21.
[382] Bourgeois, *Observations*.
[383] John Pechy, *The Compleat Midwife's Practice Enlarged* (London, 1698), pp. 345-51.
[384] James Guillemeau, *Childbirth,* pp. 79-86.

remedies to cause abortion can be traced to Hippocrates' *Oath*.[385] After this tract on the qualities of the best midwife Wolveridge referred to the midwives Shipruah and Puah of Exodus whom God treated well because they 'feared' Him.[386] Culpeper likewise referred to the 'Midwives of the Hebrews.'[387]

Once the enumeration of virtues was concluded Philadelphos questioned Eutrapelia on her 'experience and skill that I may better judge of your abilities, and approve of them (p. 27).' The midwife responded by outlining the normal birth process. Some mothers were delivered in bed while others occupied a birth stool 'as high as a Barber's chair' with a hole 'in the shape of the moon' in the seat (p. 28). Rueff also described the birth 'Stolle or Chaire' which Wolveridge could have adapted (pp. 78-80). The midwife sat at a lower stool to face the labouring woman with an attendant at each side of the stool and one behind. The woman was encouraged to 'depress the Diaphragma (or Midriff) especially when her throwes are upon her' (p. 28). The midwife dipped her fingers 'in warm oyle of sweet Almonds, or Lillies (and) moved about the orifice of the matrix.' If required, the membranes were punctured with 'the nail of the finger.' The infant and afterbirth were assisted from the birth canal and through the opening in the stool. After 'the child hath rested a while' the cord was cut four inches in length with a sharp pen-knife and tied with strong double silk (p. 30).

An astringent powder with seven medicinal ingredients was applied to the cut cord. The specified remedy was the only prescription offered by the midwife throughout the manual, the remainder being in the remit of the doctor. Also, the Rx symbol, short for the Latin recipe, or 'I prescribe' was used there, the only such instance in the *Speculum Matricis*. On the completion of those umbilical cord tasks, the infant was washed and swathed. Finally there was a discussion about the necessity to hang a 'skirt of cloth that usually ought to be about, to keep away the air' from reaching

[385] Chadwick & Mann, *Hippocratic Writings,* p. 67.
[386] Exodus 1:15 and 1:17, *The Holy Bible* (London, 1611).
[387] Nicholas Culpeper, *A Directory for Midwives* (London, 1651), sig. A7.

the privities of the mother when she was on the birth stool as 'there is nothing worse to child-bearing women than the cold air … (as) grievous symptoms, and often death itself' could supervene, a statement cited to Castro in his *De universa mulierum*.[388] The problems of fever and prostration after childbirth referred to by Wolveridge were dealt with at length by Castro.[389] The birth stool was of ancient origin and was described by Soranus who wrote 'concerning the area below the seat, the sides should be completely closed in with boards, whereas the front and the rear should be open for use.'[390]

The section in Rueff to which this chapter 'A Dialogue between Eutrapelia the Midwife, and Philadelphos the Doctor' can be compared is 'Of the Office of Midwives, and of the apt and fit forme and fashion of their Stoole or Chaire.'[391] Rueff did not use a catechetical question and answer method, nor did he write on the qualities of the best or ideal midwife as in the *Speculum Matricis*. The description of childbirth in Rueff differs to Wolveridge in style and content although there are some similarities. Rueff applied a powder to the cut cord with three ingredients while Wolveridge used seven, only Myrrh being common to both. Each author included an illustration of a birth stool that was mostly similar but Wolveridge alone included an annotated explanation of its component parts. Rueff showed an image of a fetus with placenta (of Vesalian origin) that Wolveridge also used but embellished with annotation and explanations in a later chapter entitled 'Of the Secundine or Afterbirth.'

Wolveridge's sixth chapter (p. 33) was 'Of the site of the child in the womb.' The text was accompanied by an illustration of a mature fetus in utero, with membranes dissected to reveal the placental cake, all set within a mother's torso. The image was derived from Thomas Bartholin in 1668, itself a copy of an image by Giulius Casserius in 1631. This short sixth chapter

[388] Wolveridge, *Speculum Matricis, 1670*, p. 31; Castro, *De universa mulierum*.
[389] Castro, *De universa mulierum,* Lib 4, p. 302-04.
[390] Temkin, *Soranus' Gynecology*, pp. 70-1.
[391] Rueff, *The Expert Midwife*, pp. 78-83.

treated of 'the infant, (and) how it lyeth in the womb.' The text is a slightly modified version of Harvey's 'Of the birth' from 1653.[392] Harvey wrote of the hands as follows 'whereof one is placed about his Temples or Ears, and the other at his Cheek; in which parts there are white spots discovered in the skin, as being the signes of his confrication [vigorous rubbing].' Wolveridge imitated him, but chose more direct language; the infant's hands were sited thus 'the one placed on the temples the other on the cheeks; insomuch, that white spots may be seen on the skin, as if they had been fretted against each other' thus he used 'may be seen' instead of 'discovered' and fretted instead of confrication. Culpeper also wrote on 'What is the Form the Child lies in the Womb?' and cited Hippocrates' *De Naturi Pueri.*[393] The sources Wolveridge credited for chapter 1-6 are shown in Table 3.1. It is also likely that he used the non-credited sources as laid out in the table.

Chapter	**Credited**	**Not credited**
I Generation	Ecclesiastes. The Ancients.	Bartholin, Castro, Pineau, Rueff.
II Nutriment	Galen, Hippocrates.	Rueff, Vesalius.
III Growth	Hippocrates.	Geminus, Rueff, Vesalius.
IV Due time		Rueff.
V Dialogue	Bartholin, Castro, Exodus.	
VI Site in womb		Harvey.

Table 3.1: Chapters I-VI with sources, credited and non-credited.

The seventh chapter (pp. 34-6) in the *Speculum Matricis* addressed 'Of difficult births, whether praeternatural, or whether they proceed from causes external or internal.' External causes could be excessive heat reducing the woman's strength; or excessive cold condensing the womb; or from fragrant scents 'for sweet smells do attract the womb upwards, and so render the birth more difficult.' The belief of the attractive effect of sweet aromas on the uterus, or the repellent result of pungent odours, can be

[392] Harvey, *Generation of Living Creatures*, p. 472.
[393] Culpeper, *A Directory for Midwives*, pp. 74-5; Lonie, *Hippocratic Writings*, p. 341.

traced to Hippocrates.[394] Difficult births from internal causes could be attributed to the woman herself being too angry or fearful, too modest, being overweight, when the passages were too narrow, or if she was over the age of 40. Alternatively, the womb, the infant, or the membranes of the womb could be at fault, a long list of numbered ailments or abnormalities were listed for each.

Rueff did not include a similar tract on the reasons for difficult birth but Roesslin did and cited Galen in his 'Deliveries are Hard or Easy, and how one Can and Should Recognise Them.'[395] In this instance Wolveridge did not copy from Roesslin but from Castro who grouped the causes of difficult childbirth as being from the woman, the foetus, and from the membranes. Castro cited his sources as Galen and Hippocrates supplemented by the Arabic physicians Avenzoar and Rhazes, plus Eucharius Rhodion (Roesslin).[396] Wolveridge numbered his headings: '1. From the woman … 2. From the womb itself' and so on. He may have taken the numbering idea from Guillemeau's 'Of a painfull and difficult Delivery, with the causes thereof.'[397] Wolveridge's chapter 'Of difficult births' relies heavily on knowledge from Greek antiquity as found in the writings of Soranus who in turn borrowed from Herophilus (died 3rd century B.C.) who is considered as the author of the first treatise on midwifery.[398] Herophilus dealt with the causes of difficult childbirth, and his 'external conditions' were broadly similar to those of Wolveridge, while among the 'internal conditions' he cited anomalous positions of the fetus, ailments of the uterus or amniotic sac and multiple births; those details were imitated in midwifery texts over the following centuries.[399]

In Wolveridge's chapter eight (pp. 37-9) titled 'Of the Schemes, Fashions, and Figures of the birth lying in the womb, and how they are born,

[394] James Longrigg, *Greek Medicine from the Heroic to the Hellenistic Age* (London, 1998), p. 196.
[395] Arons, *Eucharius Roesslin,* pp. 46-49.
[396] Castro, *De universa mulierum*, pp. 291 & 289.
[397] Guillemeau, *Childbirth,* pp. 104-13.
[398] Temkin, *Soranus' Gynecology*, pp. 175-7.
[399] Staden, *Herophilus*, pp. 296-99.

or may be born' the author provided an introduction and precis to the upcoming chapters 9 through 24 (pp. 39-78) that dealt with praeternatural or non-natural births in singletons and twins. Such a synopsis was not present in Rueff. Wolveridge, in the guise of Dr. Philadelphos, explained that the 'postures of the infant in the womb are generally four': first, they offer to come with their heads forward, which is the natural birth; secondly, with the feet forwards; thirdly overthwart and fourthly, doubled (p. 37). A similar system evolved in antiquity and Soranus distinguished the main presentations namely longitudinal (with head, feet or arms forward); transverse (Wolveridge's 'overthwart') with the side, back or abdomen presenting; and/or doubled up with the head and legs, abdomen or hips to the fore.[400] In concluding his summary of the upcoming chapters Dr. Philadelphos stated 'It is reasonable, (good Mrs. *Eutrapelia*) that we discourse of praeternatural births because those bring the greatest danger with them, both to the mother and infant' (p. 39). In the sections that followed each of the malpresentations was dealt with as an enquiry by Dr. Philadelphos to which Eutrapelia responded in detail, her experience and skill on show. Additionally, each non-natural presentation was displayed in the form of a diagrams.

In the first example of praeternatural birth the doctor posed the question 'how will you deliver the woman?' (p. 39) when the child presented feet forward with hands by the thighs, a form of childbirth long referred to as 'Agrippae Partus' as it was theorised that 'Agrippa' was delivered of a breech birth.[401] The midwife would encourage the infant to come forward in that posture and 'powder of Hellbor, & blowed up into her nose' would induce sneezing to aid the birth (p. 41). The second example featured a presentation of feet forward and hands above the head. Eutrapelia advised 'to thrust back the infant into the womb, and turn it to the right form' (p. 44). Alternatively, the midwife would raise the woman's buttocks and

[400] Temkin, *Soranus' Gynecology*, xlii.
[401] Robley Dunglison, *Medical Lexicon, A New Dictionary of Medical Science* (Philadelphia, 1839), p. 18.

swathe the belly to drive the infant back into the womb 'so that it may hasten to a lawful birth' (p. 44). If the infant presented by one foot the treatment was to replace the foot into the womb. When the infant lay transversely (overthwart, across) the situation may be rectified by lifting the woman's buttocks, or by a tumbling and rolling of the mother (pp. 45-51). The latter two ways of achieving a more favourable presentation for delivery were related in the Hippocratic writings.[402]

For the next examples of praeternatural births namely breech (pp. 57-61) and when 'the infant falls down upon its breast' (p. 63) the advice was to reduce the infant to the normal head down presentation mainly by internal manipulation. Twin births were also deemed praeternatural. When both twins proceeded by the head the birth of the second twin 'will be easier, and without danger, because the first birth hath made the way for the second' (p. 67). When twins came feet first the instruction was to move the head of the first to the birth and after that delivery repeat the method for the second. If those efforts failed there was 'no good hopes of a happy birth.' In the third instance of twin births one came natural / head first while the second was praeternatural, feet first (pp. 70-71).

The natural form of birth, the praeternatural singleton births and the twin non-naturals of the *Speculum Matricis* derived (with their images) from Jacob Rueff's *The Expert Midwife*. Guillemeau's midwifery manual may also have been to hand but his text was much more detailed than Wolveridge's, the sequence was dissimilar, and four of his illustrations were unlike those of Wolveridge. Both Rueff and Guillemeau wrote chapters on delivery of a dead infant with instruments, as had Soranus in antiquity, but Wolveridge did not, presumably because his targeted audience was 'Expert Midwives' and 'Grave Matrons' whom he may have considered did not use instruments to effect childbirth; however the midwife Jane Sharp was explicit on their

[402] John Redman Coxe, *The Writings of Hippocrates and Galen. Epitomised from the original Latin translations* (Philadelphia, 1846), p. 322 (henceforth cited as Coxe, *Hippocrates and Galen*).

use in *The Midwives Book* of 1671.[403] Guillemeau, unlike Wolveridge and Rueff, used the technique of podalic version in which a malpresenting infant in transverse presentation was turned to the breech and extracted feet first. The method was recorded by Guillemeau when the child came forward 'with its belly' and breast foremost. When it was not possible to turn the fetus to a natural presentation 'so drawe him forward by the feet.[404] The technique of podalic version was known in antiquity although not used by Soranus for transverse lie.[405] However Aetius described the method in the 6th century in relation the delivery of a dead infant. Podalic version was apparently forgotten or disregarded in the subsequent centuries but suggested again by Pierre Franco and re-introduced by the French surgeon Ambroise Pare in the 16th century.[406]

Wolveridge wrote a chapter on an additional birth form entitled 'Scheme the sixteenth' that was not present in Rueff. A complex presentation 'in the form of an X' was described. The German surgeon Hildanus, whose wife was an expert midwife, was involved with the case.[407] As recorded by Wolveridge, it was not possible to correct the anomalous presentation because 'the genitals were so narrow and streight … but the child was [born] dead (p. 77).' Wolveridge's chapter concluded 'having thus run through births, as well natural as praeternatural, I shall give you the reason (and that in my own opinion) why these births are of so various and different postures … [the infant] 'swimmeth in water and moving itself, sometimes this way, sometimes that way, and is bent and tumbled several ways; insomuch, that sometimes it is strangely entangled with its own navil-cord' (p. 78). That last passage was taken with little modification from

[403] Rueff, *The Expert Midwife*, pp. 98-109; Guillemeau, *Childbirth,* pp. 136-43; Temkin, *Soranus' Gynecology*, pp. 189-196; Hobby, *Jane Sharp, The Midwives Book,* pp. 148-50.
[404] Guillemeau, *Childbirth*, pp. 167-8.
[405] Temkin, *Soranus' Gynecology*, pp. 188-9.
[406] Edward Rigby, *A System of Midwifery* (London, 1841), pp. 242-3; Johnson, *Ambrose Pare,* p. 902.
[407] Guilelmus Fabricius Hildanus, *Observationum et curationum chirurgicarum centuriae, in qua inclusae sunt* (Basileae, 1606), Observation Lxiv, p. 186 (henceforth cited as Hildanus, *Observationum et curationum chirurgicarum*).

William Harvey 'for he swimmeth in a water, and moveth himself to and fro, he stretcheth himself, now this way, and anon that, and so is variously inflected, and tumbled up and down; in so much that sometimes being entangled in his own Navel-string, he is strangely insnared.'[408]

The entire section on natural and praeternatural births in the *Speculum Matricis* derived from Rueff while 'Scheme the sixteenth' was credited to Hildanus but contained an unacknowledged portion from William Harvey. The content had its genesis in antiquity; Hippocrates (whose putative mother Phoenarete was a midwife) dealt with difficult parturition in his *de Morbis Mulierum*.[409] Writers such as Soranus and Aetius clarified the various fetal presentations, with instructions on the mode of delivery in each case, as later recorded by Wolveridge and other midwifery authors in the 17th century.[410] The various birth forms were illuminated in diagrams that became known as 'birth figures' and were included in medical manuscripts from the 5th century onwards. With the advent of printing the images appeared in midwifery manuals. Similar sets of 'birth figures' were copied repeatedly until the 18th century; the French and German versions varied slightly in appearance. Table 3.2 shows the sources availed of by Wolveridge for his chapters on childbirth.

Chapter	**Credited**	**Not credited**
VII Difficult birth		Castro, Guillemeau.
VIII How born		
IX-XXIII Of births		Rueff.
XXIV	Hildanus.	Harvey.

Table 3.2: Chapters on birth with sources, credited and non-credited.

Wolveridge's chapter 25 (pp. 79-83) 'Of a Mola' dealt with 'a false conception, a hard inform tumor, full of pores ... generally thought (by the Learned Doctors) to be begotten by the woman herself without the help of

[408] Harvey, *Generation of Living Creatures,* p. 471.
[409] Nathan Smith Davis, *History of Medicine* (Carlisle MA, 2010), p. 20; Adams, *Paulus Aeginata*, p. 462.
[410] Temkin, *Soranus' Gynecology*, pp. 179 & 187-9.

a man.' In the instance of 'begotten by the woman' he quoted directly from the works of the 16th century authors Jean Fernel and Francisco Valles although he allowed that some believed that molar pregnancy was not possible without the seed of man.[411] Jacob Rueff also had a chapter 'Of the false conception named Mola, and other falsely supposed Conceptions' in which he laid out the fifteen 'certain signs and tokens above all other tumours, whereby it may be known.'[412] Wolveridge offered only three signs, stoppage of the 'monthly terms' the only one common to both. Each author wrote on the difference between normal conception and molar pregnancy. Rueff had ten points of contrast one of which was 'a great moving' in the third month after conception, a 'signe of the false conception Mola (p. 142).' Wolveridge wrote of six differences and stated, 'a false conception hath no ordinary nor periodical motion' (p. 81) Both authors compared a mole to either a hydrops / dropsie (fluid in the womb) or to a tympany (air enclosed) of the womb but differed in their interpretations.

On further analysis it was evident that there are portions of the text that could be traced to Guillemeau in 1635. This was obvious in a number of areas e.g. there are similarities in relation to hydrops /dropsie and its differentiation from molar conception when Wolveridge wrote that 'a Dropsie … will shew some marks, being depressed with the fingers' while Guillemeau's text read 'if you touch it with your finger, sometimes the print thereof will remaine behind.' Also in relation to the tympany of the womb Wolveridge recorded 'a Tympanie will sound, if lightly stricken.' Guillemeau thought the sound like 'a Tabour' being struck, and Rueff also noted 'In a Tympany the belly is hard, sounding like a tabor or drum.'[413] It appears that Wolveridge in 1670 and Rueff's translated manual of 1637 copied these and

[411] Wolveridge, *Speculum Matricis*, 1670, pp. 79-80; Joannis Fernelii, *Ambiani, Therapeutices Universalis seu nedendi rationis libri septem* (Lugduni, 1571), lib. vii, cap. 'de Seminarum' (henceforth cited as Fernelii, *Ambiani*); Franciscus Vallesius Lib 2. Cap 6. Both of his books *Commentaria in Prognosticum Hippocratis* (Aurelia, 1555) and *Methodus Medendi* (Lovanii, 1548) were accessed but Wolveridge's quote was not discovered.

[412] Rueff, *The Expert Midwife*, pp. 137-44.

[413] Wolveridge, *Speculum Matricis*, 1670, p. 82; Guillemeau, *Childbirth,* 17; Rueff, *The Expert Midwife*, p. 144.

other portions of their texts from Guillemeau in 1635 who himself referenced Hippocrates and Galen. Another source for Wolveridge may have been Castro, whose 'De mola' was mainly based on Greek and Arabic authors.[414] Wolveridge wrote that the methods of cure were similar to those employed for delivery of a dead child.[415] The medications he advised contained seven ingredients, whereas Rueff prescribed many more and offered multiple remedies.[416] The topic of molar pregnancies was the subject of a tract by Hippocrates who wrote on their causes, signs, and treatment.[417] Aristotle also wrote on 'mola uteri.'[418] Soranus contributed a detailed analysis of the appearance, diagnosis and treatments of molar pregnancy not unlike that in Wolveridge, Rueff and Guillemeau.[419] As referenced by Castro, the Byzantine writers Aetius and Paul, with Avicenna and other Arabic writers all addressed the topic of molar pregnancy. The seventeenth century authors either credited those sources or derived their material from them without reference.

Chapter 26 (pp. 84-94) of the *Speculum Matricis* was 'Of the Secundine, or After-burden.' In the opening sequence the anatomy of the placenta and membranes was defined in relation to a duo of anatomic diagrams. The first was an annotated image of the placenta and membranes that was traced to the anatomist Giulio Casserius (Casseri or Casserio) and contained in *De formatu foetus* by Adrian Spigelius (Adriaan Van den Spiegel), 1631.[420] Harvey discussed that same image in his own tract on the placenta and membranes.[421] He also referred to Fabricius ab Aquapenda (Girolamo Fabrizio), his anatomy professor at Padua, and fellow pupils

[414] Castro, *De universa mulierum*, pp. 248-51.
[415] Wolveridge, *Speculum Matricis*, 1670, p. 94.
[416] Wolveridge, *Speculum Matricis*, 1670, pp. 130-1: Rueff, *The Expert Midwife*, pp. 145-150; Castro, *De universa mulierum*, p. 251.
[417] Coxe, *Hippocrates and Galen*, p. 300; Guillemeau, *Childbirth*, p. 13.
[418] Peck, *Aristotle, Generation of Animals*, pp. 466-7.
[419] Temkin, *Soranus' Gynecology*, pp. 158-61.
[420] Adrian Spigelius, *De Formatu foetu*, Table V (Frankfurt 1631) https://www.amazon.com/ThePrintsCollector-10-Anatomical-Prints-FOETUS-PREGNANT-PLACENTA-UMBILICAL-Spigelius-Casserius-1645/dp/B00DW5BLYY (14 Nov. 2016).
[421] Harvey, *Generation of Living Creatures*, p. 537.

Casserius and Spigelius. Wolveridge adopted some of Harvey's terminology such as 'Epar Uterinum' that was not used by Rueff in his chapter on the placenta.[422] Among other similarities to Harvey's chapter Wolveridge wrote of the placental cake (the main body of the placenta) a term used 15 times in Harvey's text, but not present in Rueff. 'Although there be twins, or more' wrote Wolveridge 'yet there is but one placenta' and thus introduced a brief topic not addressed by either Harvey or Rueff in their chapters on the placenta. However, in his text on twins Castro allowed for 'different foetuses having separate placentae.'[423] The second illustration in Wolveridge's chapter on the placenta showed a fetus attached to membranes and placenta which derived from Rueff, being based on the original by Andreas Vesalius.[424] In the concluding part of this chapter Wolveridge deviated to clinical matters when he recorded the symptoms of retained placenta and the appropriate physical and medication remedies. The symptom he notes is 'a horrible stench, which fumes up to the stomach, heart, liver, and midriff' which mirrors Rueff 'an evill, stincking, pestiferous fume, and vapour will ascend upwards to the stomacke, heart and midriff.'[425] Wolveridge suggested caudles (sweet thick alcohol imbued drinks) with seven medical ingredients whereas Rueff devoted three pages to his treatments.[426] Perhaps Wolveridge considered the details were unnecessary for his shorter handbook.

Chapter 27 (pp. 84-94) of the *Speculum Matricis* dealt with 'Of the signs of Conception in general, and the different sexes in particular.' In response to the doctor's query on the matter Eutrapelia voiced her opinion that 'tis hard to know whether a woman hath conceived yea or no' (p. 95). She then laid out her nine 'credible' signs of pregnancy namely loss of menstruation, pains and giddiness in the head, alterations in the appearance

[422] Wolveridge, *Speculum Matricis*, 1670, p. 89; Harvey, *Generation of Living Creatures,* p. 523.
[423] Castro, *De universa mulierum*, Liber Tertius, p. 88.
[424] Rueff, *The Expert Midwife*, p. 82.
[425] Wolveridge, *Speculum Matricis*, 1670, p. 92; Rueff, *The Expert Midwife*, p. 91.
[426] Wolveridge, *Speculum Matricis*, 1670, pp. 92-3; Rueff, *The Expert Midwife*, pp. 93-5.

of the eyes, a warm chest and cold back, turgid veins and arteries, changes in the breasts, vomiting and change of appetite, swelling of thighs and general body signs, constipation plus observable differences of the urine. There are strong similarities in this part of Wolveridge's chapter to Castro's 'De conceptu' in the tract on 'signae conceptum' that starts on line 38 as 'deinde cessant purgationes menstruae' and continues to line 51.[427] There are passages similar to Guillemeau also, for instance his description of pregnancy signs in the mother's eyes; 'her eyeballs shew less: the lids be loose, limber, and soft' which compares somewhat closely to the *Speculum Matricis* text 'the apples of the eyes are lessened … the eyelids are remiss (lax or slack in this context).' Furthermore, as described by Guillemeau, the changes wrought by pregnancy in the breasts and nipples are reminiscent of Wolveridge's accounts, as were other descriptions.[428] Wolveridge's text also bore some similarities to Rueff's 'Of the signs of conception' whose tract was laid out initially in a tabular form without numeration. An example from Rueff; 'if cold water be drunke, a coldness is felt in the breasts' matches Wolveridge's 'if she drinketh that which is cold, she feels cold in her breast (p. 97).'

Each of the authors mentioned here wrote that pregnancy could be detected by observing the woman's urine 'wherein are to be seen many atomes' or 'being shaken it seems to be drawn out like to wool' the language being broadly similar for each (Wolveridge, p. 98). Wolveridge's 'experiment' on urine copied Rueff so that if the urine was stoppered in a bottle for three days 'you will see little creatures like to lice; if these be red, 'tis a token of a male; but if white, they portend a female' (Wolveridge, p. 99). Meanwhile Guillemeau outlined pregnancy tests that originated with Hippocrates, Avicenna and Fernel. It appears likely that Wolveridge derived his 'signs of conception' from multiple sources, and they in turn originated with Galen and Hippocrates.

[427] Castro, *De universa mulierum*, Liber Tertius, p. 74.
[428] Rueff, *The Expert Midwife*, pp. 2-8.

Chapter 27 continued with a dialogue on methods to determine whether the conceptus was male or female. The signs and symptoms for a male developed on the right side, the eye, the belly and breast, first stirring of the infant at 60 days on the right side of the womb, and so on, while for females the signs and symptoms were contrary. Once again Wolveridge appeared to derive this tract from the same three authors, namely Castro, Guillemeau and Rueff and ultimately from Hippocrates, Aristotle and other authors of Greek antiquity. For instance the 'Aphorisms' attributed to Hippocrates claim that 'a male foetus inclines to the right, a female to the left.[429] Wolveridge wrote on the subject of superfetation 'when a woman having once conceived, conceiveth again after a certain time (i. e. in the same pregnancy)' and credited Aristotle as his source.[430] Hippocrates explained the occurrence of superfetation in his *Regimen 1*.[431] Aristotle believed that 'superfetation sometimes occurs, but infrequently, because in women the uterus generally closes up during the time of pregnancy.'[432] Castro included remarks on 'superfetatio' when writing of twin pregnancy, but voiced his scepticism.[433] Yet Harvey believed that a gravid mother could conceive again during pregnancy. He related the tale of a servant-girl who gave birth to separate children only months apart 'for she had a superfoetation' cunningly concealed.[434] Wolveridge told the mythological story of Iphicles and Hercules as an occurrence of superfetation. The boys, one mortal and one supernatural, were born as twins to Alcmaena but begotten by Amphitrio and Jupiter respectively. Wolveridge, Castro and Harvey each accredited Aristotle as their source for details on superfetation. To conclude his chapter Wolveridge penned that 'as many knots as they find in the navil-string of an infant, so many males, they say she will have' an adage also written by Rueff 'for how many knots ... so many men-children

[429] Chadwick and Mann, 'Aphorisms,' Section 5. 48, p. 225.
[430] Wolveridge, *Speculum Matricis*, 1670, p. 102.
[431] W. H. S. Jones, 'Hippocrates, Heraclitus on the Universe,' in T. E. Page et al., (eds.), *The Loeb Classical Library* (Vol. 4, Cambridge Massachusetts, 1959), Regimen, 1, XXXI, p. 273.
[432] Peck, *Aristotle, Generation of Animals,* pp. 447-9.
[433] Castro, *De universa mulierum*, Liber Tertius, p. 88.
[434] Harvey, *Generation of Living Creatures*, pp. 479-80.

shall afterward be ingendered, as they say' (p. 103). A version of the belief, but based on the colour of the knots, was known to the medieval Arab physicians Avicenna and Rhazes.[435]

Chapter 28 (pp. 104-09) of the *Speculum Matricis* dealt with 'Of Abortion' and concerned spontaneous miscarriage. Eutrapelia indicated that the causes could be internal or external. Internal causes arose from the infant, the placenta, the woman, or the neck of the womb being open, linked with constipation (or looseness) and a range of other infirmities. The many external causes included immoderate exercise, excess cold or heat, stinking smells, an absurd appetite, excess hunger, overmuch sleep and excess 'venery' or lovemaking. What is evident is that Wolveridge again derived from Rueff, Castro and Guillemeau.[436] As an example, in relation to breast changes that preceded a miscarriage Wolveridge wrote the breasts 'grow flaccid and soft of a sudden.' Guillemeau opined 'her breasts remaining limber and soft;' Rueff noted 'the dugs suddenly to waxe soft and lancke' while Castro observed a pronounced 'mammillarum spontanea extenuatio.' The observations on the changes were probably based on Hippocrates 'Aphorisms' in which he wrote 'if the breasts of a pregnant woman regress it means she will have a miscarriage suddenly.'[437] While the terms used in these examples vary, the sense is that the fuller breasts of early pregnancy return to their non-gravid state due to miscarriage. This chapter in the *Speculum Matricis* chapter concluded with 'the signs of a dead child' in the womb namely, 'no motion perceived,' a 'soft' belly, accompanied by 'great pains about the navil and loyns' and other signs which bore similarity to Rueff (Wolveridge, p. 108). In a later chapter Wolveridge prescribed seven medications, including mummy medicine, 'to facilitate the birth, drive out

[435] Jacques Gelis, *History of Childbirth*, Rosemary Morris (trans.), (Cambridge, 1991), p. 161-2.
[436] Rueff, *The Expert Midwife*, pp. 161-80; Castro, *De universa mulierum*, pp. 285-9.; Guillemeau, *Childbirth*, pp. 69-78.
[437] Chadwick and Mann, *Aphorisms*, Aphorism 37, p. 224.

the … false conception, and dead child.'[438] Rueff, Castro and Guillemeau offered multiple remedies for the cure of 'aborcement or untimely births.'

In Chapter 29 (pp. 110-14) the roles of midwife and doctor were reversed when Eutrapelia questioned Philadelphos on 'Rules for Child-bearing Women.' The enumerated directions were laid out in some detail, only extracts are relayed here. The tract began 'First, let her be cheerful' (p. 110). The pregnant mother should then avoid all sudden motion like riding or dancing or 'lacing her self too streight' (p. 111). She should beware of 'perturbations' of the mind, or sharp cold winds and excessive heat, and intemperance of eating, drinking and venery' (p.111). The diet in pregnancy should be frugal. Scarification, blood-letting, cupping and use of unregulated medicinal pills were not allowed. Directions for the cure of constipation, of fainting, of fear of childbirth before time, and for nausea and bleeding were clarified. The content of Chapter 29 was extracted from Rueff's 'Of certaine Precepts very necessary for women conceived with child, even to the houre of the birth, by reason of divers chances.'[439] The numbering system of each segment was identical and Wolveridge's shorter text reflected that of Rueff (with some variation). Guillemeau (and others, including Culpeper) who wrote more extensively on the governance of pregnant women and accredited ancient sources for the numerous directions for women in pregnancy.[440] For example, in relation to the first dictum above 'let her be cheerful', Guillemeau quoted Aristotle who 'saith a woman with child must have a settled mind.'[441] Guillemeau also referred to a number of Hippocrates' adages, for instance 'frequent diarrhoea in a pregnant woman renders her liable to have a miscarriage' which was one of the maxims related to pregnant women in the *Aphorisms*.[442]

[438] Wolveridge, *Speculum Matricis*, 1670, pp. 130-1.
[439] Rueff, *The Expert Midwife*, pp. 67-73.
[440] Guillemeau, *Childbirth*, pp. 18-78; Culpeper, *Directory for Midwives, the Second Part*, 1662, pp. 156-69.
[441] Guillemeau, *Childbirth,* pp. 26, 33.
[442] Chadwick and Mann, *Aphorisms*, pp. 206-37, Aphorism number 34, p. 224.

Chapter 30 (pp. 115-20) was 'Of the Retention of the Lochia, (in Child-bed) known by the name Courses (though improperly so called) and of their immoderate Flux.' Wolveridge expressed the opinion held by 'Learned Doctors' that the retention or suppression of the lochia 'brings the greatest inconveniences to women.' The normal 'purgations' or lochial loss supposedly continued up to 40 days after female infants were born and 30 days in the case of male infants. Wolveridge referenced Hippocrates *de Natura Pueri* for this information but Hippocrates had written 42 days for girls and 25 for boys; no explanation was offered for the variances.[443] Wolveridge also noted that according to Levitical Law purgations ceased at 66 and 33 days respectively.[444] Lack of purgation could lead to 'phlegmon' of the womb which could cause 'Pleurisies, Fevers, Frenzie' aggravated by excessive cold in the birth room (p. 116). Immoderate flowing was dangerous also 'for tis well observed by Hippocrates that everything wherein is excess, is an enemie to nature.'[445] Wolveridge offered many remedies for both conditions (details in my Materia Medica chapter). Rueff did not pen a similar chapter although he did write on 'superfluities' or 'stopping' of the 'terms' at the time of the 'moone.' However, Guillemeau and Castro dwelt on the problems of retained or excessive flow of the lochia and accorded separate chapters to each condition. Hippocrates, Galen and Avicenna were among authors from antiquity that the authors referenced.[446] Both Guillemeau and Castro also credited Hippocrates and Levitical Law (as did Wolveridge) about the duration of lochial flow but both author's texts were more extensive than Wolveridge's (p. 116). Their comprehensive materia medica differed, for instance Castro included 'vini Rhenani' in a prescription for retention of lochia while Guillemeau availed of wood-lice boiled in milk and oil of violets (in a plaster) for the same condition, but Wolveridge did not recommend those products.[447] However it is likely that one or both

[443] Lonie, *The Seed and the Child*, p. 329.
[444] Leviticus 12: 25, *The Bible*, pp. 119-20.
[445] Chadwick and Mann, *Aphorisms*, Section 2, No. 51, p. 212.
[446] Guillemeau, *Childbirth*, pp. 220-32; Castro, *De universa mulierum*, pp. 298-302.
[447] Castro, *De universa mulierum,* p. 298; Guillemeau, *Childbirth,* p. 219.

authors' books were of benefit when Wolveridge wrote this chapter, as was the *Aphorisms* of Hippocrates.

Wolveridge's chapter 31 (pp. 121-27) was on 'Fever of Milk.' Fevers could be 'critical' as with milk fever, which could begin about the fourth day after childbirth but was not customary (probably breast engorgement). Resolution through sweating was usual, and medications were little used. The main ways to avoid milk fever were a specified diet free of 'all manner of flesh, which are usually the cause of those fevers' (pp. 123-4), avoidance of cold air, and staying in bed for five days after their delivery. However, there was a chance that a 'putrid' or 'malign' fever could supervene, due to inflammation of the breasts, causing it to be classified as 'symptomatical' (breast sepsis). Other such illnesses included pleurisy, smallpox, measles and dysentery. A range of medications were available but Wolveridge declared that mothers with severe symptomatical fevers should be treated by physicians (p. 125).

It is likely that Wolveridge derived his classification of critical, putrid and symptomatical fevers from Pulverini's treatise on fevers and Culpeper's 'Of Feavers and acute diseases in Women in child-bed.' The topic of milk fever was not broached by Rueff nor Guillemeau.[448] Wolveridge had further features in common with Culpeper when he cited the onset of milk fever as appearing on the fourth day after childbirth, and being resolved by a good diet and provoking the childbed purgations (lochial flow).[449] Pulverini, Culpeper and Castro wrote extensively on the various afflictions of the breast consequent on childbirth.[450] In antiquity Aetius offered treatments for swollen breasts due to an accumulation of milk that could lead on to its spoiling (with onset of fever and inflammation).[451] The belief that milk was spoiled by certain foods that created 'bad juices,' as with meat for Wolveridge, can be attributed to Soranus and his predecessors, and reflects

[448] Johannis Hieronymi Pulverinii, pp. 40, 52, 35 (henceforth cited as Pulverinii, *Medicina Practica*); Culpeper, *Directory for Midwives, the Second Part,* 1662, pp. 198-9.
[449] Culpeper, *Directory for Midwives, the Second Part*, 1662, pp. 198-9.
[450] Castro, *De universa mulierum*, pp. 70-95.
[451] Ricci, *Aetios of Amida*, pp. 44-6.

Wolveridge and Culpeper's admonition to partake of a healthy and wholesome dietary regimen in the puerperium.[452]

Chapter 32 (pp. 126-39) was devoted to 'A Miscellany of Medicines, such as are most useful for you to have with you; and conclude all' in which Dr. Philadelphos offered medications for 'divers cases' such as hard and difficult births; against heavy menses; to facilitate the birth, drive out the secundine, false conception, and dead child; to prevent abortion and so on. The various methods of administering medications (as explained in the chapter on materia medica) included cataplasms, cordial waters, liniments, ointments, plasters, powders in caudles or juleps or possets and potions, sneezing powders, suffumigations, suppositories, unguents, and washes. Wolveridge did not credit any author for this chapter but it is likely that those already mentioned for other sections in the *Speculum Matricis* were his sources, namely Pulverinii, Hildanus, Castro, and Fernel.[453] Table 3.3 shows Wolveridge's sources for chapters 25-29.

Chapter	**Credited**	**Not credited**
XXV Mola	Fernel. Vallesius.	Castro, Guillemeau.
XXVI Secundine	Learned Physicians	Casserius, Harvey, Rueff, Vesalius.
XXXVII Conception	Aristotle.	Castro, Guillemeau, Rueff.
XXVIII Abortion	Expert Physitians and Chirurgeons.	Castro, Guillemeau, Rueff.
XXIX Rules	Prudent expert Physitians.	Rueff, Guillemeau.

Table 3.3: Chapters XXV-XXIX with sources, credited or not.

Chapter 33 (pp. 140-153) 'Of Nurses, and the best milk' clarified how to choose the best nursemaid to feed the newborn and many matters

[452] Temkin, *Soranus'Gynecology*, p. 103; Wolveridge, *Speculum Matricis*, 1670, p. 124; Culpeper, *Directory for Midwives, the Second Part,* 1662, p. 199.
[453] Pulverinii, *Medicina Practica;* Hildanus, *Observationum et curationum chirurgicarum*; Castro, *De universa mulierum*; Fernel, *Ambiani.*

concerning the qualities of mother's milk. Philadelphos delivered a monologue throughout 'since the choice of a Nurse is of so great a concernment … surely this then requires many serious considerations.' The talents and obligations of the 'best nurse', and those not to be employed, were spelt out in a lengthy discourse, as clarified in this excerpt.

> She that is mild, chaste, sober, courteous, cheerful, lively, neat, cleanly, and handy; because bad conditions, as well as good, are sucked in with the milk … whereof, let not the nurse be of an angry, malepert [impudent], and saucy disposition, shameless, scolding, or quarrelsome; not gluttonous, but so careful of her nursery, that she neither eat or drink that which may be hurtful to the infant: That she do nothing to anger herself, to grieve, or sad herself … they abstain from use of their husbands … [and from] wanton thoughts, and lascivious minds, wholly upon luxury and Venery … dreaming at night of that which their minds run on in the day, and by other filthy pollutions they infect the milk' (pp. 143-4).

That lascivious dreaming could taint the milk was accompanied by a quote from Terence's Comedies: "speech in sleep betrays the [hidden] wishes of the daytime."[454] The selection of the wet-nurse was dealt with by Soranus, the directions were comparable to Wolveridge's, including the avoidance of coitus, lewdness and any other 'such pleasure.'[455] Wolveridge chose this moment in the chapter to mention children who were distorted and 'ricketty' when breast-fed by 'slovenly' nurse-maids, or 'diseased and ricketty' when suckled by unwholesome milk.[456] The disease of rickets which led to bone deformities was first named in 1650, so Wolveridge was up to date, and may have read Culpeper's translation of Glisson's tract on the condition.[457] Wolveridge's wet-nurse should also be 'of middle stature, and good complexion; active, not fat and not in poverty; not under twenty nor

[454] Watt, *Bibliotheca Britannica*, pp. 899-90; Wolveridge, p. 144.
[455] Temkin, *Soranus' Gynecology*, pp. 90-4.
[456] Wolveridge, *Speculum Matricis*, 1670, pp. 140, 144.
[457] P. M. Dunn, 'Francis Glisson (1597-1677) and the "discovery" of rickets' in *Archives of Diseases in Childhood Fetal Neonatal Edition,* Vol. 78 (1988), F 154, F 155; Francis Glisson, 'A treatise of the rickets: being a disease common in children' Nicholas Culpeper (trans.) (London, 1651).

over forty years.' Her nipples should neither be too large, nor small, and large breasts were best, though smaller ones could have sufficient milk. A child should be suckled for up to a year 'their own mothers being the most fit to nurse their own children.' Wet-nursing was availed of in antiquity and was common in the upper classes, and later the middle classes, in Ireland, England, continental Europe and America during the sixteenth and seventeenth centuries (and beyond) thus Wolveridge's interest and long tract on the subject.[458]

In relation to the breast size of nurses Wolveridge cited the poem *Moretum* in which a housekeeper was described in the following terms 'pectora late jacens mammis' (wide across the chest, with hanging breasts) but commented that 'great breasts [are] not good.'[459] Wolveridge warned that impurities ingested in breast milk could affect the infant, and quoted Hippocrates 'if a woman take any purging physick, she purgeth her child also' and 'our modern Physitians purge the nurse, to cure the child.'[460]

The attributes of the best nursemaid and the qualities of milk did not feature in Rueff's *The Expert Midwife* but Guillemeau, Pulverini and Culpeper wrote at length on those themes, the latter's text not being dissimilar in

[458] Wolveridge, *Speculum Matricis* 1670, p, 153; Research on infant feeding in Ireland was presented by Clodagh Tait, 'Safely Delivered: Childbirth, Wet-nursing, Gossip-feasts and Churching in Ireland c.1530-1690' in *Irish Economic and Social History, vol.30* (2003), pp. 1-23; historical issues related to infant feeding are explored in other notable publications (among many) such as, Dorothy McLaren, 'Nature's Contraceptive. Wet-Nursing and prolonged Lactation: The case of Chesham, Buckinghamshire, 1578-1601' in *Medical History*, vol. 23, (1979), pp. 426-41; George D. Sussman, *Selling Mothers' Milk: The Wet-Nursing Business in France, 1719-1914* (Urbana, Il., 1982); Valerie Fildes, *Breasts, Bottles and Babies: A History of Infant Feeding* (Edinburgh, 1986); Valerie Fildes, *Wet-nursing; A History from Antiquity to the Present* (Oxford, 1988); Janet Golden, 'A social history of wet nursing in America: from breast to bottle' in *Cambridge History of Medicine series*, (Cambridge, 1996); Susanna Hedenborg, 'To breastfeed another woman's child: wet-nursing in Stockholm, 1777-1937' in *Continuity and Change,* vol. 16 no. 3 (2001), pp. 399-422; Tanya Cassidy, 'Historical Ethnography and the Meanings of Human Milk in Ireland,' in Tanya Cassidy and Abdullahi El Tom (eds), *Ethnographies of Breastfeeding* (London, 2015), pp. 45-57; and with a sexuality perspective, Simon Richter, 'Wet-Nursing, Onanism, and Breast in Eighteenth-Century Germany' in *Journal of the History of Sexuality*, vol. 7 no. 1 (1996).

[459] Joseph J. Mooney (trans.) *The Minor Poems of Virgil Comprising the Culex, Dirae, Lydia, Moretum, Copa, Priapeia, and Catalepton* (Birmingham, 1916) http://virgil.org/appendix/moretum.htm (26 Oct. 2016).

[460] Wolveridge, *Speculum Matricis,* 1670, *p. 151.*

many respects to Wolveridge.[461] However, Culpeper was not a doctor, while Castro was a physician, so Wolveridge may have based his text on de Castro who outlined the qualities expected of a wet-nurse and the condition of her breast milk. Wolveridge's admonition that a wet-nurse should be 'not under twenty … or thirty years of age' is in line with Castro's first recommendation 'primum aetas, quae sit intra 20, ac 30 annum.' Other comparable sections include Wolveridge's description of the suitable nurse to be of a sanguine complexion though not fat, which closely echoes Castro's 'sanguine coloris, non obesa nimis.' Most of Wolveridge's tract on the breasts and breast milk appear to be derived from Castro who in Chapters 34-37 of his book wrote of the various defects that could be attributed to milk and the treatments required to restore normality; and his chapters 16-20 were devoted to disorders of the breasts, all the while crediting Greek, Byzantine and Arabic sources.[462] Raynalde's translation of Eucharius Roesslin's *Rosengarten* had a chapter titled 'Of the nurse, and her milke; and how long the child should suck' which has many similarities to the texts of Wolveridge, Castro and Culpeper.[463] It is therefore possible that Wolveridge derived portions of his chapter 'Of nurses, and the best milk' from both Castro and Roesslin, with Culpeper's directory close to hand. Ultimately, the information in the *Speculum Matricis* regarding wet-nurses and milk qualities can be traced through the medical compilers Paul and Aetius to the lengthy tracts on the subjects by Soranus.[464]

Chapter 34 (pp. 154-161) of the *Speculum Matricis* was 'Of Suffocation of the womb, commonly called, Fits of the Mother' about which Eutrapelia requested the judgement of the doctor. In reply Philadelphos clarified that suffocation (also known as strangulation) of the womb was the term used by the Latins; the Greeks rendered them as Hysterical Fits; while most women

[461] Guillemeau, 'The manner of Nursing' in *Childbirth*, pp. 1-10 and Lib., pp. 3, 194-99; Culpeper, *Directory for Midwives, The Second Part*, 1662, pp. 203-27; Pulverinii, *Medicina Practica*, pp. 225, 463-71.
[462] Castro, *De universa mulierum*, pp. 321-329, 70-6.
[463] Roesslin, *The Byrth of Mankynde,* Thomas Raynalde (trans.), (1545), Folio, 112-116.
[464] Adams, *Paulus Aeginata*, pp. 8, 57-8; Ricci, *Aetios of Amida*, pp. 44-5; Temkin, *Soranus' Gynecology*, pp. 90-103.

called them Mother Fits 'from another Greek word, which signifieth, the Matrix; which is another word … for Mother.' The womb retracted upward to compress the heart, lungs, midriff and brain in response to 'some naughty humor' in the womb or from 'stinking cold vapours.' The woman became senseless with a weak pulse and could hardly catch a breath. Some also suffered convulsions followed by weakness and profound sleep. The mother fits could be differentiated from syncope in which no pulse was felt; from fainting fits or swooning in which the woman had a ruddy complexion; and apoplexy in which the senses were benumbed but the woman responded to pinching. Lastly, the mother fits differed from falling sickness or epilepsy, as women affected by the latter complaint foamed at the mouth. The cures were friction, ligatures to the extremities, cupping to the hips, groins and share-bone, and sneezing powders or other medications in suppositories, ointments, fumes to sit over, and with stinking things to smell or sweet fragrance tied to the thighs.

Rueff wrote a chapter about mother fits but it differed in its structure and materia medica when compared to the *Speculum Matricis*. Wolveridge cited the 'De strangulation utero' of Pulverini and my review confirms this was his source.[465] For instance Wolveridge's opening passage 'Amongst all the fierce distempers that women are affected with, the strangulation of the womb is accounted none of the least' is derived (but not word for word) from Pulverini's sentence 'Inter saevissimos mulebres affectus reponitur affectio haec' and the section which follows reads 'which in Latin is called a strangled uterus, suffocation of the uterus or a twisted uterus.' The causes and symptoms of mother fits were alike for both authors. In treatment, the suppository ingredients matched but other forms of remedies varied so while Wolveridge offered Laudanum to be taken in pill form, Pulverini did not. It is likely that Wolveridge also used Castro as an unnamed source; the latter's analogous chapter was more detailed and contained an elaborate materia medica.

[465] Pulverinii, *Medicina Practica*, pp. 705-08.

Both Pulverini and Castro credited authors from antiquity and Arabic medicine as their primary sources of information namely Hippocrates, Galen, Aetius, Paul, Avicenna, Rhases and others. The comparable chapter in Aetius 'Concerning strangulation of the uterus; Suffocation or Hysterical attack' conveyed much the same information as Pulverini and Castro but with a briefer materia medica.[466] In his tract on 'Hysterical Suffocation' Soranus furthermore addressed the belief of the ancients that the uterus would flee from ill-smelling odours at the fundament or nose, while fragrant aromas applied from below would entice the womb back to its normal position in the pelvis.[467] The use of errhines to promote sneezing in treatment of mother fits was referenced by Wolveridge to the Aphorism of Hippocrates that read 'when a woman who is afflicted by hysteria, or who is in difficult labour, sneezes, it should be regarded as a good sign.'[468]

Chapter 35 (pp. 162-6) 'Of the coming forth of the womb' was the final chapter of the *Speculum Matricis*. The doctor addressed Eutrapelia 'Mistress, I described how the womb might be movable upwards, yea and from side to side. I now come to speak of its motion downwards.' The ensuing text began with the signs of the disorder, for instance the womb sometimes came so low as to be seen outwards 'like a soft, and round tumor, and like the Testicles of a man.' The causes could be a fall upon the hips; extraction of the placenta; a sudden immoderate flux of blood; artificial extraction of a dead child or carriage of excessive weight; the often bearing of children; and vehement passions of the mind occasioned by sudden tidings of the loss of children, and such like, or from old age. If the prolapse was recent and the woman in her prime 'the womb is easily reduced to its proper place' (p. 164). In older women, the womb 'upon the least occasion slips out again.' Where the prolapse could not be cured it was evident that the supports were 'either laxed, or broken.' With regards to cure the first procedures were to empty the gut of 'hard excrements' by use of a clyster

[466] Ricci, *Aetios of Amida*, pp. 70-4.
[467] Temkin, *Soranus' Gynecology*, pp. 149-154, p.152.
[468] Chadwick and Mann, *Aphorisms*, p. 224.

and to empty the bladder 'by some pipe [catheter].' The womb and birth canal were washed with medicated fluid while the patient laid on her back, legs bent back, and thighs 'spread abroad' (p. 165). A linen and wool pledget was infused with medications, applied to the womb, and 'without violence press(ed) up all that which is come forth.' A purge was required if the woman had a difficult birth. Then medications were applied in a special bag worn continually so that all was 'well trust up.' Rueff also wrote a chapter about womb prolapse but Wolveridge did not copy his clinical assessment of the condition nor the materia medica.

The causes of prolapse as written above can be traced to Pulverini and his 'De uteri procidentia' for instance 'Causea multae. Ab alto enim delapsa mulier. & in coxas delata … ob violentam secundine extractionem … artificial foetus extraction … ob partum frequentiam' and so on.[469] Wolveridge's chapter was a translation of Pulverini, who in turn quoted both Paul and Aetius as the sources for his information. Aetius wrote 'concerning prolapse of the Uterus, according to Soranos' and both he and Paul had written the exact sequence for the causes of prolapse as outlined in the *Speculum Matricis*.[470] The causes of prolapse in the various texts were a mirror image of Soranus, the sequence and structure being virtually identical.

Chapter	**Credited**	**Not credited**
XXX Lochia	Hippocrates, Leviticus, Learned Physicians.	Castro, Guillemeau.
XXXI Fever		Castro, Culpeper, Pulverini.
XXXII Medicine	Physicians, Apothecaries.	Castro, Fernel, Hildanus, Pulverini
XXXIII Milk	Galen, Hippocrates, Modern physitians, Terentianus, Virgil.	Castro, Culpeper, Pulverini, Roesslin, Glisson.
XXXIV Fits	Latins & Greeks, Hippocrates, Pulverini.	Castro.
XXXV Prolapse		Pulverini.

Table 3.4: Chapters XXX-XXXV with sources, credited or not.

[469] Pulverini, *Medicina Practica*, pp. 708-712.
[470] Ricci, *Aetios of Amida*, p. 79; Adams, *Paulus Aeginata*, book 3, pp. 459-60.

Wolveridge's cures were copied from Pulverini and most of the materia medica for the condition can be traced to antiquity. Wolveridge's sources for chapters 30-35 with the authors he cited and those not acknowledged are shown in Table 3.4.

At the close of his midwifery manual Wolveridge again quoted a maxim from Horace 'Si quid novisti rectius istis, Candidus imperti; si non, his utere mecum.' A translation reads 'Whatever you know better than this, share it; if not [if you don't know] use these with me.'

Conclusion

This chapter explored the title-page, prefatory material and midwifery components of the *Speculum Matricis* to determine the possible sources that Wolveridge relied upon when writing his midwifery manual. Various authors have cited the works of Jacob Rueff as the (almost sole) and unacknowledged source for Wolveridge. In my comparison of the *Speculum Matricis* to Rueff's *The Expert Midwife* I confirmed that both texts dealt with female anatomy, conception, development of the infant in the womb, normal and difficult labour, breast-feeding and many ailments that befall women after childbirth. While similar in content Wolveridge shortened some tracts, wrote additional material, cited various authors and copied extra illustrations not in Rueff.

Not included by Wolveridge but present in Rueff were tracts on male anatomy, sterility, the birth of abnormal children and instrumental delivery of children retained in the womb. While there are many similarities in some portions of both books it is likely that Wolveridge began his writing with the *Expert Midwife* as a template but as his confidence grew consulted the works of both ancient and contemporary writers and included materials from them, while moving away from Rueff as the writing progressed.

Jacques Guillemeau's *Childbirth, or, The Happy Delivery of Women* was also cited as a sourcebook for Wolveridge. That theme is explored in this

chapter, and again in my section on the materia medica of the *Speculum Matricis*. Wolveridge did rely to a limited extent on portions of Guillemeau's text for ancillary information.

Additionally, the works of William Harvey have been cited as a basis for the *Speculum Matricis*. It was clarified in this chapter that Wolveridge named Harvey as his source for the story related by Lord Carew concerning an Irish soldier's wife who gave birth unaided to twins; for the presentation of the fetus prior to birth; and for the unacknowledged mention that the fetus 'swimmeth in water' of the womb. Wolveridge also availed of other portions of Harvey's *Generation of Living Creatures* of 1653, such as the use of a placental image from Casserius and the anatomical naming for its structures.

A fact not previously recognised in the literature, but established here for the first time, was that Wolveridge cited many authors for his medical and midwifery information. From antiquity he credited Hippocrates, Aristotle and Galen and their treatises on medicine and midwifery. In various accounts he acknowledged 'The Ancients' and quoted from Biblical sources, and cited classical poets Horace, Ovid, Terence, and Virgil. Greek and Roman natural philosophers got their due including Plato, Pliny the Elder, Pythagoras, Socrates, Synesius, Theophrastus and Tully (Cicero). The intermittent use of brief Greek and Latin sentences in the body of the text and/or marginalia, with references to ancient and contemporary writings characterised his manual.

Wolveridge's main recent sources were Rodrigo de Castro, William Harvey, Johannis Pulverinus, Jean Fernel and Francisco Valles. Likewise, 'learned, prudent, grave, modern and expert Physicians' were cited, whose medicine like his own, was essentially Galenic.[471] Indeed despite

[471] Johanna Geyer-Kordesch and Fiona Macdonald, *The History of the Royal College of Physicians and Surgeons of Glasgow 1599-1858* (London, 1999), p. 117; W. B., *An Appeal to the Royal College of Physicians, touching Medical Capacity* (London, 1745), p. 12.

Wolveridge's allusions to 'learned Physitians' he was later judged with reason to be an empiric.

It was also established in this study that the text of the *Speculum Matricis* relied to a greater or lesser extent on the scripts of authors not acknowledged by Wolveridge, namely the fore mentioned Jacob Rueff, but also Eucharius Roesslin, Jacques Guillemeau, and Nicholas Culpeper.

Wolveridge's main innovation in the midwifery portion of the *Speculum Matricis*, as distinct from the materia medica and the illustrations, was the creation of the midwife Eutrapelia and the doctor Philadelphos who engaged in catechistical dialogue as a method of imparting medical and midwifery information.

As established in this study the text of the *Speculum Matricis* derived mainly from contemporary sources but Wolveridge's reference to Rickets was among few materials not derived from the medical and midwifery works of antiquity. It appears the point was to be accessible with simplified English (if not uniformly so) rather than being innovative. The *Speculum Matricis* was the first midwifery book written in the English language in Ireland and as such was accessible to Grave Matrons and Midwives, unlike most medical texts of the era which were published in Latin.

Chapter four - Illustrations

Introduction

The main objectives of this chapter are to determine whether and to what extent the illustrations of Wolveridge's *Speculum Matricis* derived from contemporary midwifery or anatomical texts, and the relationship of those images to antiquity. The number and types of illustration in the *Speculum Matricis* are ascertained; Wolveridge's images are compared to those in prior publications; a search for comparable images in medical manuscripts of the medieval era is performed; and Soranus' *Gynecology* is considered as a source from antiquity.

The English historian Herbert Spencer compared Wolveridge's images to those of earlier published works and concluded that the illustrations were copied from *The Expert Midwife* of 1637, an English translation of Jacob Rueff's midwifery manual *Ein schon lustig Trotsbuchle* published in 1554, with wood-cut images by Jost Amman.[472] Spencer claimed Rueff's artwork derived in turn from *The Rosegarden* of 1513 by Eucharius Roesslin, the first published vernacular handbook to focus solely 'on pregnancy, childbirth, and the duties of the midwife' for over a millennium, with plates by Martin Caldenbach.[473] Roesslin's midwifery manual was translated to English from a Latin imprint of the original by Richard Jonas in 1540. An enlarged version was published in 1545 by the physician Thomas Raynold. This 1545 edition was used an exemplar for the present study.[474] Some of the Roesslin

[472] Rueff, *The Expert Midwife*; Ove Hagelin, *The Byrth of Mankynde otherwise named The Womans Book, Embryology Obstetrics Gynaecology through four centuries* (Stockholm, 1989), p. 19.

[473] Arons, *Eucharius Roesslin,* pp. 1-25, p. 3; Peter Dunn, 'Eucharius Roesslin (c. 1470-1526) of Germany and the re-birth of midwifery' in *Archives of Diseases in Children Fetal Neonatal Edition*, 79 (1998) F77-F 78 (F 77).

[474] Raynold, *The Byrthe of Mankynde*; Thomas Raynald, *The Birth of Mankind, otherwise named The Womans Booke,* imprinted at London for Thomas Adams, 1604; Hobby, *The Birth of Mankind*; J. W. Ballantyne, 'The Byrth of Mankynde, it's Author and Editions' in *Journal of Obstetrics and Gynaecology of the British Empire,* Vol. 10, No. 4 (1907), pp. 297-325, (henceforth cited as Ballantyne, *The Byrthe of Mankynde*); Arons, *Eucharius Roesslin,* pp. 1-25; Hobby*, The Birth of Mankind,* xxxviii-ix.

illustrations were derived from the 16th century anatomist Andreas Vesalius while others were traced to a treatise on midwifery by Soranus.[475]

Spencer wrote that there were eight plates and twenty-one illustrations in the *Speculum Matricis* while a frontispiece with its two images created a total of thirty-one images, which he found 'for the most part is a sheer plagiarism.'[476] The versions of the *Speculum Matricis* that Spencer reported on were MS 298 and MS 299 being hand-written replicas of the *Speculum Matricis Hybernicum* of 1670 and the *Speculum Matricis, or, the Expert Midwives Handmaid* of 1671 commissioned about 1884 and held thereafter in the Library of the Royal Society of Medicine, London. Spencer also commented on printed versions of Wolveridge's midwifery manuals in the Radford Library Manchester and the Royal College of Surgeons London, and was aware of a third such copy in the Library of the Royal College of Physicians, London.[477] This chapter will show that despite Spencer's assertion the replication of illustrations without acknowledgement or consent from the original authors was common in the seventeenth century. Some deplored such 'filching' but most viewed it as 'a practical approach' to writing and publishing.[478]

Essen-Moller of Lund University also remarked that 'the figures are identical (to those of Roesslin and Rueff)' when he acquired a rare copy of the *Speculum Matricis*.[479] Kiser of Indianapolis reported that there were 'eight plates and twenty-one illustrations' in an edition of Wolveridge's manual discovered by chance in the Philippines.[480] Kirkpatrick indicated that 'there are twenty-one engraved plates printed in the text' but did not refer

[475] Ingerslev, 'Roesslin's Rosengarten, pp 1-25, (p. 7); Ballantyne, 'The Byrth of Mankynde,' pp. 297-325.
[476] Spencer, 'Wolveridge's "Speculum Matricis", pp. 1080-1086, 1080, 81, 82.
[477] Wolveridge, *Speculum Matricis Hybernicum,* 1670; Wolveridge, *Speculum Matricis; or, The Expert Midwives Handmaid,* (1671).
[478] Heidi A. Heilemann, 'Influence of the Casserius Tables on fetal anatomy illustration and how we envision the unborn' in *Journal of the Medical Library Association,* Vol. 99, No. 1 (2011), p. 25 (henceforth cited as Heilemann, *Influence of the Casserius Tables*).
[479] Essen-Moller, 'A Rare Old Irish Medical Book', pp. 312-14, (p 313).
[480] Kiser, *Speculum Matricis*.

to any other illustrations.[481] Fleetwood estimated that there were thirty engravings in Wolveridge's book.[482] O'Sullivan commented that 'many of the figures were copied' from the books of Roesslin and Rueff and there were 'eight plates and twenty-one illustrations in the text.'[483] Devane and Murphy Lawless compared Wolveridge's 'mainly plagiarised' manual to that of the Dublin based man-midwife Fielding Ould's treatise in 1742 but made no mention of illustrations.[484] Coakley noted that the book borrowed freely from other works and contained thirty engravings.[485] Recent analyses of fetal illustrations were in the context of human rights and literary criticism respectively, and do not mention Wolveridge at all.[486] It was evident that a comprehensive study of the *Speculum Matricis* illustrations was required in the overall assessment of the manual. Once that evaluation was complete the images could be compared to those of Rueff, Roesslin and other authors of the era, to validate Spencer's assertion regarding Wolveridge's sources, or not.

Analysis of the illustrations

The *Speculum Matricis Hybernicum* of 1670 was assessed to determine the number and the categories of illustrations in the book. This version of the manual was a reproduction of an original in the Bodleian Library at the University of Oxford, made available by Early English Books Online.[487] The *Speculum Matricis, or, The Expert Midwives Handmaid* of 1671 was also assessed. This was to be found in the Heritage Centre of the Royal College of Physicians of Ireland (RCPI), Dublin.[488] Inspection revealed that the

[481] Kirkpatrick, *Speculum Matricis,* pp. 577-78, (p. 577).
[482] Fleetwood, *The History of Medicine*, pp. 50-1.
[483] O'Sullivan, *Highlights,* pp. 105-16, (p. 106).
[484] Devane and Murphy-Lawless, *Childbirth in Ireland*, pp. 138-57, (p. 144); Ould, *A Treatise*.
[485] Coakley, *Medicine in Trinity,* p. 27.
[486] Karen Newman, *Fetal Positions: Individualism, Science, Visuality* (Stanford, 1996); Katherine Park, 'Fetal Positions: Individualism, Science, Visuality, a Review' in *Bulletin of the History of Medicine, V*ol. 72, No. 2 (1998), pp. 366-368 (https://muse.jhu.edu) (19 March 2015); Keller, *Rhetoric of Reproduction*, p. 136.
[487] Wolveridge, *Speculum Matricis, 1670.*
[488] *Wolveridge, Speculum Matricis or, the Expert Midwives Handmaid*, 1671.

illustrations and the text were comparable for the RCPI library edition and the EEBO (Bodleian) version. In that EEBO (Bodleian) version the two frontispiece portrayals (of a childbirth room, and a pregnant mother with midwife and doctor) were not included so were downloaded from the website of the National Portrait Gallery, London, and added to my database of illustrations.[489] One of the anatomy plates in the EEBO (Bodleian) version was duplicated but I counted it as one for the final tally. The RCPI *Speculum Matricis* lacked three illustrations namely, a '14 to 18 day old fetus', an anatomic plate showing an opened 'mother with fetus lying in the womb', and 'peripheral nerve development' in the embryo. A figure that should have been on page 51 appeared on page 15 so it may have been that errors during book restoration led to misplaced or missing images. Otherwise the RCPI version was a comprehensive copy of the original version of 1670 except for the change of title. For the remainder of this chapter the short title *Speculum Matricis* will be used and will reflect the content of both editions.

All the illustrations in the EEBO (Bodleian) reprint of the *Speculum Matricis* were captured via an Epson Perfection V500 scan machine at 600 dots per inch (dpi) and stored in a Samsung DP700A7D 27" Series 7 'All-in-One Personal Computer'. Each image was cropped in the Adobe Photoshop Elements 9 software programme to render a typical post production image that excluded text and white page space not essential for comparison or display purposes. Each image was titled individually so that it could be readily traced to its original source. The original scans were placed in a named file while the cropped images were in a different folder. Both were retained in a third master folder named for the book's author and year of publication. To ensure that each illustration had been scanned the digital versions were compared to those of the RCPI and EEBO (Bodleian) editions and verified as being present.

[489] James Wolveridge by Thomas Cross, National Portrait Gallery, London (http://www.npg.org.uk/collections) (15 Dec. 2014); there is a second copy of Wolveridge's manual on EEBO, that of Folger, which includes the frontispiece illustrations, namely *Speculum Matricis; or, the Expert Midwives Handmaid* (London, 1671).

To compare the Wolveridge images to those of Rueff, Roesslin and those of previous midwifery or anatomy publications the illustrations in those books were scanned to computer from facsimile reprints of original works, for example those published by the Classics in Obstetrics and Gynaecology Library, and Early English Books Online. Additional images were sourced from academic treatises based on specific historic midwifery books, when complemented by the text and illustrations. Illustrated textbooks on the history of anatomy, medicine, midwifery and surgery were sourced and relevant anatomy and midwifery images scanned. Online digitized volumes, manuscripts and material dating to the middle ages and available on reputable websites were located and researched as was the Greek midwifery of Soranus. By this means a Wolveridge Midwifery and Anatomic Images (WMAI) database was created, each illustration being stored in a folder named for the book's author and the year of publication, as described for the Wolveridge images. Those folders were kept in a main file titled by the century of the book's publication. The entire complement of images was fully assessed; only a representative number of examples of the illustrations are included here to highlight the study findings. Use of the digital images in the database proved very effective when matching the *Speculum Matricis* images and other midwifery and anatomic depictions of the era as the study progressed.

The illustrations in the *Speculum Matricis* were readily sub-divided into specific types and a classification system was developed so that each image could be assigned to a descriptive category as shown in Table 4.1. The images in their categories were as follows: two plates that illustrated the fetus in early and late pregnancy; a 'bagg' to convey medications to the female genitalia; eighteen birth figures that showed the fetal presentation prior to birth; a birth stool used at childbirth; seven embryology diagrams; a fetus with placenta, and a placenta; and two portraitures. The classification system will be used later when comparing the depictions in the *Speculum*

Matricis to those in earlier printed books devoted to anatomy, medicine, midwifery and surgery, and during the appraisal of manuscript sources.

Category	**Number**	**Pages**	**Thomas Cross**
Anatomy	2	22, 49	1 (p. 22)
Bagg	1	76	1 (p. 76)
Birth figures	18	24, 40, 43, 46, 48, 50, 51, 53, 55, 58, 60, 62, 64, 66, 68, 70, 73	2 (p. 24) 1 each on pp. 62,64, 66, 68, 70, 73
Birth stool	1	28	1 (p. 28)
Embryology	7	2, 4, 6, 9, 13, 13, 16	2 (p. 13)
Fetus and placenta	1	86	-
Placenta	1	84	-
Portraiture	2	on frontispiece (Sig. A1v)	2
Total	**33**		**15**

Table 4.1: The Wolveridge Classification. The illustrations in the *Speculum Matricis* by category, the totals, their page numbers and images 'signed' by the engraver Thomas Cross.

Based on the results of the current analysis it is proposed that an intact original *Speculum Matricis* would have contained at least thirty-three images, two more than Spencer's estimate in 1927. The engraver Thomas Cross of London signed fifteen of the images in the *Speculum Matricis*; of these the legend 'Cross Sculpsit' was carried on six figures (pp. 13, 22, 24, 28), 'Cross Sculpsit et Exudit' was on two (Sig. A1v), there was a symbol which merged T (for Thomas) with a cross shape for his surname, a unique brand that was present on seven images (pp. 62, 64, 66, 68, 70, 73), but it is likely that he was the illustrator for the complete series. Cross, an 'artist associated with 163 portraits, was an engraver active 1644-1682 who produced numerous portraits of authors for frontispieces, as well as title

pages for books.'[490] It was normal practise at the time that the illustrations were financed by the book-seller, in this case Rowland Reynolds.

An expanded view of 'birth figures' in the *Speculum Matricis* is presented in Table 4.2. The terms for the presentation or presenting part of the fetus as it approached the birth outlet was in keeping with Wolveridge's descriptions in his text. He used the word 'scheme' with a designated number for each of the various fetal presentations outlined. The page number of each birth figure in the *Speculum Matricis* and the modern terms to describe fetal presentations are shown.

Presentation	**Scheme**	**Page**	**Current terms**
Head forward	-	24	Cephalic
Buttocks, feet	-	24	Compound breech
Feet forwards	First	40	Double footling
Feet forwards	Second	43	D. footling extended
One foot	Third	46	Footling
Across	Fourth	48	Transverse lie
Distorted, legs open	Fifth	50	D. footling, flexed
Knees bent	Sixth	51	Knee
One hand	Seventh	53	Hand
Both hands	Eighth	55	Hands extended
Buttocks	Ninth	58	Breech
Shoulders	Tenth	60	Shoulder
Hands and feet	Eleventh	62	Compound, limbs
Breast	Twelfth	64	Flying
Twins, heads	Thirteenth	66	Twins, cephalic
Twins, feet	Fourteenth	68	Twins, footlings
Twins, Head, feet	Fifteenth	70	T. cephalic, footling
Doubled over	Sixteenth	73	Compound, doubled
Total = 18			

Table 4.2: The Wolveridge birth figures, by presentation, 'scheme' (title), the page on which they appeared, and modern descriptive terms.

Comparison to those published

Not previously acknowledged in the literature was that Wolveridge attributed sources to three of the *Speculum Matricis* illustrations. The images were (a) an anatomy plate showing a 'child lying in the womb' which

[490] Thomas Cross of London (http://www.npg.org.uk/collections) (8 April 2015).

he credited to Thomas Bartholin;[491] (b) a birth figure titled 'Scheme the 16th' implicitly ascribed to Giulius Fabritius Hildanus through the acknowledgement that the anecdote is taken from him;[492] and (c) a medication 'bagg' also indorsed to Hildanus.[493]

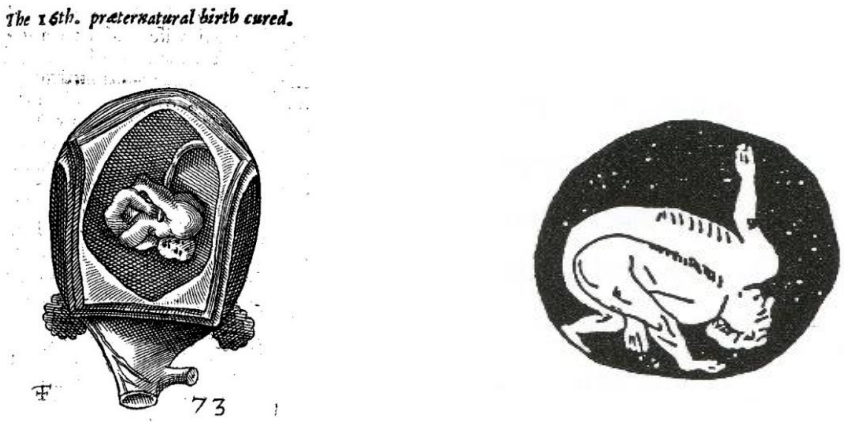
Wolveridge (1670) Bartholin (1668) Casserius (1631)

Figure 4.1: A comparison of Wolveridge's 'child lying in the womb' to plates by Thomas Bartholin and Giulius Casserius.

The anatomy plate (a) 'child lying in the womb' credited to Thomas Bartholin was one of the seven illustrations in the *Speculum Matricis* that was not derived from Rueff nor Roesslin, as shown in Figure 4.1.[494] The Wolveridge and Bartholin plates are almost identical but differ in that the Wolveridge picture is shown without external genitalia. Both images are similar in almost all respects to the third image which is a cropped version for the study of an anatomical plate by the anatomist Giulius Casserius and his artist Odoardo Fialetti published in 1631.[495] In Wolveridge's depiction the flaps of dissected abdominal wall and uterine body resembled petals of a flower, with the baby and placenta at the centre. No reference was made to the low-lying placenta in the image. The Casserius plate in its original form depicted the entire body of the mother and the engraving included a bough and foliage which occluded most of the vulva. The distribution of the cord blood vessels on the

[491] Wolveridge, *Speculum Matricis*, 1670, opposite p. 49; credited to Bartholin p. 32.
[492] Wolveridge, *Speculum Matricis*, 1670, p. 73.
[493] Wolveridge, *Speculum Matricis*, 1670, p. 76.
[494] Culpeper, *Bartholinus anatomy*, book I, table xxx, p. 81.
[495] Adriaan van der Spiegel, *De Formatu Foetu* (Frankfurt, 1631), p. 37, plate 4 (henceforth cited as Spiegel, *De Formatu Foetu*).

surface of the placenta and the style and placement of lettering for an accompanying explanatory table are equivalent in Wolveridge and Bartholin, but differ slightly in Casserius. The Casserius illustrations provided superb anatomic realism and were copied to anatomy and midwifery manuals in the following centuries.[496] Later in the seventeenth century the eminent English midwife Jane Sharp remarked in her midwifery manual of 1671 that her 'child lying in the womb' illustration, copied from Casserius, was 'the very same with that of a child that I had once the chance to see when I was performing my office of Midwifry'.[497]

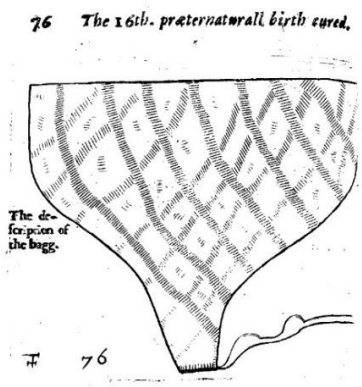


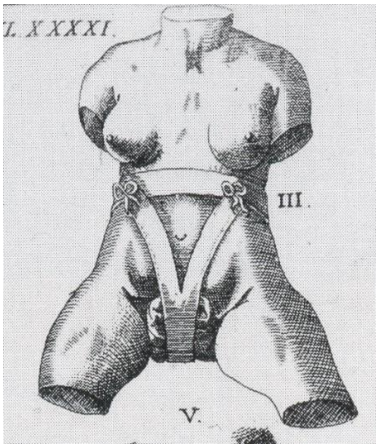
Wolveridge scheme the 16th (1670). Sloane MS 2463.
Figure 4.2: Wolveridge's scheme the 16th compared to a birth figure in Sloane MS 2463 from the 1400s.

The next image (b) as in figure 4.2 was a birth figure termed 'Scheme the 16th' and described as 'gibbous, that is crook-back'd' and was attributed to Giulius Fabritius Hildanus (Wilhelm Fabry) from his text of 1606.[498] But Hildanus, unlike Wolveridge, did not show a pictorial representation to describe the complex doubled over fetal presentation as described in the case history. A search of the WMAI database failed to reveal a similar

[496] Heilemann, *Influence of the Casserius Tables*, p. 23.
[497] Hobby, *Jane Sharp, The Midwives Book,* p. 119.
[498] Wolveridge, *Speculum Matricis*, 1670, pp. 35, 73; Guilhelmi Fabricii Hildanii, *Medico-Chirurgi Hacce Aerate praesantissimi, Observationum & Curationum Chirurgicarum Centuriae,* Lugduni, M. DC. XLI), Observation lxiv, pp. 186-88 (henceforth cited as Hildani, *Observationum & Curationum Chirurgicarum*).

compound fetal presentation in printed sources. The Sloan Manuscript 2463 in the archives of the British Library contained an image of a doubled over fetus, as shown in Figure 5.2, but there the similarity ceased.[499] The 'Scheme the 16th' image was original to Wolveridge and his illustrator Thomas Cross, and not previously credited in the literature.





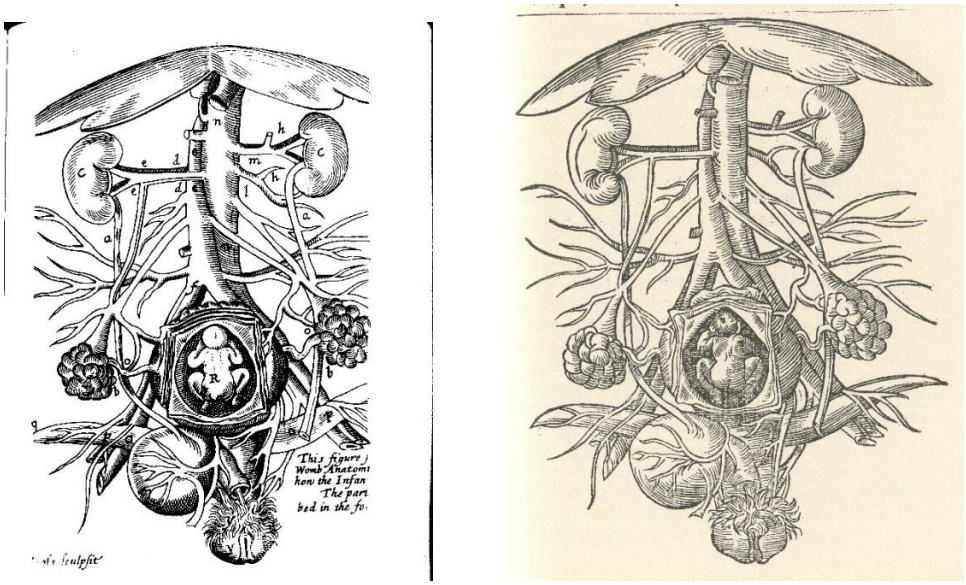
Wolveridge's 'bagg' (1670). Schultes' truss (1655).
Figure 4.3: Wolveridge's bagg device compared to Schultes' truss.

The third image (c) that Wolveridge attributed was a 'triangular bagg' to apply medical materials to the vulva, with tapes attached to the corners, to 'cover the lower belly and the privities' as shown in Figure 4.3. [500] The 'bagg' device was attributed by him to Hildanus, based on a written case report in his surgical text and uniquely illustrated by Wolveridge and his illustrator Thomas Cross.[501] In Figure 4.3 the Wolveridge 'bagg' is compared to an image in the Wolveridge database of a truss or pad known as a Schultes' truss, being a pad with a supportive belt. The sketch on the right appeared in a book by the German surgeon Scultetus, the Latinised name for Johann Schultes (1595-1645), who became eponymously associated with his

[499] Sloane Manuscript 2463 (http://www.bl.uk/catalogues/illuminatedmanuscripts) (accessed 15 Oct. 2014).
[500] Wolveridge, *Speculum Matricis*, 1670, p. 67.
[501] Hildani, *Observationum & Curationum Chirurgicarum,* lxiv, pp. 186-88.

'Scultetus bandage' a many-tailed binder which could be applied to the thorax, abdomen or vulva.[502]

The use of a truss or similar means to apply medications to the vulva and genitalia can be traced to antiquity. In his *Gynecology* Soranus wrote of 'warm clothes, or linen towels and wool' that were impregnated with remedies and applied locally for painful or retained menstruation and for inflammation of the uterus all bound by 'a piece of felt around.'[503] Midwives were accustomed to swaddling infants and could readily adapt that knowledge to apply binders to the pudenda of pregnant women or those recently delivered and Soranus provided detailed instructions.[504] The remainder of the illustrations not credited by Wolveridge to particular authors follow from this point onwards.



Wolveridge 1670 Rueff 1637

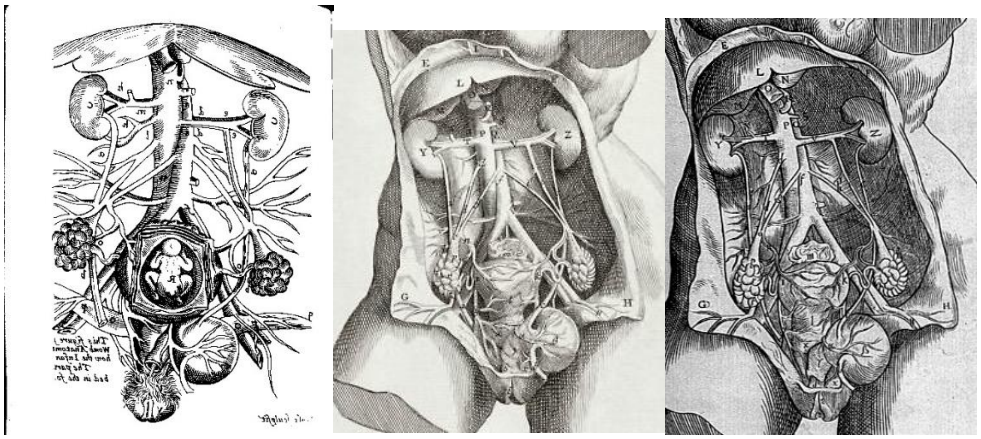
Figure 4.4: A comparison of Wolveridge and Rueff anatomy plates.

The Wolveridge and Rueff anatomical illustrations as shown in Figure 4.4 are almost identical, in each rendering a fully formed fetus is placed within a layered early pregnant uterus and placental sac. Also revealed are the

[502] Johann Schultes, *Armamentarium Chirurgicum* (Ulmae, 1655), table xxxxi.
[503] Temkin, *Soranus' Gynecology*, pp. 136, 137 & 147.
[504] Temkin, *Soranus' Gynecology,* pp. 84-7.

ovaries, kidneys, bladder, genital tract and the main abdominal blood vessels. An important variation was Wolveridge's use of letters to mark structures in the abdominal cavity for explanation in the body of his text, whereas Rueff's image did not carry such symbols. However, scrutiny of Wolveridge's plate revealed that only twelve of the sixteen marked structures corresponded with the explanation offered in the text of the *Speculum Matricis*.

The maternal intra-abdominal structures displayed in the Rueff image can be traced via *The Birth of Mankind* (p. 83) through the copyist Thomas Geminus (1555) to Vesalius in 1543 as shown in Figure 5.5. The Vesalian plates created by Andreas Vesalius and his artist (probably Jan Stefan van Kalkar) were copied by Thomas Geminus soon after their publication. His plagiarised version was shorter and cheaper than the Vesalius original, and thus very popular.[505]



Wolveridge reversed Vesalius, cropped 1543 Geminus 1555

Figure 4.5: The Wolveridge anatomy plate compared to illustrations by Vesalius and Geminus.

The Wolveridge and Rueff images in Figure 4.5 are reverse copies of original Vesalian illustrations. The letters used to mark various structures also differ between Wolveridge and Vesalius. When the Wolveridge image is digitally

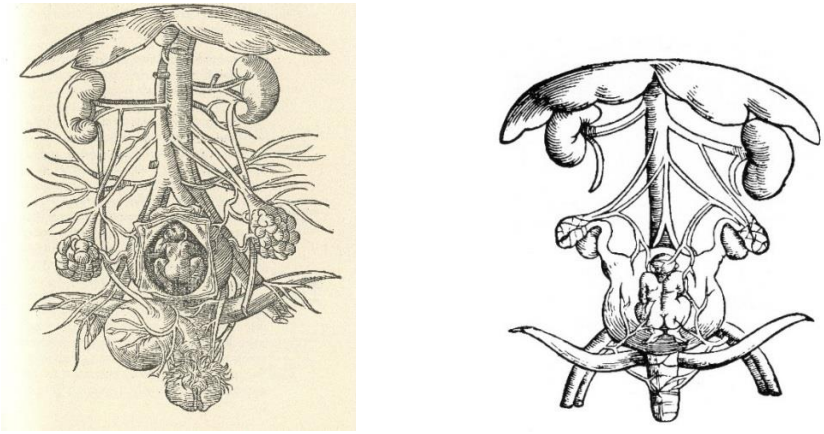
[505] Thomas Geminus, *Compendiosa totius Anatomie delineation,* 1545 (http://www.arsanatomica.lib.ed.ac.uk) (accessed 16 Dec. 2014).

reversed the similarity to Vesalius is more obvious, although the latter was without a pregnant uterus and fetus, and the lettering is different.

Another variation in the Wolveridge anatomy image compared to Vesalius and Geminus was the hirsute vulva of the *Speculum Matricis.* The artistic detail can be traced via *The Birth of Mankind* (p. 95) through to an illustration of the female genitalia by Vesalius, imitated by Geminus, and shown as a cropped version in Figure 4.6.[506]

Wolveridge Vesalius Geminus.

Figure 4.6: Cropped versions of the hirsute lower genital tract in Wolveridge, Vesalius and Geminus via *The birth of Mankind*.



Rueff 1545 Ryff 1541

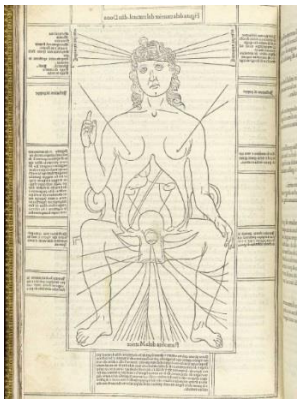
Figure 4.7: Rueff's anatomy plate with fetus compared to the earlier version by Walter Herman Ryff.

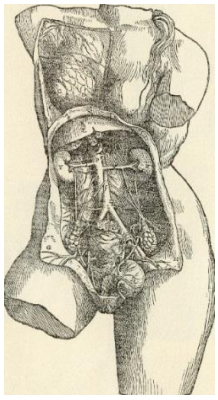
Rueff from whom Wolveridge derived (as shown in Fig 4.4) may have copied or adapted the fetus in his anatomy plate from an illustration published by

[506] LeRoy Crummer, 'The Copper Plates in Raynalde and Geminus' in *Proceedings of the Royal Society of Medicine History Section,* Vol. 20, (1926), pp. 53-56, (p. 53).

Walter Herman Ryff in 1541 as similarities are present when both images are viewed together in Figure 4.7.[507]

It is evident that the Vesalian plates of the female intra-abdominal anatomy, the pregnant and non-pregnant uterus, and the fetus and placenta, inspired the Thomas Cross illustrations of the *Speculum Matricis* and those of other midwifery manuals.[508] The Vesalian monograph *On the Fabric of the Human Body,* or *Fabrica* was published in 1543, a second edition *Fabrica* appeared in 1555, and the *Epitome* was printed about the same time as the original *Fabrica*.[509] Prior to Vesalius's treatise the female reproductive organs were shown by Jacopo Berengario da Carpi in his *Isagogae breves* of 1535, but were of poor quality.[510]





Johannes Ketham 1494 Vesalius 1543

Figure 4.8: A comparison of early printed anatomy plates by Ketham and Vesalius.

At the close of the fifteenth century the first anatomical figure in a printed work in which an 'internal organ (the uterus) has been drawn from the

[507] Speert, *Obstetrics and Gynecology*, p. 160.

[508] Daniel H. Garrison, Malcolm H. Hast (eds), *On the Fabric of the Human Body, An Annotated translation of the 1543 and 1555 editions of Andreas Vesalius' De Humani Corporis Fabrica* (Basel, 2014); John Bertrand DeCusance Saunders, Charles D. O'Malley, *The Illustrations from the Works of Andreas Vesalius of Brussels* (Cleveland and New York, 1950) (henceforth cited as Saunders & O'Malley, *Andreas Vesalius*); Susanna Horn (ed.) *Andreas Vesalius, De Humani Corporis Fabrica,* (Budapest, 1968); Ballantyne, *The Byrthe of Mankynde*, p. 190; Joseph Ames, William Herbert, Thomas Frognall Dibdin, *Typographical Antiquities, or the History of Printing in England Scotland and Ireland* (London, 1816), Vol. 3, pp. 563-66. (http://books.google.ie/books) (accessed 20 March 2015).

[509] Charles Singer, *The Evolution of Anatomy* (London, 1925), pp. 110-135, (p. 114 &115) (henceforth cited as Singer, *The Evolution of Anatomy*).

[510] L. R. Lind, Paul G. Roofe (eds), Jacopo Berengario da Carpi, *Isagogae breves per lucide ac uberrime in Anatomiam humani corporis* (1535) (New York, 1969), pp. 75, 77, 79, 81.

object' came from Johannes Ketham's *Fasciculo di Medicina* of 1494.[511] Ketham's image is compared to the Vesalian anatomized woman of 1543 to display the remarkable progress in anatomical illustration of the time, as shown in Figure 4.8. Further back in time only rudimentary images that could be classified as depicting the female anatomy were present in medieval manuscripts as borne out during a scrutiny of online codices. [512] Such images were carried in MS 1122 from the University of Leipzig c 1400 A.D. and a Persian manuscript dated to the fifteenth or sixteenth century, both of which displayed a pregnant woman with fetus in utero.[513] Another codex, the Chantilly MS dated c. 1345 A.D., contained seventeen images of human anatomy the tenth of which displayed a schematic diagram of a woman anatomised to display the uterus in the pelvis.[514] The Munich MS Clm 13002 of the Munich Bayerische Steetbibliothek c. 1158 A.D. contained a series of anatomical figures that illustrated the skeleton, nervous system, muscles, venous and arterial systems, the so-called 'Five Figure Series'.[515] A sixth figure of a pregnant mother was sometimes included with that series. The Five Figure Series was based on an ancient sequence of nine figures whose origins have been traced to the medical schools of Alexandria founded c. 300 B.C. and active to the 4th century A.D.[516] Soranus described female anatomy in his *Gynecology* but the sole anatomical image that accompanied the

[511] Singer, *The Evolution of Anatomy*, Figure 51, p. 94; Johannes de Ketham, Fasciculus medicinae (Venice, 1494) http://www.alamy.com/stock-photo-illustration-from-fasciculus-medicinae-venice-1494-the-first-printed-84969160.html (accessed 18 Jan, 2017).

[512] Mortimer Frank (ed.) *Ludwig Choulant, History and Bibliography of Anatomic Illustration, 1852* (Cambridge MA, 1917), pp. 42-87.

[513] Islamic Medical Manuscripts at the National Library of Medicine, MS P 19 Fol 18a (http://www.nlm.nih.gov/hmd/arabic) (accessed 29 Jan. 2015); K. B. Roberts and J. D. W. Tomlinson, *The Fabric of the Body. European Traditions of Anatomical Illustration* (Oxford, 1992), p. 16.

[514] Wallis, *Medieval Medicine*, pp. 237-47, (p. 246).

[515] BSB Clm 13002, [S.l.], 1158 [BSB-Hss Clm 13002], Methodus varias aegritudines cauteriis curandi 22 figuris illustrata. Corporis humani arteriae et venae duabus figuris exhibitae [u.a.] (- http://daten.digitale-sammlungen.de) (accessed 8 Dec. 2014); Karl Sudhoff, 'Ein Beitrag zur Geshichte der Anatomie im Mittlealter: Speziell der anatomischen Graphik nach Handschriften des 9 bis 15' Jarhunderts in *Sudien zur Geschichte der Medizin,* 4 (1909), pp. 52-73.

[516] Manuscript 190/223, fols 2v and 5, Gonville and Caius College, Cambridge; *The Medieval Encyclopaedia: Science and Practice, case four, The Anatomy of England*. (http://www.lib.cam.ac.uk/exhibitions) (accessed 18 Dec. 2014).

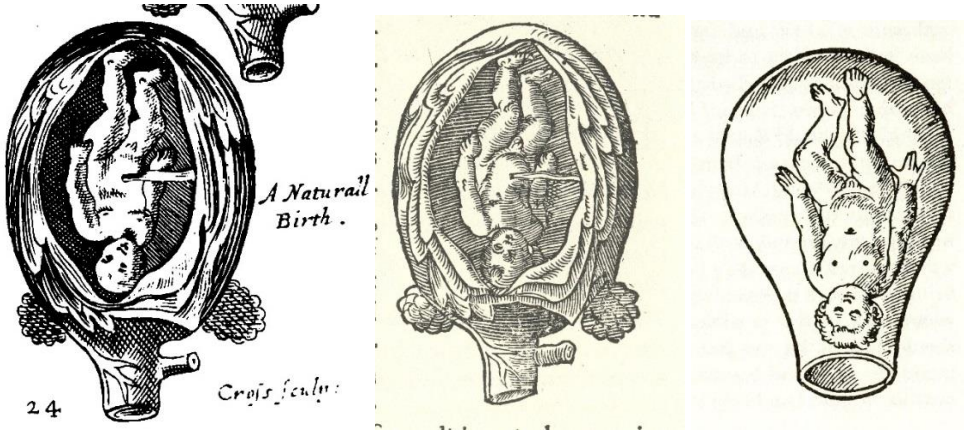
modern English translation was a non-pregnant uterus derived from a Latin manuscript written in the form of a catechism for midwives and matrons by Moscio (or Muscio, 5th century A.D.) who likely copied it from Soranus.[517] Evidence that illustrations were used during debate and tuition in ancient Greece was provided by Aristotle (384-322 B.C.) who wrote of 'anatomical diagrams which are represented on the walls'.[518]

Of prime importance to the evolution of anatomical illustration was human dissection which became legalised in the thirteenth century, but rarely performed, and the procedure only gained full approval and recognition in the sixteenth century.[519] The dissections and accompanying illustrations were fashioned in haste because the cadavers deteriorated rapidly. Female bodies were rarely available for dissection and it is claimed that the famed French anatomist Charles Estienne inserted diagrams of pregnancy onto erotic engravings for his anatomy treatise of 1545.[520] Eventually in 1666 a reliable method of preserving corpses (mainly of executed criminals) was invented which led to a deeper understanding of human anatomy through prolonged episodes of dissection.[521]

The 'birth figures' category was the largest component of the illustrations of the *Speculum Matricis* and the principal area of similarity between for the images of Wolveridge, Rueff and Roesslin (and *The Birth of Mankind*). Those schematic diagrams attempted to depict the various fetal presentations in utero. I ascertained that there were eighteen 'birth figures' in Wolveridge's book; some examples are shown in the following sequences. The 'birth figures' would prove to be the most important category in comparative analyses as the overall study of the illustrations in the *Speculum Matricis* progressed. The schema in Figure 4.9 represent a fetus in utero prior to what was termed a natural birth. A robust mature male fetus was

[517] Temkin, *Soranus' Gynecology*, fig 1, facing p. 8; William John Stewart McKay, *The History of Ancient Gynaecology* (London, 1901), p. 173.
[518] Platt, *De Generatione Animalium,* Book 2, 6, 743b, PDF page 420.
[519] Ball, *Andreas Vesalius*, pp. 15, 24, 28.
[520] Charles Estienne, (http://nyamcenterforhistory.org) (accessed 13 April 2015).
[521] Heilemann, *Influence of the Casserius Tables*, p. 25.

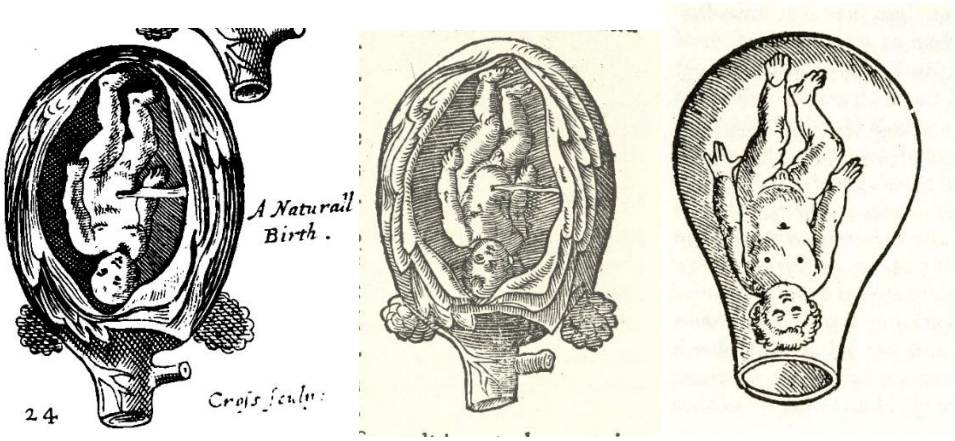
shown floating freely in a spacious uterus. The diagrams displayed in simple fashion the attitude, the position and the part of the fetus that presented in the lower portion of the uterus prior to childbirth.



Wolveridge 1670 Rueff 1545 Roesslin 1513.

Figure 4.9: Presentations of the fetus at natural birth for Wolveridge, Rueff and Roesslin.

Both Wolveridge and Rueff showed layers of reflected uterine wall and placental membranes in each of their birth figures. Roesslin used the simple form of an inverted urine flask, carafe, or cupping glass, with rounded body and wide neck, to represent the uterus.

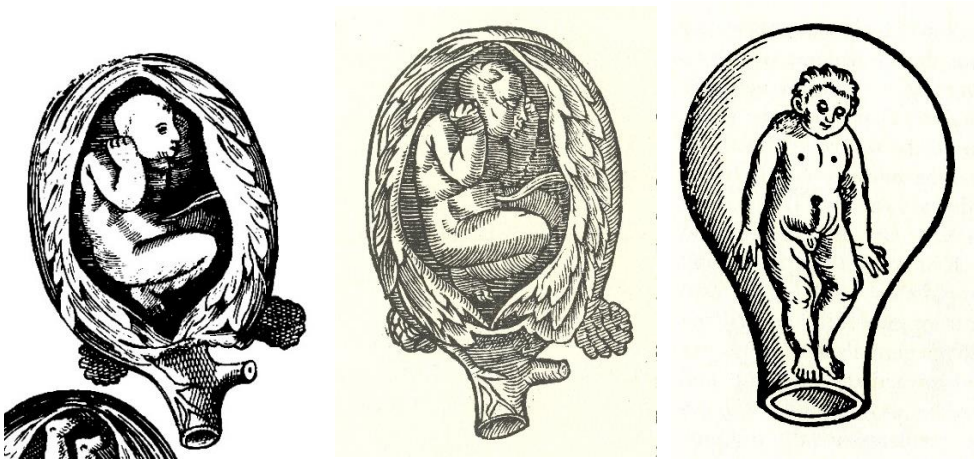


Wolveridge Rueff Roesslin

Figure 4.10: Examples of natural birth from Wolveridge, Rueff and the image from Roesslin which is reversed for comparison sake.

An umbilical cord was present in the Wolveridge and Rueff figures but not so in the Roesslin illustrations. The fetus was almost identical in both the Wolveridge and Rueff versions, head down, hands by the sides, face forward to the left. In the Roesslin version the fetus faced to the mother's right side. When the Roesslin birth figure was reversed the resultant images of the fetus in utero were more alike for all three authors, as in Figure 4.10. The natural birth image of Roesslin shown in Fig. 4.9 was reversed in the *Birth of Mankind* (like Fig. 4.10) so it is likely Wolveridge's illustrator used that source for his images.

For the present study of the birth figures Wolveridge's own descriptions of the 'natural' and 'non-natural' birth forms, or close derivatives of, are used rather than modern terms. His expressions such as presenting by the 'buttocks' or 'across' are known in current terminology as 'breech' or 'transverse' presentations. A 'natural' birth was anticipated when the fetus 'turned towards the out-let of the matrix, with his head towards the orifice of the same…with the hands drawn down to the sides, and placed on the hips.'[522]

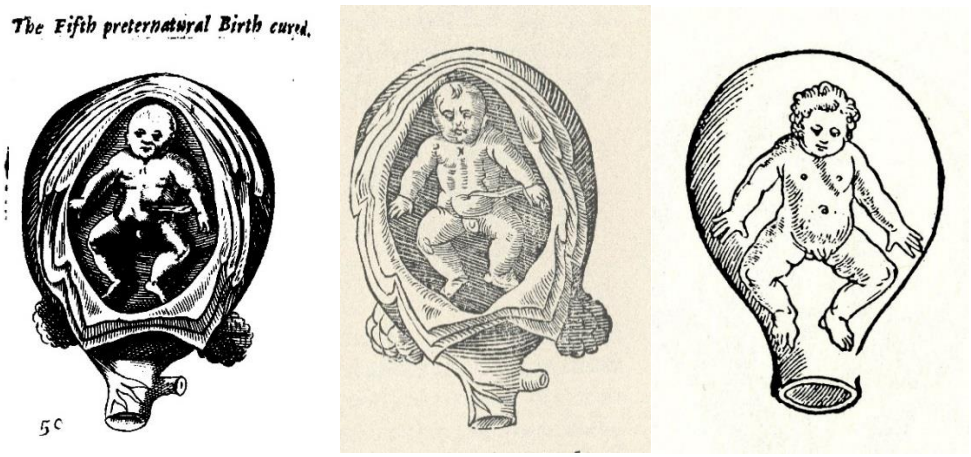


Wolveridge 1670 Rueff 1554 Roesslin 1513

Figure 4.11: Wolveridge and Rueff showed a fetus with buttocks and feet forward, Roesslin with feet first.

[522] Wolveridge*, Speculum Matricis*, 1670, p. 24

Both Wolveridge and Rueff introduced an element of confusion in their sections on 'natural' (head) presentation due to their addition of an extra image of a fetus presenting by the buttocks and feet respectively (these were non-natural presentations). However, both authors explained that in each instance the fetus rotated to adopt a head down (natural) presentation at the onset of the birth process. In his text Roesslin related that the feet first image was indeed 'non-natural' but being closest to 'natural' birth was not as dangerous as the other non-natural positions. The breech 'natural' presentations for childbirth, as illustrated, were alike for Wolveridge and Rueff but dissimilar to Roesslin's feet first version. The non-natural birth presentations of footling breech and feet presentation as they appeared in the discourses on natural birth for each of the three authors are shown in Figure 4.11.



Wolveridge, legs open. Rueff. Roesslin.

Figure 4.12: A comparison of singleton non-natural birth figure from all three authors.

The 'non-natural' birth images, in which any part of the fetus other than the head presented, were also displayed in somewhat similar fashion by the three authors, as displayed in Figure 4.12. Rather than include all the non-natural birth figures a representative sample from each of the three authors is shown. Wolveridge referred to this, his fifth preternatural birth, as having 'his arms and legs distorted and crooked' while the descriptive label 'legs

open' was chosen for the accompanying table and pictures. Apart from slight differences the images show the same fetal presentations, but Roesslin did not include an umbilical cord with his more mature fetus.

A novel finding of this study was that there were twelve birth figures in common for all three authors in singleton 'non-natural' pregnancies, namely feet forward, feet with hands high, one foot, across, distorted legs open, knees bent, one hand, both hands, buttocks, shoulder, hands and feet, breast, as shown in Table 4.3.

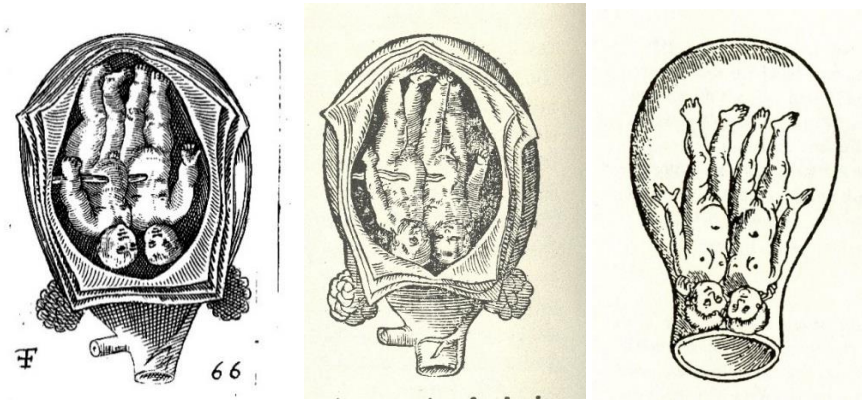
Presentation	Wolveridge	Rueff	Roesslin
Feet forward	√	√	√
Feet, hands high	√	√	√
One foot	√	√	√
Across	√	√	√
Distorted, legs open	√	√	√
Knees bent	√	√	√
One hand	√	√	√
Both hands	√	√	√
Buttocks	√	√	√
Shoulder	√	√	√
Hands and feet	√	√	√
Breast	√	√	√
Doubled over	√	0	0

Table 4.3: Preternatural singleton birth figures in the three authors' texts.

Overall, there were representations of thirteen singleton birth figures classified as preternatural or non-natural for Wolveridge but twelve in Rueff and Roesslin. As previously described Wolveridge included one non-natural birth figure termed 'Scheme the 16th' that was not shared with either Rueff or Roesslin, being a compound presentation of a doubled over fetus in utero, derived from the text of Hildanus, the German surgeon Wilhelm Fabry.

Twin pregnancies were also deemed non-natural and could present in several different ways during childbirth. Each of the three authors chose to illustrate twins as presenting by both heads, or by both feet, and a head and

feet option. An example of twins with both heads presenting is included in Figure 4.13 to demonstrate the similarities between the authors. The Roesslin image in this representation was reversed digitally during the study to ease comparison. In the instance where one twin presented by the head and the other by the feet the latter twin gripped the ankle of his counterpart, a pictorial reference to the Biblical twins Esau and Jacob.[523]



Wolveridge Rueff Roesslin.

Figure 4.13: A comparison of twins from the three authors with both heads presenting.

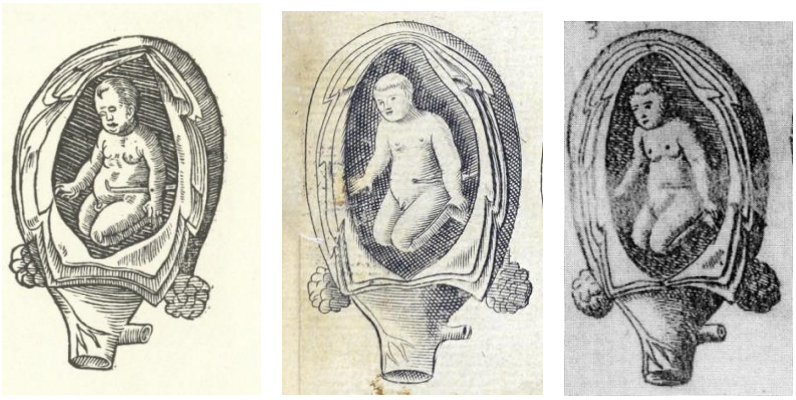
While Wolveridge, Rueff and Roesslin each portrayed three types of twin presentation Roesslin alone included a fourth twin birth figure, a case of conjoined infants joined at the hip with feet presenting, as noted in Table 4.4. Rueff had illustrated a form of conjoined twins, but the case was in his tract on monstrous births rather than with his birth figures.[524]

Twin types	Wolveridge	Rueff	Roesslin
Heads forward	√	√	√
Feet forward	√	√	√
Natural and feet	√	√	√
Conjoined	0	0	√

Table 4.4: Preternatural twin birth figures.

[523] Genesis 25:26, *The Holy Bible* (London, 1611).
[524] Rueff, *The Expert Midwife*, p. 152.

Wolveridge was not the only author to copy illustrations at that time. In the images shown in Figure 4.14 there is similarity of all three images in the midwifery treatises of Jacob Rueff, the French midwife Louise Bourgeois and Jane Sharp her English counterpart.[525] The uterus and membranes plus the fetus are modified slightly in Bourgeois, and appear little different to Rueff; and the Bourgeois images were copied to Sharp's book over fifty years later by John Dunstall. Meanwhile, but not shown here, the eighteen birth figures in Daniel Sennert's book are comparable but slightly modified versions.[526]



Rueff 1545 Bourgeois 1617 Sharp 1671

Figure 4.14: An illustration from Jacob Rueff compared to similar images from the midwives Louise Bourgois in 1617 and Jane Sharp in 1671.

The similarity of the illustrations from Jacob Rueff, Jacques Guillemeau the French surgeon man-midwife, and James Wolveridge is demonstrated in Figure 4.15.[527]

[525] Louise Bourgeois, *The Compleat Midwife's Practice Enlarged* (London, 1663); Peter M. Dunn, 'Louise Bourgeois (1563-1636): Royal midwife of France' in *Archive of Diseases in Childhood Fetal and Neonatal Edition,* Vol 89 *(*2004), pp. 185-187; Hobby, *Jane Sharp, The Midwives Book*, pp. 118-19.

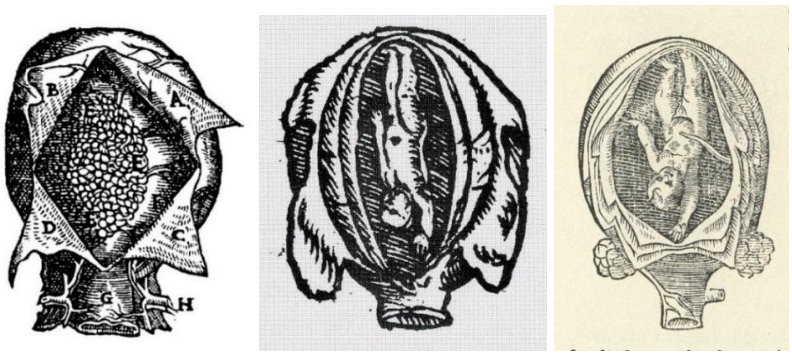
[526] Sennert, *Quartus,* p. 735.

[527] Jacques Guillemeau, *Childbirth, or, the Happy Delivery of Women* (London, 1635).

Rueff 1554 Guillemeau 1635 Wolveridge 1670

Figure 4.15: The images of Jacob Rueff, Jacques Guillemeau and Wolveridge compared.

When the entire sequence for Guillemeau was viewed it became apparent that not all the fetal images bore such a close resemblance to the other pair of authors which shows that Wolveridge, probably for ease and consistency, chose to copy his birth figure images from Rueff rather than the French physician. The multi-layered uterus and feto-placental compartment illustrated by both Wolveridge and Rueff differed remarkably from the simple inverted flask-shaped uterus pictured in Roesslin, as in Figure 4.16.



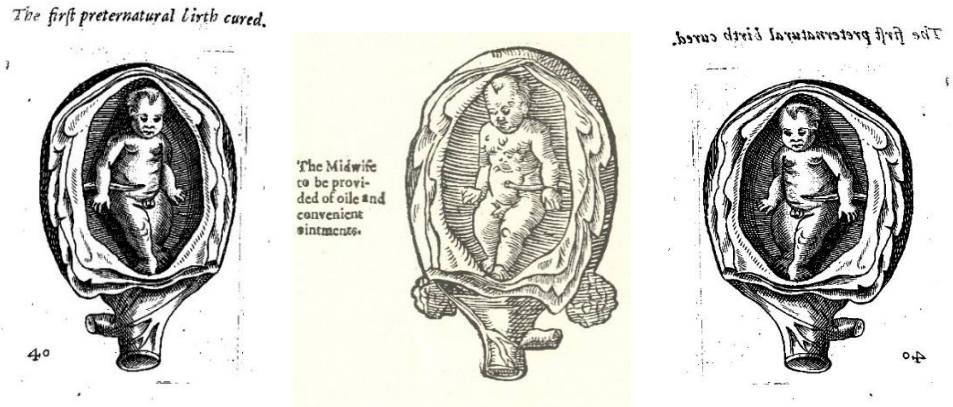
Vesalius 1543 Dryander 1547 Rueff 1554

Figure 4.16: A proposed serial development of the multi-layered uterus and membranes image.

The inspection of uterine images during the current study highlighted a major development of methods to depict the matrix in the early sixteenth century. Comparison of Rueff's multi-layered uterus and membranes to illustrations from earlier textbooks led me to conclude that Rueff's uterine anatomy was based on the work of Johann Dryander (1547) whose multi-

layered uterus was apparently adapted from a uterine image displayed by Vesalius (1543).[528]

The proposition that there occurred a sudden change in the depictions of the multi-layered uterus and membranes image is based upon a review of images in the Wolveridge database and shown in Figure 4.16. The image on the left was contained in the anatomy treatise of Andreas Vesalius of 1543. The uterus was opened in a single layer to reveal the enclosed placenta and membranes, but the fetus was not shown. This may be the image that was later modified to include the fetus with the membranes opened as in the birth figure attributed to Johann Dryander which depicts a fetus surrounded by the three layers comprising the uterine wall and two placental membranes, with a placental band at the midpoint, both left and right. The Dryander illustration was available six years prior to Rueff's publication and could have provided the source of the modified uterus, membranes and fetus. The figure on the right is from Rueff and enhances the Dryander image by the inclusion of the ovaries, and an elongation of the upper vagina.



Wolveridge Rueff Wolveridge

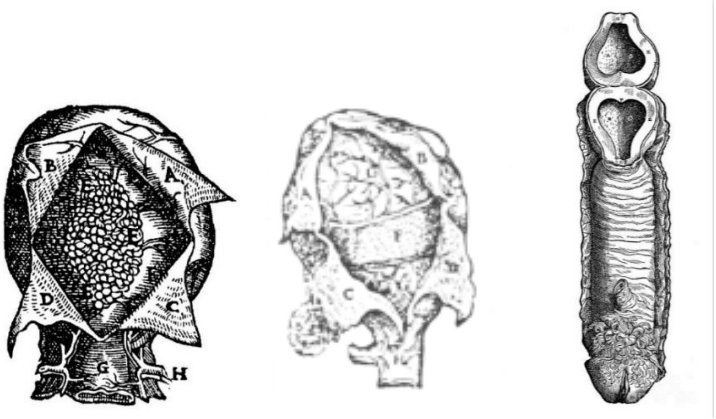
Figure 4.17: Images with maternal urethra opening into upper vagina.

In what was a convention for both Wolveridge and Rueff a short segment of vagina was included in the birth figure images. As depicted in Figure 4.17 the mother's urethra was incorrectly shown entering the upper vagina in those

[528] Joan. Dryander, *Arnezi Spiegel* (Frankfurt, 1547), p. 5 (henceforth cited as Dryander, *Arnezi Spiegel*); Speert*, Obstetrics and Gynecology,* fig 5: 38, p. 180.

illustrations although the site of the external orifice of the female urethra at the vulva was correctly described by Soranus.[529] The aberrant maternal urethra proved to be a marker when comparing birth figures from both authors and an additional indicator was the three layers of uterine tissue and membranes that surround the fetuses.

In eight of the Wolveridge birth figures the layered design was simple, and in each instance the mother's urethra pointed to the right; in eight the layered effect was more detailed, and the urethra pointed to the left. In one instance, the design was compound, and the urethra pointed left. The Wolveridge and Rueff figures matched. When the abnormal insertion of the maternal urethra was investigated further it was observed that blood vessels with three main branches supplied the upper vagina on one side only, being present opposite the supposed urethra, but should have been bilateral.



(a) (b) (c)

Figure 4.18: Vesalian anatomical figures, (a) a uterus with the expected bilateral blood vessels, (b) the urethra incorrectly entering the upper vagina and (c) repeated in the third image.

What was the reason for the anomalous insertion of the urethra in the Vesalian plates which I believe was the source of that inaccuracy for Wolveridge and Rueff as in Figure 4.17? A dissection of a pregnant uterus and upper vagina in Figure 4.18 marked (a) was present as Vesalian *Plate XXX Qunti Libri Figura, Prima Tabella* in which the bilateral blood vessels that

[529] Temkin, *Soranus' Gynecology*, p. 16.

supply the area were illustrated. The blood vessels of the Vesalian figure on the mother's left side were almost double the calibre of those on the right, instead of being the same.[530] It is theorised from this study that the artist, without recourse to the original dissection, may have relied on his preparatory sketches during the engraving of the definitive Vesalian illustration and the enlarged blood vessels were wrongly identified as the urethra as it (supposedly) opened into the vagina, and was later copied by Rueff and Wolveridge.

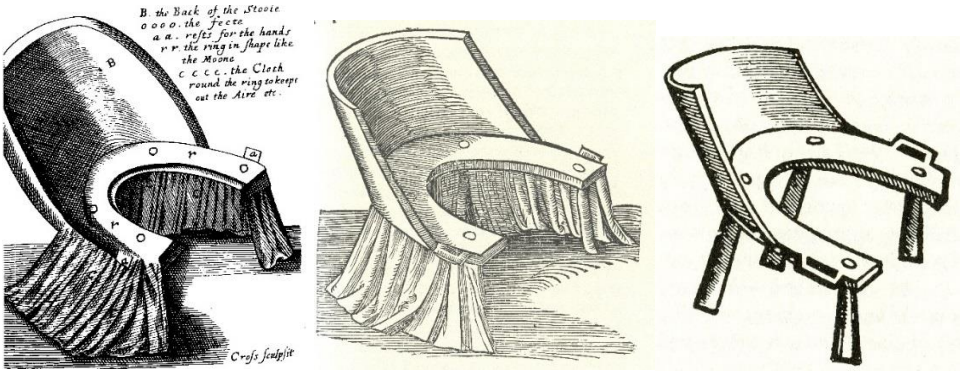
The Vesalian illustration marked (b) also presented the urethra entering the upper vagina, with an opened uterus, placenta and placental band, and a single ovary on the right (Figure 4.18). That diagram incorporated canine anatomy, as suggested by the annular placental band not present in humans. The Vesalian *Plate XXVII* of a dissected uterus and vagina marked (c) also incorrectly demonstrated the urethra as it entered the vagina on its anterior aspect a short distance from the vulva. The error may have resulted from an interpretation of the hurried and unfinished dissection on a stolen corpse which was abruptly terminated and failed to follow through to the urethra's actual opening at the vulva.[531]

There was another and more renowned Vesalian illustration, the Quinti *Libri Figura,* which depicted a Venus figure, with bladder reflected to one side of the uterus and vagina, in which the urethra was again not fully dissected to the true outlet at the vulva, shown previously in Figures 4.5 and 4.6. That image lent further credence to the notion that the urethra culminated in the vagina.[532] It is also worthy to note that Vesalius commented in book five of *De humani corporis* as follows 'just as the vagina readily admits urine.'[533] The inaccurate Vesalian visuals that showed the

[530] H. Boerhaave and B. S. Albinus (eds), *Andreas Vesalius, Opera Omnia anatomica & chirurgice* (Leiden, 1725), Prima tabella, p. 468; Vesalius, *Humani Corporis Fabrica (Basilaea,* 1543), p. 382; Vesalius, *Opera Omni,* (Leiden, 1725), XXVII, p. 468.
[531] Saunders & O'Malley, *Andreas Vesalius,* p. 170.
[532] Vesalius, *Opera Omni*, 1725, Quinti Libri Figura, p. 407.
[533] Megan Guenther, *"To all grave and modest matrons": Practical Midwifery and Chirurgery in De conceptu et generatione hominis (1580),* (Illinois, 2005) (http://digital.library.northwestern.edu) (accessed 23 March 2015).

mother's urethra entering the vagina were copied to Rueff's midwifery manual and thus to Wolveridge, an extraordinary anatomical error.

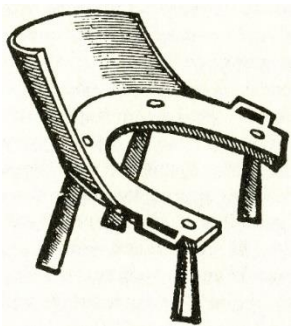
The birth stool illustrated by Wolveridge was a horseshoe shaped seat on which the mother balanced or squatted to allow the birth process to proceed to the midwives waiting hands below. Wolveridge's birth stool mimicked that of Rueff but with minor alterations, being of curved contour to the upper rear. There were handgrips at the sides for the mother to grasp and a sloped back to the stool for maternal support between contractions. Wolveridge and Rueff both included a 'cloth round the ring to keep out the aire' but shown as a solid curved board-like structure by Dryander.'[534]



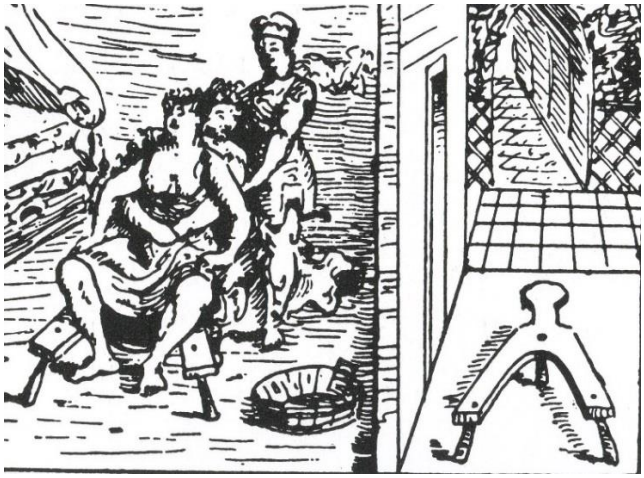
Wolveridge 1670 Rueff 1554 Roesslin 1513.
Figure 4.19: Comparison of birth stools Wolveridge, Rueff and Roesslin.

Wolveridge marked the stool with letters for explanation within the text. The similarity of both images to that of Roesslin indicate him as being the primary source for Rueff who in turn was copied by Wolveridge, as shown in Figure 4.19. The images were alike for all three authors with the exception that Roesslin's birth stool lacked the cloth draped from the base.

[534] Wolveridge, *Speculum Matricis*, 1670, p. 28; Dryander, *Arnezi Spiegel*, p. 4.



Roesslin, birth stool.



Savonarola, birth scene with birth stool.

Figure 4.20: Roesslin's birth stool compared with that of Savonarola.

Roesslin's birth stool image may have originated from a birth seat illustrated by Giovanni Michele Savonarola (1384-1464) in his *Practica Major*, the author being credited with the first description of the stool in a medical book, the images shown in Figure 4.20 are from the 1547 edition.[535] The birth stool remained in common use in Wolveridge's era.[536] The descriptions of the birth stool in the *Speculum Matricis* and other early printed works mirror that of Soranus.[537] The birth-stool can be traced beyond him to great antiquity through the admonition by the King of Egypt when he spoke to the Hebrew midwives Shiprah and Puah and said 'When ye do the office of a midwife to the Hebrew women, and see them vpon the stooles.'[538] Mothers were also delivered in a squatting position, while the ancient Egyptian hieroglyph for childbirth was a woman being delivered as she balanced on two large bricks.[539]

[535] E. Ingerslev, 'Roesslin's Rosengarten: Its relation to the Past (the Muscio Manuscripts and Soranos), Particularly in relation to Podalic Version' in *The Journal of Obstetrics and Gynaecology of the British Empire,* vol 15, no. 2, (1909), pp. 74-92, (pp. 79, 86, 88) (henceforth cited as Ingerslev, Roesslin's Rosengarten, no. 2).

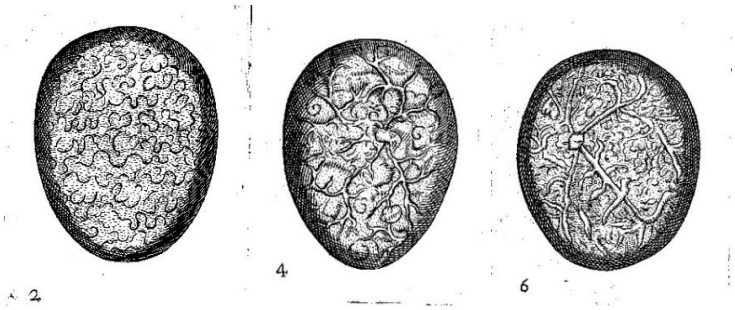
[536] Amanda Carson Banks, *Birth Chairs, Midwives, and Medicine* (Jackson, 1999), pp. 1, 106; Aly Alaily, *The History of the Parturition Chair* (East Sussex, 2000), p. 8.

[537] Temkin, *Soranus' Gynecology*, pp. 70-71.

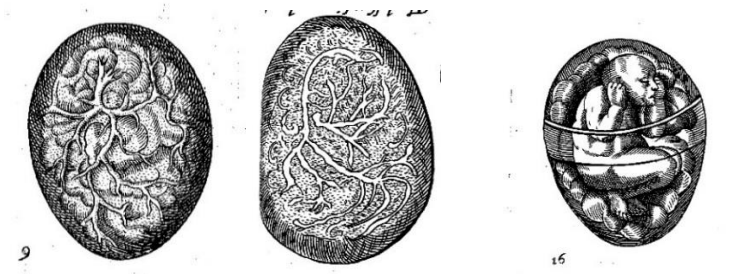
[538] Exodus 1:16, The Holy Bible (London, 1611).

[539] Estes, *Ancient Egypt,* p. 59; W. E. Crum, 'Bricks as Birth-Stool' in *The Journal of Egyptian Archaeology*, Vol. 28 (1941), p. 69.

Regarding early fetal development, termed embryology for the Wolveridge Classification, both Rueff and Wolveridge devoted a chapter to 'the generation of the parts and increase of the infant in the womb' but Roesslin did not. The term embryology is derived from the Greek 'embryon' meaning unborn and deals with the development of an embryo from the conception to the fetal stage. Wolveridge estimated 45 days or 6 weeks and 3 days for the process while the modern limit is 63 days or 9 weeks.[540] Each of the embryology images from Wolveridge and Rueff were compared, and found similar for both authors in six instances, as was the appropriate text, although Wolveridge had seven embryology figures and Rueff eight. Wolveridge chose not to copy the images of 'congealed seed' and also seed with surrounding membrane instead favouring an illustration of a fetus in the womb (featured in Figure 4.24). The six matched images are shown in the supposed sequence of events in Figure 4.21 and Figure 4.22. The first illustration revealed the formation of small fibres within the coagulum of early pregnancy.



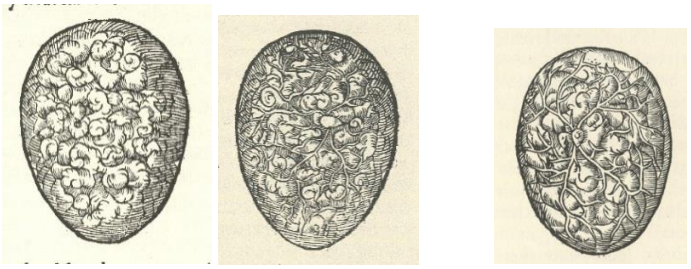
1. Small fibres 2. Liver 3. Heart



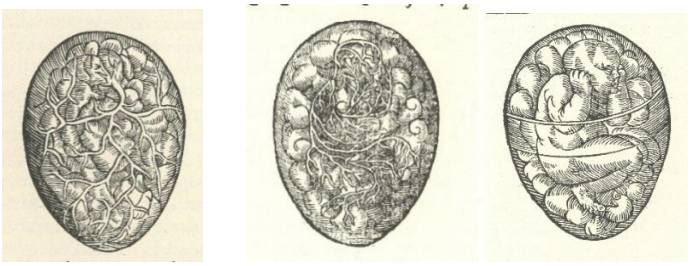
4. Brain 5. Nerves 6. Fully formed

Figure 4.21: Fetal development sequence, Wolveridge 1670.

[540] Wolveridge, *Speculum Matricis*, 1670, p. 17.



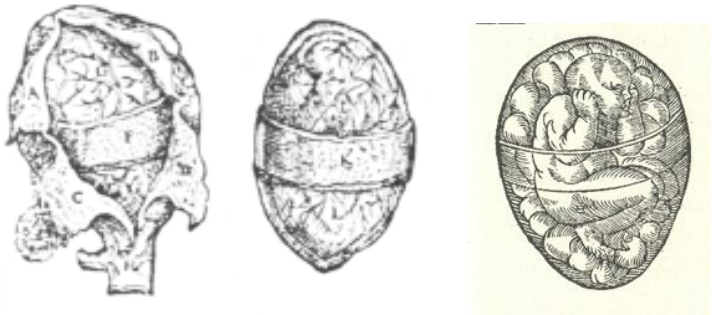
1. Small fibres 2. Liver 3. Heart



4. Brain 5. Nerves 6. Fully formed

Figure 4.22: Fetal development sequence, Rueff 1554.

The diagrams that followed displayed in sequence the development of the liver, heart, brain, nerves and finally the full body of the fetus. In Wolveridge's system (Figure 4.21) the reproduction of the nerves (number 5) was shown as a reversed and vertically altered copy when compared to Rueff (Figure 5.22). The image was modified (digitally reversed and rotated) for the sake of comparison.

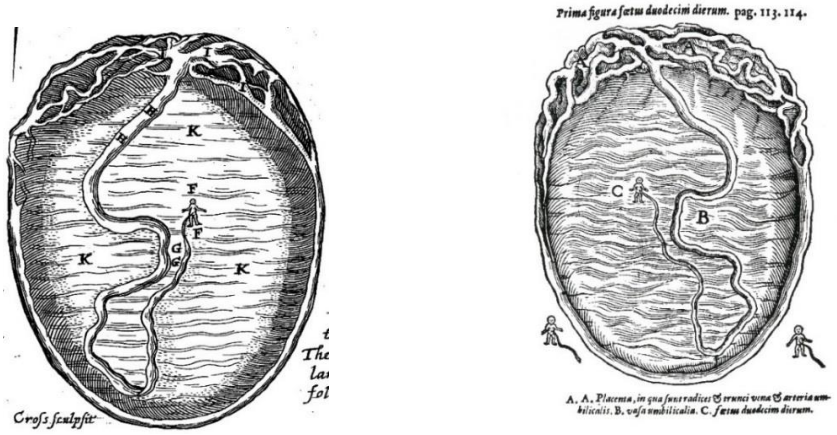


Vesalius, placental bands. Rueff, fetus with placental band.

Figure 4.23: The placental bands illustrated by Vesalius and Rueff copied by Wolveridge.

It was noteworthy that the sixth image of the fully formed fetus in both Wolveridge and Rueff included the Vesalian placental band that surrounded

the fetus from elbow to mid-thigh, so it is proposed that Rueff copied that incorrect concept from Vesalius, or his imitator Geminus, as in Figure 4.23.



Wolveridge 1670. Severinus Pineau 1641.

Figure 4.24: Comparison of Wolveridge's 14-18-day fetus to that of Severinus Pineau.

Wolveridge displayed an illustration not present in Rueff of a fourteen to eighteen-day old fetus attached by its umbilical cord to the placenta, as shown in Figure 4.24. Wolveridge's likely source for the illustration was Severinus Pineau whose book of 1641 had a similar image, although in Wolveridge the content of the diagram was reversed.[541]

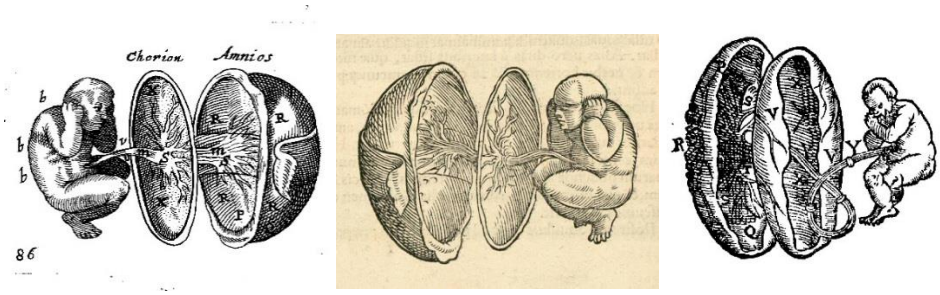
The early development of the fetus was not fully understood by the date of Wolveridge's publication. His contemporary William Harvey (1578-1657) observed the early sequence of intra-uterine life in fowl, roe deer and other animals, often through vivisection, but his knowledge and that of his contemporaries was hampered by lack of adequate magnification of the tiny structures involved. Harvey agreed with Aristotle that the heart was the first organ formed in the embryo and made many valuable additions to the understanding of embryology in his publication of 1653.[542] Aristotle had studied the early formation of the fetus and wrote in his *De Generatione*

[541] Wolveridge, *Speculum Matricis*, 1670, opposite p. 13; Pineau, *De integritatis*, pp. 113, 114.
[542] Joseph Needham, *Chemical Embryology* (Vol. 1, New York, 1931), pp. 138-156, (p. 148); Harvey, *Generation of Living Creatures.*

Animalium that 'the heart appears first distinctly marked off…and is the first principle or origin.'[543]

Rueff cited the works of Aristotle, Hippocrates and Galen as the basis for his eight embryology diagrams.[544] He described aspects of generation as being 'after the manner of a Runnet or Egge' which prompted Singer to observe that he may have observed the events at first hand.[545] But Rueff was of the opinion that the liver formed before the heart, thus he copied Galen.[546] Based on the findings of the current study it is proposed that Rueff was the likely originator of images that depicted the embryology genre. No pre-existing diagrams of the sequence he illustrated were discovered.

An illustration in the *Speculum Matricis* depicted a formed fetus, separate from a disc-like placental membrane (the chorion of the diagram), and attached through it by the umbilical cord to the placenta (the amnios), as shown in Figure 4.25.



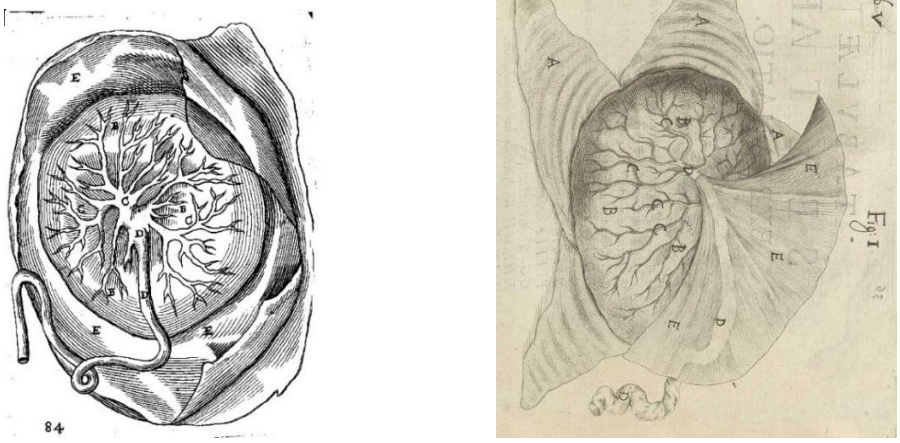
Wolveridge Rueff Vesalius.

Figure 4.25: Fetus and placenta by Wolveridge, Rueff and Vesalius.

The images were similar in both Wolveridge and Rueff although the figure in the *Speculum Matricis* was reversed and marked with letters for an explanation in the text, as distinct from Rueff. However, a comparable illustration was present in Vesalius but differed because of the apparent lack

[543] Platt, *Aristotle*, book 2, 4, 740a, (PDF p. 408); *Making Visible Embryos*, (http://www.hps.cam.ac.uk/visibleembryos/) (accessed 10 April 2015).
[544] Rueff, *The Expert Midwife*, p. 637. The credits were on pp 8 & 9 while the images were placed on pp. 12, 15, 27, 29, 30, 34, 38, 41; Jacob Rueff (http://www.hps.cam.ac.uk/visibleembryos (accessed 08 January 2015).
[545] Singer, *The Evolution of Anatomy*, p. 65.
[546] Ibid., p. 62.

of a placental band at the rear of the placenta. The looped cord, the stippling at the rear of the placenta, and the lettering also differed in his version. The image of the fetus and placenta in the *Speculum Matricis* is almost identical to Rueff with the exception that Wolveridge's diagram is marked with letters for explanatory segments in his text. The letters and their placing in that illustration reflect but differ from those in a Vesalian image of 1543, the likely origin for both Rueff and Wolveridge.[547] Roesslin did not show a similar image to those displayed in Fig. 4.25 but a comparable version (ex Vesalius) was present in *The Birth of Mankind* (p. 88). The plates displayed by Andreas Vesalius in his treatise of 1543 became the template for artistic representation of anatomy and this image of the fetus and placenta. It is now known that a major innovation in this type of illustration came with the drawings of Leonardo da Vinci that illustrated a fetus in utero from about the year 1512. However, his schemata were neither available nor widely circulated until centuries later. A search of manuscript sources was performed but no illustrations of note that displayed a fetus with placenta were discovered.



Wolveridge 1670 Casserius 1631

Figure 4.26: An image of placenta, membranes, and cord in Wolveridge compared to Casserius.

[547] Wolveridge, *Speculum Matricis*, 1670, p. 86; Rueff, *The Expert Midwife*, p. 82; Saunders & O'Malley, *Andreas Vesalius*, p. 175.

The placenta, also referred to as the secundine or afterburden, was the basis for a full-page image, complete with indicator letters and explanatory text in the *Speculum Matricis* (Figure 4.26).[548] Neither Rueff nor Roesslin carried a similar image. A comparable illustration by Giulius Casserius was identified, published by Spiegel in 1631.[549] In the representations above the cord is seen to enter the fetal surface of the placenta, its course being closely similar in both pictures. On reaching the placenta the cord vessels diverge into five or more separate branches in both images. The discoid shape of the placental mass is surrounded by membranes. Letters mark specific points of the anatomy in both pictures; the letter D marks the cord, E the membranes, C the lesser blood vessels on the placental surface and B the bulk of the placental body itself. It is therefore proposed that the placental illustration in Wolveridge's text is copied from Giulius Casserius 1631, with slight alterations. Galen wrote in detail about the anatomy of the placenta while Soranus composed clear instructions for delivery of the placenta, and cited Hippocrates with other Greek writers, but no relevant images survive from the era.[550]

The frontispiece in the *Speculum Matricis* has two compartments, each with a separate action portrayal, but displayed here individually for illustrative purpose. The upper section shows a newly delivered mother in bed while a midwife holds a swaddled newborn in her arms beside a smoking fire, a basket of clothes at her feet, as shown in Figure 4.27. No matching illustrations were discovered in previous printed publications although a 1528 version of Roesslin's *Rosegarden* showed a birth chamber with a midwife tending to a new-born while her two female assistants comforted the mother.[551]

[548] Wolveridge, *Speculum Matricis*, 1670, pp. 83, 84, 85.
[549] Spiegel, *De Formatu Foetu,* Tabula V, p. 39 (http://www.amazon.com/ThePrintsCollector-10-Anatomical-Prints) (accessed 10 April 2015).
[550] Singer, *Galen, Selected Works*, pp. 178-80; Temkin, *Soranus' Gynecology*, pp. 196-200.
[551] Ingerslev, *Roesslin's Rosengarten*, no. 2, pp. 72-92 (fig 25, p. 82).

Figure 4.27: The delivery room, mother, midwife and baby.

The lower section of the frontispiece illustrated a pregnant woman in the company of a midwife, in a central position who held a book in her hand, being addressed by a physician, as shown in Figure 4.28.[552] The figures represented a pregnant woman, and probably Eutrapelia the noble midwife of the *Speculum Matricis* with the author James Wolveridge. The book was likely the *Speculum Matricis* itself.

Figure 4.28: A second image on the frontispiece represented Wolveridge, midwife and expectant mother.

[552] Wolveridge (http://www.npg.org.uk/collections) (10 April 2015).

As no similar portraitures were found in the WMAI database the study conclusion was in accord with Spencer that the frontispiece with its two compartments appeared to be original to Wolveridge and Cross.[553]

Portrayals of childbirth and the lying-in room were common themes in art through the ages.[554] One early depiction from olden Egypt pictured a squatting woman during childbirth. The art of ancient Greece and Rome also displayed the mother with her newborn and the theme became common in religious iconography, being presented in many comparable images in paintings and sculpture.

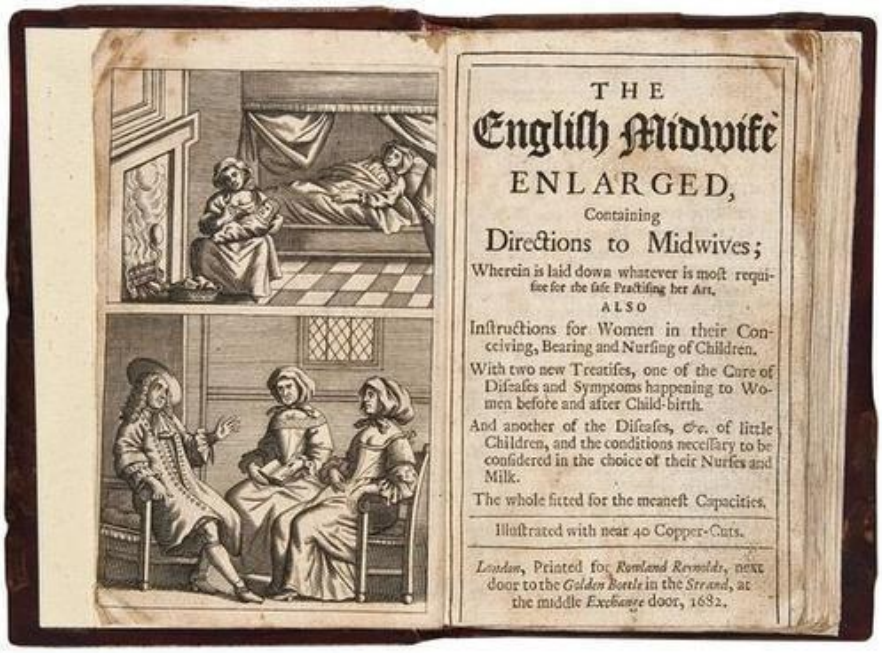


Figure 4.29. *The English Midwife Enlarged* 1682.

While no similar image was found to pre-date the frontispiece illustrations of the *Speculum Matricis* an enhanced version titled *The English Midwife Enlarged* was published some twelve years later. Printed by Wolveridge's publisher Rowland Reynolds, the manual contained images based on but

[553] Spencer, Wolveridge's "Speculum Matricis," 1670, pp. 1081-82.
[554] Alan E. H. Emery, Marcia L.H. Emery, *Mother and Child Care in Art* (London, 2007); Jacqueline Marie Musacchio, *The Art and Ritual of Childbirth in Renaissance Italy* (New Haven and London, 1999).

different (not least the woman being less obviously pregnant) to those of the *Speculum Matricis,* as shown in Figure 4.29.[555]

As demonstrated in Table 4.5 there were thirty-three images in the *Speculum Matricis*. Analysis revealed that twenty-six of thirty-three or 79 percent were like those in Rueff, and likely copied from that source.

Images	Rueff	Hildanus	Wolveridge	Casserius	Bartholin	Pineau
Anatomy	1				1	
Bagg		1				
Birth figures	17	1				
Birth stool	1					
Embryology	6					1
Fetoplacental	1					
Placenta				1		
Portrayals			2			
Total 33	**26**	**2**	**2**	**1**	**1**	**1**

Table 4.5. Wolveridge's images by source.

Two of the seven images that remained were attributed by Wolveridge to Hildanus who described case histories without images in his surgical textbook. Those images, a birth figure of a compound presentation and another of a medication 'bagg', could be classified as original to Wolveridge and Cross. However, I retained them as sourced from Hildanus in the accompanying table. Of the remaining five illustrations the two frontispiece portrayals appear to be original being engraved and signed by Thomas Cross. Of the three that remained Wolveridge attributed one image to Thomas Bartholin, namely the anatomy plate of a mother dissected to display her fetus in utero. A full-page illustration of a placenta with explanatory text was not attributed but apparently derived from Casserius so it is proposed that the image should be attributed to him. It is also suggested that the embryology figure of a 14-18-day fetus was copied without attribution by Wolveridge from Pineau and should be credited to that author.

The study provides evidence that Spencer and the commentators who believed the illustrations of the *Speculum Matricis* were merely copied from

[555] Reynolds, *The English Midwife*.

Rueff were incorrect. Seven of the thirty-three images (or 21 percent) were found to derive from sources other than Rueff, indeed Wolveridge cited other authors for three of them (9 percent). Also, according to Spencer the *Speculum Matricis* illustrations copied from Rueff were derived in turn from Roesslin. To test that opinion the images from all three authors were analysed using the Wolveridge Classification. The results of the study showed that Rueff's book contained almost double the number of images of Roesslin's manual. Only the birth figures and birth stool were shared between Rueff and Roesslin, moreover Rueff's illustrations were much more detailed.

Manuscript sources

Roesslin's birth figures, and by inference those of Rueff and Wolveridge, were compared by previous authors to manuscript images and concordance was discovered. Manuscripts of this kind and bearing such illustrations circulated widely, and many of them are no doubt lost. I chose a selection because of apparent significant overlaps with Rueff (and so, with Wolveridge), but do not suggest that any was a source – indeed, the differences identified indicate that none of them was. The investigations led to birth figures in an MS credited to Moscio and said to originate from the *Gynecology* of Soranus although not present in his text.[556]

As the current study provided new evidence regarding the *Speculum Matricis* illustrations would it be possible to refine the previous MS analyses, but with Wolveridge instead of Roesslin at the core, and perhaps discover novel conclusions? Accordingly, my next study involved an online search of medieval medical manuscripts to further elucidate the provenance of the *Speculum Matricis* illustrations. The four medical manuscripts of most importance to this study were the Stockholm MS X 118 and London's Sloane MS 2463, both from the early 1400s, with the Oxford Ashmole MS 399 c.

[556] Green, *Eucharius Roesslin*, pp. 175-80; Arons, *Eucharius Roesslin*, p. 17; Hobby, *The Birth of Mankind*, xxx; Ingerslev, *Roesslin's Rosengarten,* no 1, pp. 1-25 (p. 7 & 20); Ingerslev, Roesslin's Rosengarten, no. 2, pp. 74-92, (pp. 79, 88).

1296, and the Brussels MS 3701-15 dated to the 9th-11th centuries.[557] The four manuscripts were chosen based on an assessment of the content and quality of their midwifery illustrations and their estimated dates of writing. As Irish MS do not contain images of the fetus in utero the collection was not included in the study.[558]

Manuscript	Location	Date A.D.	No. of birth figures
X 118	Stockholm	1425-35	15
Sloane 2463	London	1400-25	17
Ashmole 399	Oxford	1292	10
3701-15	Brussels	9-11 century	13+

Table 4.6: The four medical manuscripts availed of for the study and an analysis by manuscript title, location, approximate date and number of birth figures present.

The four chosen MS with their archival locations and their approximate dates of origin are listed in Table 4.6. The eight categories that were developed for the Wolveridge's Classification were availed of to compare the images discovered in MS sources to those in the *Speculum Matricis*. It emerged that the birth figure category was common to the chosen manuscripts, between 10 and 17 being present per MS, as shown in Table 4.6 but the other categories in the Wolveridge Classification hardly featured at all. The birth figures are dealt with almost exclusively in the following tract. The individual birth figures from each of the four manuscripts were downloaded. A comparison between the Wolveridge birth figures and those in the four chosen MS was then undertaken. It became evident that the MS

[557] Stockholm MS X 118 (http://www.wdl.org/en/item/11631/view/1/4/) (accessed 12 Nov. 2014).
Sloane MS 2463 (http://www.bl.uk/catalogues/illuminatedmanuscripts/record.asp?MSID=1229&CollID=9&NStart=2463) (accessed 11 Nov. 2014).
Ashmole MS 399 (http://bodley30.bodley.ox.ac.uk:8180/luna/servlet/view/all/what/MS.+Ashmole+399) (accessed 11 Nov. 2014).
Brussels MS 3701-15 p. 34. (http://lucia.kbr.be/multi/KBR_3701-15Viewer/imageViewer.html) (accessed 11 Nov. 2014).
[558] Personal Communication, Aoibheann Nic Dhonnchadha (anicd@celt.dias.ie.) (4 Nov. 2014).

birth figures conveyed similar information to those of the *Speculum Matricis* concerning the fetuses prior to childbirth, while allowing for variations in artistic interpretation. Some images were difficult to categorise e.g. a breech presentation with one hand at a lower level in Sloane MS 2463 could be classified as hand presentation, but the intent may have been to depict breech presentation. Reference to Wolveridge's Classification and analysis of the overall placement of the fetal body led me to select the type of presentation in each case.

Wolveridge, legs open

MS X 118, legs open.

Figure 4.30: Wolveridge birth figure compared to Stockholm MS X 118.

The National Library of Sweden in Stockholm holds MS X 188 c. 1425-35 A.D., a replica is held in the Wellcome Historical Medical Museum, London. The MS contains an abridged version of *De arte phisicali et de cirurgia* (Of the physical arts and surgery) from the original by John of Arderne (1307–70 A.D.). Examination of the Stockholm MS X 118 revealed that the birth figures therein were broadly similar (in their depictions of fetal presentations) to those of the *Speculum Matricis* in nine instances. An example from Wolveridge's manual of his fifth preternatural birth presentation (distorted, feet open) is compared to an image from MS X 118, as shown in Figure 4.30. While the images are unalike the information being portrayed is of comparable nature. The depiction of the uterus in the MS was unlike that of Wolveridge, Rueff and the simpler inverted flask shape shown in Roesslin, and did not appear like a medical device or domestic utensil of the era. My

conclusion is that the sketches of the uterus in the MS were derived from a botanical source, evidence for which is provided in the following images. The photographs in Figure 4.31 show a desiccated poppy-seed head with corona and the same picture with corona removed (by utilising the eraser tool in Photoshop) compared to an image from Stockholm MS X 118 that illustrated a fetus in utero. The outline of the structure and the number of bowed vertical supports of the poppy head without corona compare favourably with the manuscript uterus, as is the aperture at the base, although that of the MS has a rolled edge like a cupping glass.

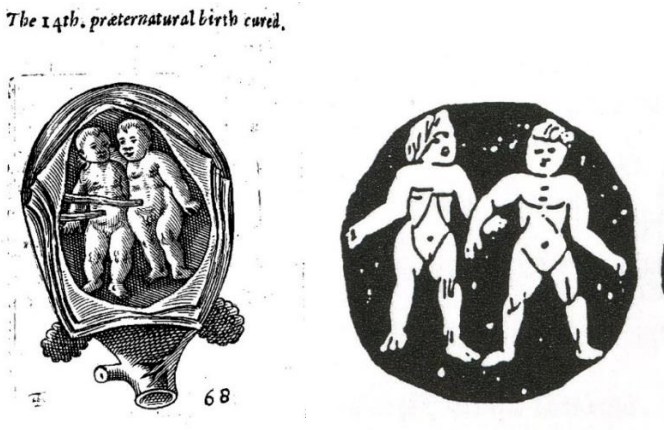
Poppy head & corona Poppy, no corona MS X 118 fetus in utero

Figure 4.31: The MS X 118 uterine image compared to a desiccated poppy seed head.

The choice of a poppy-seed head to illustrate the uterus is thought-provoking. The milky fluid (lachryma papaveris, poppy tears; latex) that exuded from the poppy head on incision, was the source for opium, much prescribed by physicians for pain relief, indeed Roesslin advocated opium to ease childbirth in his *Rosengarten.*[559]

The Sloane MS 2463 c. 1400-1425 A.D. contained an assortment of treatises on medical themes from Gilbertus Anglicus in his *Compendium Medicinae* c. 1240, with an English translation of sections on midwifery and gynaecology (ff. 194-232).

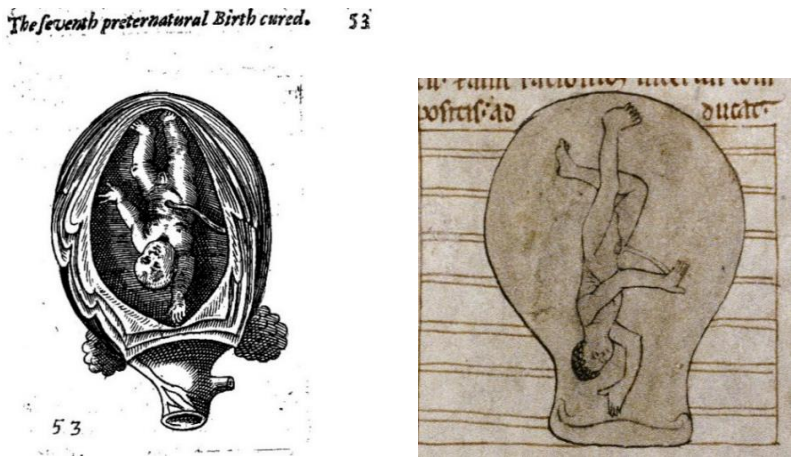
[559] Arons, *Eucharius Roesslin*, pp. 64, 65.



Wolveridge, feet presenting Sloane 2463 twins
Figure 4.32: A set of twins in Wolveridge compared to an image in Sloane 2463.

In the MS there were seventeen birth figures in roundels with red backgrounds that represented the womb. Fetal presentations were recorded on folios 217 and 217v and on folios 218 and 218v. Nine of the birth figures in Wolveridge resembled those of Sloane MS 2463. In this example of twin pregnancy from the *Speculum Matricis* both twins presented by the feet, shown here with the corresponding diagram from Sloane MS 2463, similar information being evident (Fig 4.32).

The Ashmole MS 399 c. 1292 is part of the collection of Medieval and Renaissance Manuscripts of the Bodleian Library, the University of Oxford. Examination revealed that there were ten birth figures in the MS, plus one other stylised version of a fetus in utero, on folios 013v, 014r, 014v and 15r. In this example of Wolveridge's birth figure with hand presentation, there is similar information to Ashmole MS 399, as shown in Figure 4.33. Although the illustrations were not identical the evidence regarding the presenting part was the same. The simple flask shaped uterus corresponded with the Roesslin images of two centuries later.



Wolveridge, hand presenting Ashmole MS 399, hand presenting

Figure 4.33: Wolveridge birth figure compared to Ashmole MS 399.

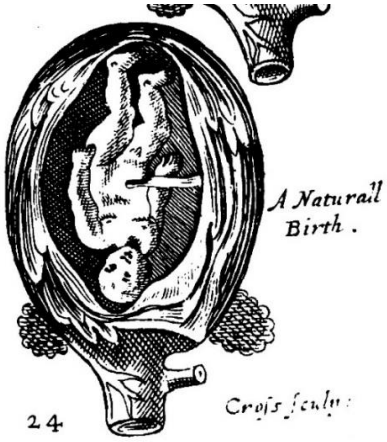
The most ancient manuscript examined for the study was the Brussels MS 3701-15 from the Carolina Bibliothèque Royale de Belgique (Brussels Koninklijke Bibliotheek van België) and is believed to date from the 9-11th centuries A.D.

Figure 4.34: Matrix (uterus) image in MS 3701-15, 9-11th century.

On page 35 of MS 3701-15 there was an illustration of a uterus, termed matrix in the text and shaped somewhat like a cupping glass, with various parts named, as in Figure 4.34. The auricular shapes on both upper sides correspond with the sites of fallopian tubes as they entered the organ.

Wolveridge's birth figure of a normal head down presentation, hands by the sides attitude, is compared to an equivalent image from Brussels MS 3701-15 and shown in Figure 4.35. Altogether there were thirteen birth

figures in the Brussels MS, on pages 55-60 inclusive, ten of which depicted a single fetus in utero, in various presentations.



Wolveridge, head presentation Brussels MS 3701-15.
Figure 4.35: Wolveridge's head presentation compared to MS 3701-15.

The remaining three images illustrated multiple types of fetal presentation on pages 56, 59 and 60. Each fetus had full growth of head hair and was portrayed as an adult.

A. MS 3701-15. B. MS 3701-15. C. MS 3701-15.
Figure 4.36: The three Brussels MS images shown here styled A, B and C for this description.

As shown in Figure 4.36 the illustration marked A. MS 3701-15 had two fetuses in transverse lie and a third who may be a face or chest presentation. In the image B. MS 3701-15 the fetuses presented as breech, knee, footling and double footling. There are multiple cephalic presentations in C. MS 3701-15 thus allowing for twins or higher orders of fetuses.

Natural	**Wol**	**St X 118**	**Sloane 2463**	**Ash 399**	**Br 3701-15**
Head	√	√	√		√ (x3)
Preternatural					
Feet forward	√	√	√ (x2)	√	√ (x3)
Feet handsup	√	√	0		
One foot	√	√ (x2)	√ (x2)	√	√ (x3)
Across	√	√ (x2)	0	√	√ (x3)
Feet open	√	√ (x2)	√	√	√
Knees bent	√	0	√	√	√
One hand	√	√	0	√ (x2)	√
Both hands	√	√	√		√
Buttocks	√	√ (x2)	√ (x4)	√ (x2)	√
Shoulder	√	0	√		
Hands feet	√	0	0		
Breast	√	0	0		
Other					
Buttocks feet	√				
Doubled	√	0	√		
Face			√		√
Head feet		√			
Total	15	14	15	9	18
Matching		9/15 (60%)	9/15 (60%)	7/15 (47%)	10/15 (67%)

Table 4.7: Wolveridge's singleton natural and preternatural birth figures compared to four manuscript sources.

In Table 4.7 the Wolveridge birth figures were compared to those in the four manuscripts chosen for the study. The Stockholm MS X 118 birth figures were like those of the *Speculum Matricis* in nine of the fourteen natural and unnatural presentations, a match of 60 percent. The birth figures of both hands presenting, one foot presenting, and both feet presenting were duplicated, with slight differences only between those illustrations. It was evident that four of the birth figures in the MS were duplicates or were very similar to each other.

Wolveridge and the Sloane MS 2463 were comparable in 9 of fifteen instances, once again a match of 60 percent. In the MS there were four images of breech presentations (each with one hand low) and two figures in which a fetus presented with one foot forward. Sloane 2463 contained an

illustration of face presentation not shared by Wolveridge. The two sets of twins in Sloane 2463 matched 2 of 3 in Wolveridge.

In Oxford's Ashmole MS 399 there were nine singleton birth figures, two of which were duplicated, namely the breech and hand presentations. Seven of the nine figures in Ashmole matched Wolveridge' fifteen images, or 47 percent. There was one set of twins, presenting by the feet, also present in Wolveridge.

In the Brussels MS 3701-15 the birth figures matched Wolveridge in ten instances, or 67 percent. Three images showed multiple fetuses in utero, namely transverse and face presentations (page 56), breech, knee, one foot and both feet presenting (page 59) and on page 60 a group of nine fetuses presented by the head while two other fetuses alongside them were displayed similarly. Altogether the Wolveridge birth figures matched the Brussels MS 3701-15 in ten instances provided the multiple foetuses can represent twin pregnancy.

Twins	**Wol**	**St X 118**	**Sloane 2463**	**Ash 399**	**Br 3701-15**
Both head	√	0	√	0	√ Multiple
Both feet	√	√	√	0	0
Head feet	√	0	0	√	0
Total	3	1	2	1	0
Matching		1/3 (33.3%)	2/3 (66.6%)	1/3 (33.3%)	1/3 (33.3%)

Table 4.8: Wolveridge's twin presentations compared to four manuscript sources.

In Table 4.8 the sets of twins of the *Speculum Matricis* were compared to those in the four chosen manuscripts. Wolveridge displayed three sets of twins compared to MS X 118 which illustrated only one set, with feet presenting. Sloane MS 2463 had a duo of twin presentations that matched Wolveridge, both twins by the head and another as both twins presenting by the feet. The Ashmole MS had one set of twins presenting as head and feet, and matched by Wolveridge. The Brussels MS illustrated multiple head presentations in one graphic which could be interpreted as higher order

presentations or possibly various sets of twins. With the latter possibility in mind a credit for twins was allowed in the table.

Presentation	**Wolveridge**	**Soranus**
Natural		
Head	√	√
Preternatural		
Feet forward	√	√
Feet hands up	√	√
One foot	√	√
Across	√	√ (x4)
Distorted legs open	√	0
Knees bent	√	0
One hand	√	√
Both hands	√	√
Buttocks	√	√
Shoulder	√	0
Hands feet	√	0
Doubled breast	√	√ (abdomen)
Other		
Head to buttocks	√	
Buttocks & feet	√	
Head to one side		√
Head & feet		√
Twins		
Head head	√	√
Head feet	√	√ *
Feet feet	√	√ *

Table 4.9: Wolveridge birth figures 1670 compared to the midwifery text of Soranus from the second century A.D.

What was significant was that both the Brussels 3701-15 and the Stockholm X 118 specifically named Moscio and his midwifery writings (first published in 1566) as the source of their birth figures, and he in turn derived from Soranus although illustrations are not present in his manuscripts.[560] An English translation of Soranus' *Gynecology* does not contain any birth figures but the text outlines the natural and non-natural presentations of the fetuses at childbirth, as written of and illustrated by Wolveridge fourteen centuries later.[561] Therefore, in a novel study based on the Soranus text it

[560] Jeremy M. Norman, *Garrison and Morton's Medical Bibliography* (Vermont, 1993), p. 949.
[561] Temkin, *Soranus' Gynecology,* pp. 179-80.

was possible to catalogue his singleton natural and non-natural birth forms, and those for twin pregnancies, in a tabular system similar to that already developed for the Wolveridge birth figures, as shown in Table 4.9. By means of that device it was possible to compare Soranus' seventeen simulated birth figures to Wolveridge's eighteen. The results of this innovative study revealed that twelve of the seventeen (or 67%) of the Soranus forms were found to correspond to those of the *Speculum Matricis* while of the twelve non-natural singleton presentations in Wolveridge there were eight matching birth figures in Soranus' text.

So, when Wolveridge's illustrations were compared to MS sources, it was proven that forty-seven to sixty seven percent of birth figures were shared, while the other images of the *Speculum Matricis* were not present in the manuscripts chosen for review. Another novel discovery was the poppy head matrix of the Stockholm MS X 118. In another innovation the *Speculum Matricis* birth figures were compared to those created specifically for this study based on the relevant text of Soranus's *Gynecology*, and a match of sixty seven percent found.

Conclusion

This chapter adds significantly to our understanding of the *Speculum Matricis* illustrations and their original sources. The provenance of the images was explored through use of an innovative Wolveridge Anatomic and Midwifery Image database. The creation of such reproductions and their inclusion in this WMAI database enabled effective categorisation, evaluation, management and storage of illustrations from varied sources.

There were thirty-three images in the *Speculum Matricis,* an excess of two on the estimate by Spencer in 1927. By use of a novel Wolveridge Classification it was possible to assess and categorise the various types of images and their totals in his manual. In another unique study each of the illustrations was compared to those in selected midwifery and anatomy manuals of the era. A further innovation was the comparison of

Wolveridge's birth figures to those in four medical manuscripts. Finally, in another original study the birth figures of the *Speculum Matricis* were compared to the relevant text of Soranus of the second century A.D.

Evidence is provided that the illustrations of the *Speculum Matricis* were sourced from images in the foremost anatomy, midwifery and surgical treatises of the era being replicated as high-quality copper engravings by Thomas Cross of London. Because the illustrations integrated so clearly with the text it is likely that Wolveridge chose the illustrations and would have indicated their correct page positioning in the manual.

It is clarified that twenty-six of thirty-three (or 79 percent) of the *Speculum Matricis* images were derived from Jacob Rueff who in turn based sixteen (or 62 percent) of that group on similar images in Roesslin's *Rosengarten*, namely the birth figures and birth stool. Wolveridge included an extra 'overthwart' birth figure not present elsewhere (taken from the written text of Hildanus) which can now be classified as original to Wolveridge and his illustrator Thomas Cross. The concordance for twelve 'non-natural' birth figures in singleton pregnancies, and the birth figures of twins in the manuals of Wolveridge, Rueff and Roesslin was a novel and very significant finding that informed further research into the ancient origin of that type of image in midwifery.

The birth stool illustration in Wolveridge was traced to Rueff thence to Roesslin. The image may have originated from a seat device shown in a previous publication by Michele Savonarola. The birth stool is of ancient origin being mentioned by Soranus.

In the embryology section of the *Speculum Matricis* only six of the eight Rueff images were copied by Wolveridge but he added a further illustration to clarify the sequence. It is possible to credit Severinus Pineau as the source for that seventh image because of this study. It is proposed that Rueff originated the genre of embryology images, based on Galen's observations and ancient Greek writings.

It is established that Wolveridge credited his illustration of a medicated 'bagg' to the case-notes of Wilhelm Fabry (Hildanus). It is proposed that the image of the 'bagg' may have been inspired by a truss depicted by Johannes Scultetus in 1655.

One of two anatomy plates featured a fetus and uterus in a dissected mother and was credited by Wolveridge to Thomas Bartholin, a fact not previously acknowledged in the literature. The image was traced through the WAMI database to an earlier anatomic depiction by Giulius Casserius. A second anatomic plate pictured an early pregnancy with fetus, reproductive organs, and main intra-abdominal blood vessels and kidneys. The illustration was traced through the WMAI database to Andreas Vesalius in 1543, or alternatively to the anatomy plates of his copyist Thomas Geminus in 1555. It is proposed that the lone placental image in the *Speculum Matricis* was copied from Giulius Casserius.

A proposal is offered from this study to clarify the increasing complexity of uterine images in the sixteenth century. A suggestion is also offered to explain an anomaly in the Vesalian anatomy in which the mother's urethra was incorrectly showed to enter the upper vagina, an inaccuracy that was copied to Rueff, Wolveridge and other authors.

The two frontispiece illustrations are deemed original to Wolveridge and his illustrator Thomas Cross, as was Spencer's opinion. Versions of both images were later copied to the plagiarised edition of Wolveridge's book, *The Expert Midwife* of 1682.

It is unknown whether Wolveridge availed of manuscript sources although there were references to ancient Greek texts in his manual, so it may be that printed materials were his likely bases. However, while the *Speculum Matricis* illustrations were derived from premier treatises of the sixteenth century almost all the knowledge that gave rise to them was available from antiquity. In this chapter the provenance of birth figures was traced through four chosen manuscripts and the images matched those of the *Speculum Matricis* in 47 to 67 percent. In another novel procedure the

birth figures in Wolveridge were compared to the relevant Soranus text and were also found to match in 67 percent.

The implications are that birth figures, and the information that promoted them, can be traced to ancient times and Wolveridge drew unwittingly on medieval and classical sources for the birth figures in his manual. A common set of such images evolved in ancient Greece and was copied through manuscript images to the wood-cuts and copper engravings used in the printing press for midwifery texts and manuals. However, in a break with medieval and classical tradition Rueff's birth figures represented a quest for anatomical accuracy, being novel in that regard, particularly in relation to his 'infant' rather than adult style fetus (as in Roesslin and the MS) and the complex uterus and membranes images. Despite that observation, Wolveridge's birth figures, although copied from Rueff, had their genesis in antiquity.

The question posed by the thesis 'Wolveridge's *Speculum Matricis*: a mirror on antiquity?' can now be answered about the illustrations in his midwifery manual. Based on the evidence provided in this chapter it is possible to state that the images in the *Speculum Matricis* reflected the knowledge of antiquity.

Chapter five - Materia medica

Introduction

A comprehensive review of the materia medica (medical materials) of the *Speculum Matricis* has not been published to date. Therefore, the purpose of this investigation is to ascertain the remedies appropriate to midwifery laid out in Wolveridge's *Speculum Matricis* and to establish their provenance, where possible. Did Wolveridge's materia medica mirror that of antiquity, or reflect the knowledge of his era, or both? Such an evaluation of the medications requires a close comparison of the *Speculum Matricis* and midwifery and medical texts of the medieval and early modern period, and to ancient Greek treatises on materia medica and midwifery. Because of those textual comparisons it should be possible to outline a likely provenance for various medical ingredients in Wolveridge's materia medica. Also included in this chapter are notes on medical and midwifery information in almanacs and women's writings such as those of Sarah Jinner and the Countess of Kent.

According to Spencer the *Speculum Matricis Hybernicum* of 1670 was but a copy of the midwifery manual of Jacob Rueff, including its materia medica, available as an English translation in 1637.[562] More recently it was asserted that Wolveridge's materia medica 'repeated the treatments of Jacques Guillemeau' whose French midwifery manual was translated into English and published in 1635.[563] However in my review it was notable that Wolveridge did not cite Rueff nor Guillemeau from whom he may have derived materia medica, although he cited other sources in his text.

Accordingly, the *Speculum Matricis* of 1670 was assessed to determine the therapeutic substances included in the text. The version of the manual investigated was a reproduction of an original in the Bodleian Library at the

[562] Spencer, 'Wolveridge's "Speculum Matricis", p. 1080, and others as noted in the chapter on Illustrations; Rueff, *The Expert Midwife*).

[563] Hobby, 'Early Modern Midwifery Manuals and Herbal Practice'; Jacques Guillemeau, *Child-birth, or, The Happie Deliverie of Women* (London, 1612) (henceforth cited as Guillemeau, *Child-birth*, 1612).

University of Oxford, published by Early English Books Online.[564] To begin with each remedy within the *Speculum Matricis* was traced to its various locations throughout the text. That allowed for a detailed analysis of the name(s), and type of each medication, their locations, the indications and frequency for its/their use, whether as a single agent or in combinations, recipes of compound remedies, weights and measures, the various modes of administration, and other relevant information. The results of those studies were catalogued in a *Speculum Matricis* materia medica database.

The sources that Wolveridge referenced in the materia medica of the *Speculum Matricis* were identified and evaluated. The relevant publications were Johannis Pulverinii, *Medicina Practica*, 1649;[565] Guilelmus Hildanus, *Observationum et curationum*, 1606;[566] Rodrigo de Castro, *De universa mulierum mediciano*, 1604;[567] and Johannia Fernelii, *Ambiani Therapeutices Universalis*, 1571.[568] In addition to comparisons with those Latin texts the *Speculum Matricis* medications were considered in relation to midwifery and other medical writings, mainly from the early modern period, in order to determine the number and percent of the ingredients in each which were common to those in the *Speculum Matricis*. The results of such a study might indicate if Wolveridge had copied or derived his ingredients from favoured sources.

Based on a survey of the literature the following key treatises of midwifery, pharmacopoeiae, and well-being were chosen as comparators. Specific midwifery books were *The Rose Garden for Pregnant Women and Midwives* 1513; *The Birth of Mankind* 1560; *The Midwives Book* 1671; and *The Practice of Physick* 1678.[569] Each book contained a glossary, index, list or table of the materia medica present in the text. *The Midwives Book* of 1671 was written in English while the other three named midwifery texts

[564] James Wolveridge, *Speculum Matricis,* 1670.
[565] Pulverinii, *Medicina Practica*.
[566] Hildanus, *Observationum et curationum chirurgicarum*.
[567] Castro, *De universa mulierum.*
[568] Fernelii, *Ambiani*.
[569] Arons, *Eucharius Roesslin*; Hobby, *The Birth of Mankind*: Hobby, *Jane Sharp, The Midwives Book*; Burton*, Riviére.*

availed of were modern edited editions. Other texts evaluated were the *Pharmacopoeia Londinensis* 1618, the *Pharmacopoeia Londinensis or London Dispensatory* 1654 (published in 1720) and *The Ladies Dispensatory* 1652.[570]

Three further midwifery manuals were chosen, those of Jacques Guillemeau (two editions) and Jacob Rueff.[571] It was proposed recently that elements of the materia medica of the *Speculum Matricis* were 'taken direct' from Guillemeau's C*hild-birth, or, the Happie Deliverie of Women* (1612).[572] The purpose of the investigation was to discover the elements 'taken direct' from Guillemeau's (French translated to English) midwifery book of 1612 or the later edition from 1635. It was also claimed that Wolveridge had summarised a large portion of Jacob Rueff's thesis for the opening chapters of the *Speculum Matricis*.

In addition to Rueff and Guillemeau the widely circulated books on midwifery by Nicholas Culpeper and François Mauriceau were studied. Both of the midwifery books published on behalf of Nicholas Culpeper were popular English manuals of the era, being *A Directory for Midwives* 1651 and *Culpeper's Directory for Midwives* 1662.[573] Another common midwifery book of the era was *Traite Des Maladies des Femmes Grosses* by the French physician François Mauriceau, published in 1662 (with an English translation in 1683).[574] The three books were reviewed to assess whether Wolveridge would have availed of them as source material for the materia medica of the

[570] George Urdang, *Pharmacopoeia Londinensis of 1618, Reproduced in Facsimile, With a Historical Introduction,* Hollister Pharmaceutical Library Number Two (Madison Wisconsin, 1944) (henceforth cited as Urdang, *Pharmacopoeia Londinensis,* 1618); Culpeper, *Pharmacopoeia Londinensis*; Carey Balaban, Jonathan Erlen, Richard Siderits, (eds), *Leonard Sowerby, The Ladies Dispensatory 1652* (New York and London, 2003) (henceforth cited as Balaban et al., *The Ladies Dispensatory*).

[571] Guillemeau, *Child-birth*, 1612; Guillemeau, *Child-birth,* 1635; Rueff, *The Expert Midwife.*

[572] Hobby, 'Early Modern Midwifery Manuals and Herbal Practice', pp. 67-85.

[573] Culpeper, *A Directory for Midwives, 165*1; Culpeper, *Culpeper's Directory for Midwives: Or, A Guide for Women, The Second Part*, 1662.

[574] François Mauriceau, *Traite Des Maladies des Femmes Grosses, et de Celles qui sont Accouchees* (Paris, 1662); Francis Mauriceau, *The Diseases of Women with Child, And in Child-bed, translated by Hugh Chamberlen M.D* (London, 1683) (henceforth cited as Mauriceau, *The Diseases of Women with Child*).

Speculum Matricis. Also reviewed were Daniel Sennert's *Operum Tomus Quartus* of 1656 and Philip Barrough's *The Method of Physick* of 1583.[575]

The materia medica of Wolveridge's *Speculum Matricis* was likewise compared to that of the *Medieval Woman's Guide to Health* (the *Sloane 2463* manuscript) and *The Trotula*, both with origins in the 12th century.[576] The following works from the 1st to 7th centuries A.D. were chosen for investigation namely, *The Greek Herbal* of Dioscorides (1st century A.D.) as published by Gunther and later by Beck, complemented by the materia medica of the *Alphabet of Galen* (pre-2nd century A.D., but author unknown, and wrongly attributed to the Graeco-Roman physician Galen), and that of *Soranus' Gynecology*.[577] From Byzantium, the sixteenth book of Aetius of Amida (6th century A.D.) was selected. Written in Greek the text was translated to Latin as *Aetii Medici* in 1542 and eventually to English.[578]

Wolveridge's materia medica

A database of the materia medica in the *Speculum Matricis* was compiled presenting the ingredients as named by Wolveridge, the locations in his text and the indications for their uses. There was a non-paginated 'Index containing the Contents Alphabetically' of twenty pages in Wolveridge's book but only three medical ingredients were mentioned in that, namely oxycrat (a mixture of vinegar and water), oxymel (honey, sea salt and vinegar) and parsley respectively. Most of the constituents and recipes were present throughout the final fifty-five pages, which accounted for approximately one third of the text of the book.

[575] Sennert, *Quartus*; Barrough, *Physic*.
[576] Rowland, *Medieval Woman's Guide to Health*; Green, *The Trotula*.
[577] Robert T. Gunther (ed.), *The Greek Herbal of Dioscorides. Illustrated by a Byzantine A.D. 512, Englished by John Goodyer A. D. 1655* (New York, 1959); Lily Y., Beck (ed.), *Pedanius Dioscorides of Anazarbus. De materia medica* (2nd ed., Hildescheim, Zurich, New York, 2011) (henceforth cited as Beck, *Dioscorides*); Nicholas Everett (ed.), *The Alphabet of Galen. Pharmacy from Antiquity to the Middle Ages. A Critical Edition of the Latin Text with English Translation and Commentary* (Toronto, Buffalo, London, 2012); Temkin, *Soranus Gynecology*).
[578] Ricci, *Aetios of Amida*.

Analysis of the materia medica of the *Speculum Matricis* revealed that there were two hundred and twenty-one ingredients. They included plant, animal, human, and mineral extracts, a sample being shown in Table 5.1, with the entire medical ingredients listed in the Appendix.

Materia medica of the *Speculum Matricis*.
Acatia. *Acacia*, *Gum Arabic,* derived from *Acacia Senegal.*
Agarick. *Amantia muscaria,* fly agaric, a fungus like mushroom.
AEgrimony. Agrimony. *Agrimonia eupatoria.*
Alkermes. *Kermes-berries, cocci, of the Scarlet Oak,* the work of an insect.
Almonds (sweet). P*runus Amygdalus dulcis*.
Aloes. *Aloe Vera.*
Allom. *Alum. Sulphate of aluminium* and of an alkaline earth element or ammonium, also known as *Stupteria*.
Amber. *Amber,* the fossilized resin of *Populus nigra*, Black poplar.
Ambergreece. *Ambergrease,* a waxy substance originating from the intestine of the sperm whale *Physter catodon.*
Angelica. *Angelica archangelica.*
Annis. *Anise, Pimpinella anisum*. Aniseeds.
Asafoetida. An oleo-gum-resin from *Ferula foetida* and other *Ferula* species, also known as Devil's Dung.

Table 5.1: Sample of materia medica from the *Speculum Matricis*. Wolveridge's spellings in bold.

There were many problems with arriving at this final account. For instance, the dietary components are integrated as materia medica in the table because Wolveridge availed of diet in treatments, either to avoid complications in childbed or to relieve conditions that had already arisen. In the dietary category there were duplications of products which have been rolled together (trotters and hog's feet were mentioned separately for example). Within the medical ingredients, some products appear with different names, like opium and poppy. The differing terms were retained in the table for authenticity but counted as one for statistical purposes. The estimated 221 constituents were later compared to the materia medica of the treatises mentioned already. It was an important finding that Wolveridge's materials (with few exceptions) were named in plain English as many texts of the era used Latin terminology.

When all the ingredients of the materia medica of the *Speculum Matricis* were formally identified it was possible to determine the common name and to ascertain the Latin title to each of Wolveridge's named products in the database. Up to that point the correct identification of each ingredient was a cause for concern. Some of Wolveridge's materials were easily recognisable, such as fennel and frankincense. Others had variant spellings. Most of the medications, including the compound remedies such as *Unguentum Arthanita* and others, required detailed searches. Fortunately, some of the sources I chose had already grappled with the problems of identification. The translations of Greek works by Theophrastus, Hippocrates, Galen, Dioscorides, Soranus and Aetius provided clarity. The *Rosa Anglica*, the later English *Herbals,* John K'Eogh's *Botanalogia Universalis Hibernica, Or, A General Irish Herbal* (1735), the original *Pharmacopoeia Londinensis* and translations of the *London Pharmacopoeia and Dispensatory*, and Robert Lovell's publications were among many invaluable sources as were treatises on historical aspects of materia medica by John Hill, John Quincy, Friedrich Flukiger, Daniel Hanbury and Tony Hunt who bemoaned 'the apparent anarchy of pre-Linnaean nomenclature.'[579]

Almost all the prescriptions offered by Wolveridge contained multiple medical ingredients. Some of the constituents were readily available such as cowslip (*Primula veris*) availed of by Wolveridge for use in a general cordial water and dill (*Anethum graveolens*) to increase breast milk supply. Others were exotic and imported from abroad, for example date (*Phoenix dactylifera*) with powdered remedies to prevent abortion and fenugreek (*Trigonella foenum-graecum*) for retention of the lochia and to treat womb prolapse. Additionally, some constituents would have to be obtained from an apothecary. Hiera lo godii (*Hiera logadii*) a purgative for convulsions and Manus Christi pearled (*Saccharum tabulatum & perlatum Simplex*) a conserve

[579] Friedrich August Fluckiger, Daniel Hanbury, *Pharmacographica. A History of The Principal Drugs of Vegetable Origin, and met with in Great Britain and British India* (2nd ed., London, 1879); Tony Hunt, *Plant names of Medieval England* (Suffolk, 1989), ix.

of powdered pearl, sugar, Damask Rose Water and leaves of gold (possibly Golden leaf *Sage*), for fainting in early pregnancy, were among that group. The number of ingredients and their quantities per prescription varied, as did the total of recipes per female condition treated. An aide-memoire, such as Wolveridge's book or other midwifery manual, would have been essential for the midwife or a physician involved in treating childbirth and its ailments.

In keeping with ancient Greek medical traditions Wolveridge placed great importance on diet.

Diet "of breeding women"	Frugal, moderate, abstaining from gross meats hard of digestion; eat birds of the mountains, &c. a variety of broths, chickens, eggs, grewels, kid, lamb, land-fowl, mutton, panadoes, rabbets, veal, cinamon and nutmeg, drink wine moderately (p. 111).
Costive	Lettuce and spinage boyled, well buttered, with salt and vinegar, or wine (p. 112).
Terms before time	Comfrey and Plantane in Milk made boyle with red-hot steel (p. 113).
Immoderate lochia	Broth of Calves-feet, Gellies, Panadoes, Pears, Pomegranate juice, Quince, Rice, Roast-meats, yelks of eggs. Red Wine, water wherein steel was quenched (p. 120).
Child-bed fever	Baulm, Mugwort, Oatmeal-caudles, Orgamine, Panadoes, Speremints, Water-grewels, white-Wine, forbearing nourishments that are stronger and solid, as also all manner of flesh (p. 123).
For want of Milk	Butter, Broths, eat plentifully, Possets (hot milk with ale or wine) (p. 147). Broth of Hens or Capons, Cinamon, Mace, Poch'd-eggs, Annis seeds, Dill seeds, Earth-worms, Barley-water, sugar (p. 148).
Avoid in breast feeding	Garlick, Junkets (flavoured milk curds) made with spices, leeks, onions, Persly, salt meats, Smallage (p. 144).
Milk too tart	Meats as are of the best juice (pp. 146-47).
Milk too thick	Extenuating diet (p. 146).
Milk too thin	Contrary food, Formenty of Wheat, Rice, Hogs-feet, Calves-feet, Trotters, sweet Wine (p. 146).

Table 5.2: Advice regarding diet in the *Speculum Matricis* with page numbers in the text.

For instance, a regulated diet was specified for pregnancy and when uterine bleeding or constipation occurred during the gravid state. Nutritional information was also offered for excess flow of the lochia and for fevers in

childbed. Specific diets were proposed for breast-feeding mothers and/or wet-nurses for both the quality and the quantity of milk, as were instructions on the dietary ingredients to avoid during lactation. Wolveridge's advice regarding various dietary measures is shown in Table 5.2. The essential regimen of dietary advice, when included in his text, preceded the various prescriptions that were thought effective for the ailment or condition.

In the ancient Greek language, the word diet (diaita) meant the 'mode of life' and encompassed food and drink, exercise, and the entire way of leading one's life, a philosophy that led Hippocrates to write 'the most famous doctors cure by changing the diet and lifestyle of their patient, and by using other substances.'[580] The Hippocratic writings dealt with the importance of diet in the *Regimen in Acute Diseases*. Barley gruel and water, drinks of honey and water or wine and those with herbs such as 'myrtle, pomegranates and the rest' were explored in detail.[581] Many centuries later Galen wrote 'the thinning diet is indicated for the majority of chronic diseases, which can, indeed, frequently be treated by such means alone, without recourse to drugs' and he proceeded to consider the nutritional and medicinal values of vegetables, seeds, cereals including barley, meats, roots, fruits and nuts, also honey, milk and wine.[582] Soranus also commended the virtues of diet in various female conditions, for instance 'wine in moderation and varied foods' in the treatment of the female flux.[583]

The overall number of ingredients of Wolveridge's materia medica included the substances necessary to render a prescription in its required form. The menstruum or solvent could be water, red or white wine or its spirit, and ale or brandy. The oral remedies also required constituents to make them palatable. Medicines for application to various body parts contained medicated liquids compounded with cerates (wax), fat or oils. Each component of a prescription could have beneficial properties of its

[580] Eleni Tsiompanou, Spyros G. Marketos, 'Hippocrates: timeless still' in *Journal of The Royal Society of Medicine*, Vol. 106, No. 7 (July, 2013), pp. 288-292, p. 291.
[581] Chadwick & Mann, *Hippocratic Writings*, pp. 186-205, p. 203.
[582] Singer, *Galen*, *Selected works*, pp. 305-324.
[583] Temkin, *Soranus' Gynecology*, p. 168.

own. As an example, one of the most common ingredients in Wolveridge's materia medica was cinnamon. According to Dioscorides *Cinnamomum tamala* was pungent and sweet with digestive properties but it also had the ability to induce menstruation and to aid childbirth.[584] Many of the constituents were not native to Ireland or England. *Cloves*, *coriander*, *dates*, *figs* and other exotica were imported and therefore more expensive than locally sourced materia medica.

An astringent powder for the cord.
Rx. Of Aloes, Frankincense, Dragons-blood, of each a drachm; of burnt Hart's-horn, sealed earth (called Terra Sigillata), fine flour, of each two drachms; of the wooll of Hares shread small, half an ounce; of these make a fine powder.

Table 5.3: The ingredients and preparation of an astringent powder to apply to the cut cord, from Wolveridge's Section V, 'A Dialogue between Eutrapelia the Midwife, and Philadelphos the Doctor' (p. 30).

The following examples of Wolveridge's materia medica for conditions in midwifery were culled from the materia medica database. An astringent powder applied to the newly cut umbilical cord of the new-born contained seven ingredients as shown in Table 5.3. Among the materials were the exotic aloes (*Aloe Vera*), Dragons-blood (*Sanguis Draconis***,** Dragon-tree resin), frankincense (*Boswellia species*) and Terra Sigillata (sealed earth /*Red Lemnian Earth*). The symbol Rx (short for receipt or prescription), being much favoured by both physicians and apothecaries, was prefixed to the recipe, the only occasion the sign appeared in the *Speculum Matricis*. Wolveridge's treatment of the cord differed from the early modern authorities consulted by me.

[584] Beck, *Dioscorides,* pp. 14-5.

Sample, A General Cordial Water
'I shall give one general Cordial water, which I shall not only commend to Midwives to have ever by them, but also to other Gentlewomen; it being a general Cordial water against most distempers. Thus then; Take Baulm, Betony, Pellitory of the wall, sweet Marjoram, Cowslip flowers, of the flowers of Rosemary and Sage, each a great handful; of the seed of Annis, sweet Fennel, and Coriander, Caraway and Gromel, of each half an ounce; of Cinamon, Licoras, and Nutmeg, all bruised, each one ounce; of Juniper-berries, one ounce and half; let the herbs be shred, and infused in a gallon of Brandy in an earthen pot well leaded, for the space of a fortnight; afterwards strein it, and put in twelve ounces of Loaf-sugar, and of Musk and Ambergreece, (Note, that a gallon of Brandy added to the ingredients after streining makes as good water as the former, if ordered so) each two grains, tyed up in silk, and hang'd in the glass: you may put in another gallon of Brandy, after the first is streined.'

Table 5.4: 'A General Cordial Water' and its preparation included by Wolveridge in 'A Miscellany of Medicines' Section XXXII (pp. 128-129).

A cordial water commended by Wolveridge for midwives to 'have ever with them, but also to other Gentlewomen; it being a general Cordial water against most distempers' is shown in Table 5.4. There were twenty ingredients being berries, flowers, herbs and seeds in various quantities prepared with ambergreece (a waxy substance from sperm whale intestines), cinnamon (*Cinnamomum tamala*), licorice (*Glycyrrhiza glabra*), loaf-sugar, nutmeg (*Nux moschata*, *Myristica fragrans*) and musk (*Moschus,* a 'perfume' from a small deer) all infused in brandy and strained after two weeks. The filtered liquid was strengthened with additional brandy. The household preparation and storage of various cordial waters in the era was documented recently.[585]

For the treatment of retention or immoderate flow of the lochia in childbed fifty different ingredients were used and are presented in Table 5.5. The elements which included those of animal, vegetable, and mineral origin could be availed of in various combinations, all compound in nature. The ingredients were both local and exotic and a number could only be obtained from an apothecary such as *Laudanum* (a medicine with opium from the poppy *Papaver somniferum* plus other ingredients), and the compounds

[585] Elaine Leong, 'Making Medicines in the Early Modern Household,' in *Bulletin of the History of Medicine*, Vol 82. No. 1 (2008), pp. 145-68.

Unguentum Arthanita and *Unguentum Comitissae*. Additionally, remedies of both cupping glasses and phlebotomy were availed of.

Angelica, Anniseeds, Balm water, Balm, Birth-wort roots long and round (Aristolochia), Broth, Bryonie, Calamint, Caraway seeds, Chamemile flowers, Cinamon water, Confection of Alkermes, Cupping glasses, Dill seeds, Elder, Foenugreek seeds, Gentian, Laudinum two grains, Mallow leaves, Manna, Marshmallow roots, Melilot flowers, Mercury leaves, Mugwort water, Mugwort, Orgamint, Oxycrat, oyle of Bayes, oyle of Chamomile, oyle of Dill, oyle of Eggs, oyle of Worms whelps, Pellitory of the wall, Phlebotomy, Plantane juice, Poppy syrup, Red Wine, Roses syrup, Sal-Gemm, Savin, Seseleos seeds, Sowbread (Cyclamen), Spring-water, St. John's-wort, Tansy, Unguent de Arthanita, Unguentum Comitisse, Violets, water wherein steel was quenched, white Lillies, yelk of two eggs.

Table 5.5: The ingredients availed of in recipes for 'Retention of the Lochia (in Child-bed) and of their immoderate Flux' in the *Speculum Matricis,* Section XXX (pp. 115-20).

The treatments for womb prolapse involved local applications of compound medications, replacement of the uterus to its correct position, and insertion of a medicated pessary to treat the womb while holding it in place, as in Table 5.6. Thirty-five ingredients were availed of with use of a urinary catheter to empty the bladder, plus medicated sponges for cleansing and wool pledgets wrapped in linen for application of the medications.

Acatia juice, Annise seeds, Beers, Bistort roots, Brambles (red) leaves, broth, Comfrey roots, Cypress-nuts, Foenugreek, Glyster, Hagtaper, Horse-tail, Hypocistis juice, Lineseed, linnen-rag, Mace-ale, Mallows, Marsh-mallows, Medlar leaves, Myrtle-berries, Oake leaves, oyle of Myrtles, oyle of Mastich, Pipe (catheter), Plantain leaves, Pomegranat-flowers, Pulvis Sennae compositus major, red Rose-leaves, Shepherd's-purse, Sloe leaves, Smith's water, sponges, spring-water, Tormentill roots, Unguentum Comitissae, Wine (red), Withy leaves, wooll pledget.

Table 5.6: 'Of the coming forth of the womb' ingredients of the materia medica from *Speculum Matricis,* Section XXXV (pp. 162-66).

The fourteen ingredients of compound medicines for fevers in child-bed (Table 5.7) included '*Irish Slatt* [Irish slate] poudered' (p. 124) but there were other recorded medical uses at the time. Wolveridge wrote that 'Midwives usually give…*Irish Slatt* poudered…in posset-drink.'[586]

[586] Wolveridge, *Speculum Matricis*, 1670, p. 124.

Of the Fever of Milk and The Cure of Fevers in Child-Bed
Balm-water, Bezoar-dical medicines, Castoreum, Glysters emollient, Hysterical-water, Irish Slatt poudered, Laudanum, Marrigold-flowers, Pennyroyal-water, Saffron tincture, Saffron, Sperma Ceti, Violet confection, white-Wine. Prevent outward colds, advise that women be kept in their beds for five daies at the least after their delivery. Advice Of Learned Physitians.

Table 5.7: 'Of the Fever of Milk and The Cure of Fevers in Child-Bed' the materia medica from *Speculum Matricis* Section XXXI (pp. 121-25).

In 1730 an author wrote that Irish Slate (*Lapis Hiberniae*) was an unusual ingredient of the materia medica as 'few regular Physicians use it.'[587] The *Lapis Hiberniae* did not feature in the *Pharmacopoeia Londinensis* of 1653 nor did it appear in the midwifery, or lay reader sources I investigated throughout this chapter.[588] The Irish version of John of Gaddesden's treatise entitled the *Rosa Anglica* contained a Latin to Irish vocabulary of materia medica but did not include the ingredient.[589] Neither did the *Botanalogia Universalis Hibernica* (1735) of John K'Eogh which also contained a valuable Irish vocabulary, but of botany only.[590] However it was 'much commended by some, as very effectual against quartan agues (fever with shivering) in (a) posset drink' according to Robert Lovell in 1661, just eight years before Wolveridge penned his *Speculum Matricis*.[591] Lovell graduated M.A. from Oxford and was there when Jonathon Ashe, who wrote an encomium to the *Speculum Matricis,* was in Oriell college.[592] Could it be that Lovell was the likely source for Wolveridge for the *Irish Slatt* ingredient? Also present in the section 'The Cure of Fevers in Child-bed' (Table 5.7) was *Hysterical water* (*Aqua Bryoniae compositae)*, a product introduced by the Swiss born physician Theodore de Mayerne. Wolveridge also offered advice apart from

[587] R. Bradley, *A Course of Lectures upon the Materia Medica, Antient and Modern* (London, 1730).
[588] Culpeper, *The Pharmacopoeia Londinensis.*
[589] Winifred Wulff (ed.), *Johannis Anglici, Rosa Anglica Sev Rosa Medicinae* (London, 1929) (henceforth cited as Wulff, *Rosa Anglica*).
[590] John K'Eogh, *Botanalogia Universalis Hibernica, Or, A General Irish Herbal* (Cork, 1735).
[591] Robert Lovell, *Sive Pammineralogicon, Or An Universal History of Minerals* (Oxford, 1661), Geologia, p. 89.
[592] G. S. Boulger, rev. Anita McConnell, 'Lovell, Robert (1630? - 1690)' in H. C. G Matthew and Brian Harrison (eds), *Oxford Dictionary of National Biography* (vol. 34., Oxford and New York, 2004), p. 526.

the recipes, such as the avoidance of cold, remaining in bed for five days after delivery and/or seeking the advice of learned physicians. Another medical ingredient advocated by Wolveridge was *Castile soap* for use against costiveness in a recipe for suppositories made of egg-yolk, honey and other ingredients.[593] Soap in various forms was in medical use since antiquity.[594] *Castile soap* became available in England during the 16th century.[595] Under the title *Castile Soap* the product was not found in the materia medica of the midwifery manuals and other sources investigated in this study prior to Wolveridge's publication. In the following year, Jane Sharp proposed *Castle sope* as an ingredient of a suppository to treat constipation (p. 140).

Methods of administration included applying medications to external body parts such as medicated oils, ointments and plasters; to internal body parts including enemata, pessaries and suppositories; oral preparations in liquid, lozenge and pill forms; cupping and blood-letting via scarification and phlebotomy; suffumigation with medicated steam or smoke and the use of 'errhines' being medications to induce sneezing. Wolveridge explained the function of only four of those methods so the remainder were identified and clarified by recourse to medical and general dictionaries of the era.[596] The forty-eight methods that Wolveridge advised as modes of administration of materia medica are detailed in Tables 5.8 and 5.9. Almost all the methods of administration of the many prescriptions in the *Speculum Matricis* originated from antiquity.

[593] Wolveridge, *Speculum Matricis*, 1670, p. 112.
[594] John A. Hunt, 'A Short History of Soap' in *The Pharmaceutical Journal* (I Dec 1999) online (http://www.pharmaceutical-journal.com/opinion/comment/a-short-history-of-soap/20066753.article) (3 December 2015).
[595] History of Castile soap (http://www.soaphistory.net/soap-history/castile-soap/) (3 December 2015).
[596] John Kersey, *Dictionarium Anglo-Britannicum: or, A General English Dictionary* (London, 1708), not paginated (https://books.google.ie/books) (22 February 2016]; John Quincy, *Lexicon Physico-Medicum: or, A New Medicinal Dictionary; explaining the difficult terms Used in the Several Branches of the Profession, and in such parts of Natural Philosophy* (9th ed., London, 1775) (henceforth cited as Quincy, *Lexicon Physico-Medicum*); Samuel Johnson, *A Dictionary of the English Language* (3rd ed., Dublin, 1768), not paginated.

Method	Explanation
Apply.	Medications placed on body parts, as with bags, embrocations, liniments, ointments, plasters, unguents.
Astringent powder.	Tissue constricting powder.
Bagg.	A bag with emollient herbs, applied.
Cataplasm.	A poultice.
Caudles.	Warm wine or ale with bread, eggs, sugar, spices.
Cloths.	Woollen-cloths.
Clyster.	An enema.
Confection.	Powdered ingredient in honey or syrup.
Cordial-water.	A liquor to raise the spirits.
Cupping.	To apply a cupping glass.
Decoction.	Anything boiled.
Draught.	A drink.
Embrocation.	Medicated lotion to moisten, rub.
Emplaster.	A plaster.
Fomentation.	Application of hot medicated cloths.
Fume, suffumigation.	Fumigation, application of medicated steam or smoke.
Infusion.	Virtues of plants steeped in a menstruum.
Julep.	Sweet potion with medicine.
Junkets.	Cakes and sweet-meats.
Ligatures.	Things that tie body parts.
Liniments.	Unctuous (greasy) medicinal rub.
Ointment.	Oil, melted wax, powder of remedy, beaten to creamy paste.
Oyle.	Vegetable oil, expressed, infused with medication.

Table 5.8: Methods of administration of materia medica with explanations, part one.

Examples, such as the medicated bagg (attributed by Wolveridge to Hildanus) and fomentations were included in Hippocrates' *Regimen in Acute Diseases* while blood-letting, application of cupping-glasses and sneezing remedies were presented in Hippocrates' *Aphorisms.*[597] Soranus also included similar modes of administration complemented by exercise, massage and other physical means, as was the Greek method. Fumigation of medicines to the vulva for example can be traced to ancient Egypt c 1700 B.C. and the Edwin Smith Papyrus.[598] Further methods such as direct

[597] Chadwick & Mann, *Hippocratic writings*, pp. 192, 191, 224, 225.
[598] Breasted, *Edwin Smith Papyrus,* pp. 490 & 505.

application of remedies to the vulva and medicated douches are recorded in the Kahun Papyrus c 2000 B.C., and the Ebers Papyrus c 1500 B.C.[599]

Mode	Explanation
Panadoes, Panatell.	Bread and water boiled.
Phlebotomy.	Blood-letting, as treatment.
Pills.	Solid medicines made up in a ball.
Pipe.	Catheter placed in the bladder.
Plaister.	A plaster.
Pessary.	Pledget of wool wrapped in linen.
Posset.	A drink of ale.
Potion.	Medicine in a draught.
Powder.	Dried ingredient ground small.
Pultiss.	Poultice, ingredients boiled, apply.
Purge.	To cleanse bowels, or womb.
Scarification.	Incisions of the skin with a lancet.
Silk.	Burnt, tied with, tyed up in silk.
Smell.	Inhale via nostrils.
Sneezing powder.	Errhine, to purge the head.
Sponge.	Spungia, sponge, hollow, porous.
Stool, close-stool.	Midwives' stool for childbirth.
Stupps.	(Fomentation) medicated cloths applied to a body part.
Suppository.	Medicine thrust up the fundament.
Swathes.	A band or dressing.
Syrup.	Sugar boiled with juice of plant(s), to a thick consistency.
Tincture.	Liquor saturated with ingredients.
Trochischs.	Medicated lozenges.
Tutia.	A protective, as in ointment.
Unguent.	Ointments more compounded.

Table 5.9: Methods of administration of materia medica with explanations, part two.

The weights and measures system and the frequency of administration of remedies availed of by Wolveridge are shown in Table 5.10. Specific weights such as grain, scruple, drachm and ounce were in use allied with non-specific weights such as a pugill (the amount held between thumb and two fingers) and six other weight variants. Measures of liquid medicines could also be specific (a pint) or non-specific (a draught, the quantity drunk during one breath). The specific weights mentioned by Wolveridge were of ancient origin; the drachm (Greek, drachme), grain (Latin, granum), ounce (Latin,

[599] Griffith, *Kahun;* Ebbell, *Papyrus Ebers.*

unica) and scruple (Latin, scrupulous), and were also included in the apothecaries' weight system.[600] Wolveridge's liquid measures, the pint, quart and gallon, were of later origin.

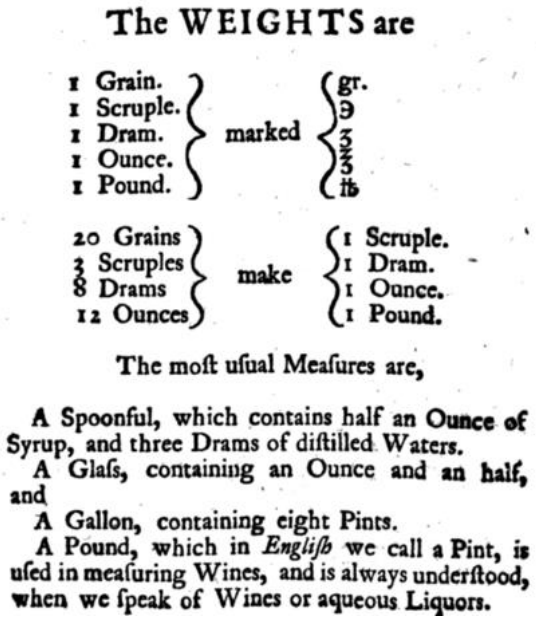
Weights
Specific. Grain, scruple (16 grains), drachm (60 grains), ounce.
Non-specific. Handful, nut (size), a number of, pills (number of), pugill (as much as can be held between thumb and two fingers), sufficient quantity, top (of a flower, plant).
Measures
Specific. Drops, pint, quart, gallon
Non-specific. Draught (quantity drunk during one breath),
Frequencies
As need requires; 3 or 4 spoonfuls often times a day; one in three hours; for a week; as much as will suffice; for many days; four times a day; twice or thrice; wearing it continuously.

Table 5.10: Wolveridge's weights and measures system and the frequency of administration of the particular medication.

The non-specific weights and measures he wrote of such as a handful and a pugill were not unusual in the era and were included by Robert Lovell whose writings may have influenced Wolveridge's own (this is unproven).[601]

The frequency of administration of the remedies could be precise, or not so, depending on the medication availed of. The weights and measures of the era detailed by John Quincy (in 1721) were broadly similar and are shown for comparison in Fig. 5.1.[602] Wolveridge included non-specific terms such as handful, nut, top of, sufficient quantity and draught not included by Quincy in his *Dispensatory*. Perhaps Wolveridge, writing for a non-physician readership, included non-specific variations that were sometimes less precise, as in preparation of food.

[600] William R. Hensyl, *Stedman's Medical Dictionary* (25th ed., Baltimore, 1990), pp. 113, 466, 667, 1397.
[601] Robert Lovell, *Pambotanologia sive Enchiridion botanicum, Or, A Compleat Herball* (Oxford, 1665), pp. 42-43.
[602] John Quincy, *The Dispensatory of the Royal College of Physicians in London* (London, 1721), Sig A4 following To the Reader.



The WEIGHTS are

1 Grain.	marked	gr.
1 Scruple.		℈
1 Dram.		ʒ
1 Ounce.		℥
1 Pound.		℔

20 Grains	make	1 Scruple.
3 Scruples		1 Dram.
8 Drams		1 Ounce.
12 Ounces		1 Pound.

The moſt uſual Meaſures are,

A Spoonful, which contains half an Ounce of Syrup, and three Drams of diſtilled Waters.

A Glaſs, containing an Ounce and an half, and

A Gallon, containing eight Pints.

A Pound, which in *Engliſh* we call a Pint, is uſed in meaſuring Wines, and is always underſtood, when we ſpeak of Wines or aqueous Liquors.

Fig. 5.1: The weights and measures in Quincy.

Wolveridge wrote the *Speculum Matricis* at a time when Galen's complex theories and practice of medicine were still dominant. Wolveridge did not delve into the humoral aspects of medicine in the *Speculum Matricis* although he referred approvingly to Hippocrates in relation to usage of purges and sneezing powders and Galen in relation to the purging qualities of scammony (*Convolvulus scammonia*).[603] However Wolveridge wrote of medicines with 'hot qualities' regarding laborious labours and remedies 'hot in the first and second degree' to increase breast milk supply.[604]

Once the database of materia medica specific to the *Speculum Matricis* was completed it became possible to compare Wolveridge's remedies to those in a range of other publications. These included the treatises of his four referenced authors for materia medica and a variety of herbal, medical, midwifery, pharmacopoeial and self-help books of his era, additionally from materia medica of the 12th century and from selected works from Greece, Rome and Byzantium.

[603] Wolveridge, *Speculum Matricis*, 1670, pp. 151, 159.
[604] Ibid., pp. 74, 119, 148.

Early modern midwifery texts

Each author cited by Wolveridge for his materia medica was tracked to its source and the results are presented below. A chapter 'de Strangulatione Uteri' of the Neapolitan physician Johannis Pulverinii's *Medicina Practica* (1649) was cited by Wolveridge in his materia medica for 'The Cure of Mother Fits' and 'The Cure of Hysterick Fits.'[605] Wolveridge's suppository treatment for mother-fits contained 'Agarick Troschise, of the species of Hiera Logadii, Rats-dung…Figs, Rue-leaves and Cummin-seeds, all made into a powder, and with honey made up into a suppository' and was copied directly from Pulverini's Latin text to English.[606] In the remedies for womb prolapse Wolveridge wrote of a pessary 'dipped in the juice of *Acatia* and *Hypocistis*, dissolved in red Wine, applied to the womb; and so without violence press up all that which is come forth' a direct translation from Pulverinii.[607] Another remedy for prolapse 'using afterward the oyles of *Mastich* and *Myrtles* to the place (as applied with sponges) and *Unguentum Comitissae* to anoint the reins' is also taken from Pulverinii.[608] In his segment on 'Retention of the Lochia' Wolveridge quoted 'Hippocrates lib. De natura pueri' which likewise appeared in Pulverinii who quoted Greek, Byzantine Greek, Arabic and sixteenth century physicians throughout the chapters related to female conditions, some of whom Wolveridge also mentioned.[609] The *Medicina Practica* of Pulverinii both informed and influenced Wolveridge's sections on materia medica in the *Speculum Matricis.* As will be seen below in relation to womb prolapse Pulverinii copied the treatments offered by Rodrigo de Castro for that condition.

Drawing on Guilelmus Fabritius Hildanus, *Observationum et curationum,* (1606) Wolveridge wrote a description of difficult childbirth after which the mother was treated with a medicated bag applied to the

[605] Ibid., pp. 161.
[606] Wolveridge, *Speculum Matricis,* 1670, p. 160; Pulverinii, *Medicina Practica*, p. 708.
[607] Wolveridge, *Speculum Matricis,* 1670, p. 165; Pulverinii, *Medicina Practica,* p. 709.
[608] Wolveridge, *Speculum Matricis,* 1670, p. 165; Pulverinii, *Medicina Practica,* p. 712.
[609] Wolveridge, *Speculum Matricis,* 1670, p. 115; Pulverinii, *Medicina Practica,* p. 689.

vulva.[610] That was the single reference to the materia medica of the surgeon in the *Speculum Matricis*.[611] Much more influential was Rodrigo de Castro's *Du universa mulierum mediciano* (1604). Wolveridge quoted the Portuguese physician's book 4 chapter 1 in relation to natural birth and use of the midwives stool, a reference to the (common continental European) assertion that cold air is dangerous to the mother during childbirth.[612] As detailed already Wolveridge availed of Pulverini's text when he described how to examine and treat a woman with womb prolapse, but a portion of that description is largely copied by Pulverinii from Castro, and he advised the same key medications including *Acacia*, *Hypocistis* and *Unguentum Comitissae*.[613] Wolveridge may also have been influenced by prefatory messages of congratulations in verse from friends printed in Castro's book, similarly used as a device in the *Speculum Matricis*. Castro cited one hundred and ninety previous authors in tabular form beside the opening page of his book, repeating their names as relevant throughout the text, a valuable resource of writers on materia medica, midwifery and medicine.

Wolveridge quoted a tract in relation to molar pregnancy from Johann Fernelii, *Ambiani Therapeutices Universalis* (1571). In this book on therapeutics Fernel devoted eight chapters to uterine medications, three to menstrual treatments and one to those for breast milk. The chapter entitled *Uteri Medicamenta* in Liber Quintus Cap XXVI was devoted to remedies for female conditions.[614] An analysis of that chapter revealed that fifty-six of the one hundred and one remedies contained therein were shared between Wolveridge and Fernel. When the publications of the other authors cited by Wolveridge were reviewed it was learned that the materia medica of the *Speculum Matricis* was influenced to a variable extent by each of them.

[610] Wolveridge, *Speculum Matricis*, 1670, p. 74.
[611] Hildanus, *Observationum et curationum chirurgicarum,* pp. 185-6.
[612] Wolveridge, *Speculum Matricis,* p. 31; Castro, *De universa mulierum,* pp. 175-8.
[613] Wolveridge, *Speculum Matricis,* 1670, pp. 164-5; Castro, *De universa mulierum,* p. 168 line 55 and p. 169 lines 1-5.
[614] Fernelii, *Ambiani,* pp. 363-70.

About midwifery books specifically four texts were chosen as comparators for the materia medica of the *Speculum Matricis* (1670), three of which were translations to English. Each of the four had a very helpful glossary, list or table of medications for comparison purposes. It was established that the *Rose Garden* (1513) shared 123 (56 percent) of its materia medica in common with Wolveridge. *The Birth of Mankind* (1560) had 68 (31 percent) medical ingredients in common with Wolveridge while *The Midwives Book* (1671) and *The Practice of Physick* (1678) shared 113 (51 percent) and 107 (48 percent) respectively, as shown in Table 6.12. The fact that medical ingredients were shared does not mean that Wolveridge gained his materia medica from the sources noted in Table 5.11, but that the remedies (i.e. those not found in Dioscorides) were availed of during that time in midwifery.

Publication	**Year**	**Number**	**Percent**
Speculum Matricis	1670	221	100
The Practice of Physick	1678	107	48
The Midwives Book	1671	113	51
London Dispensatory	1654	129	58
The Ladies Dispensatory	1652	115	52
Rose Garden	1513	123	56
The Birth of Mankind	1560	68	31
Sloane 2463	15th cent.	118	53
The Trotula	12-15 cent.	119	54

Table 5.11: Materia medica in the *Speculum Matricis* shared with selected midwifery and medical sources from the fifteenth through the seventeenth centuries.

The *Pharmacopoeia Londinensis* (1618) contained compound medications with multiple ingredients presented as a series of named prescriptions in Latin which proved beneficial in tracing unusual formulae. Despite initial efforts the prescriptions therein proved unsuited to the form of analysis undertaken for this portion of the chapter. However, the later *Pharmacopoeia Londinensis or London Dispensatory* (1654) which catalogued medications according to various sub-heading within the plant kingdom and included sections on medicines derived from animal, human

and mineral sources was analysed. It was proven that the *Pharmacopoeia* shared 129 (58 percent) of medical constituents in common with the *Speculum Matricis*. Due to his education as a physician Wolveridge had great expertise in therapeutics and the *London Dispensatory* (secondary title) should have been a core text during his term as a post-graduate pursuing his doctorate. Kirkpatrick wrote about the medical teaching and therapeutics in Trinity College Dublin 'After frequent attendance in the laboratories of the apothecaries he must thoroughly know and keep clearly in his mind all the simples and the drugs compounded from those simples.[615]

The Ladies Dispensatory (1652) was a well-being or self-help book written for a general audience with remedies that were consistent with standard medical practice of the day.[616] The author acknowledged his debt to Dioscorides, the *Pharmacopoeia Londinensis* and writers on herbal medicine for the medical ingredients in his book. It is tempting to speculate that Wolveridge was aware of the publication whose author claimed to have written 'the first and only peece of this kinde in our English tongue.' In the *Speculum Matricis* Wolveridge stated that his intention was '(*still aiming at a publick good) declining that* Idiom *best becoming the Pen of Doctors* [Latin]*, shall shape my Quill to an English Dialect*.'[617] The Ladies Dispensatory contained remedies under many sub-headings allocated to specific ailments that shared 115 (52 percent) of its materia medica with Wolveridge.

The *Sloane 2463* manuscript and *The Trotula* were the sources chosen to represent the 15th century although with roots in the 12th century and further back. The *Sloane 2463* MS was the first text in English about midwifery and gynaecology and was available as the *Medieval Woman's Guide to Health*.[618] *The Trotula* reflected the medical traditions of Salerno and the treatments were written during the twelfth to fifteenth centuries.[619] The *Sloane 2463* MS and *The Trotula* shared 118 (53 percent) and 119 (54

[615] Kirkpatrick, *Trinity College Dublin and the School of Physic,* p. 23.
[616] Balaban et al., *The Ladies Dispensatory*, viii.
[617] Wolveridge, *Speculum Matricis*, 1670, Sig. b4r.
[618] Rowland, *Medieval Woman's Guide to Health*; Green, *The Trotula.*
[619] Wallis, *Medieval Medicine,* pp. 185-90.

percent) respectively of their materia medica in common with the *Speculum Matricis* (Table 5.12).

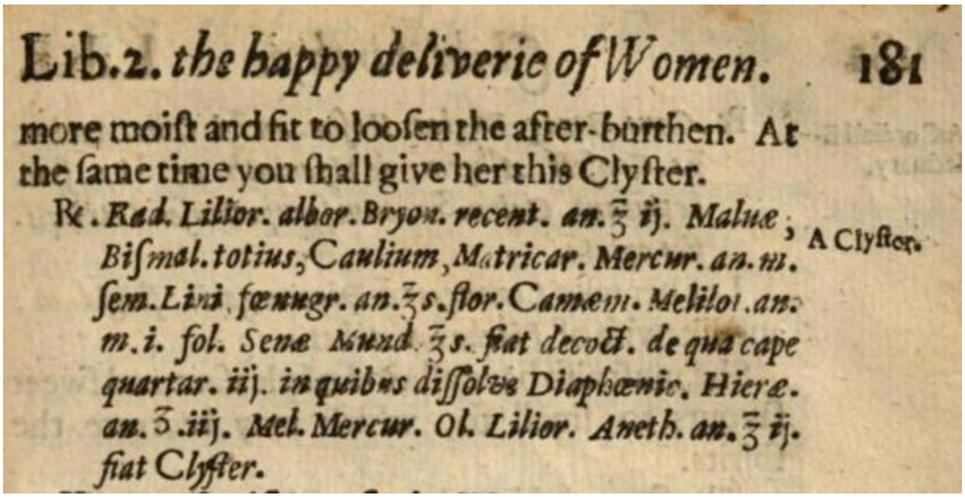
As stated previously it was claimed that Wolveridge repeated the treatments specified in the midwifery manual of Jacques Guillemeau.[620] For excess flow of the lochia Guillemeau offered dietary measures, physical means (binding limbs, blood-letting, cupping-glasses, cloth dipped in vinegar) and a large range of plant remedies (administered by means of cataplasms, electuaries, ointments, pessaries, and uterine injections). Present also in Guillemeau were two sets each of compound medications derived from the works of the sixteenth century French physician authors James Hollerius and Ludovic Mercatus. By comparison Wolveridge offered only dietary measures, physical means such as cupping-glasses, phlebotomy, application of cloth dipped in oxycrat, *Unguentum Comitissae* and plantain juice. Wolveridge also offered a 'julep' in treatment, a recipe which did not appear in Guillemeau.[621] The findings of this part of the study did not support observations that Wolveridge simply repeated Guillemeau's treatments; a more complex process of assimilation and adaptation is at play.

Wolveridge commended the plantain remedy for excessive lochial flow.[622] A plantain remedy for uterine discharge and/or haemorrhage was in use since Greek antiquity and Woveridge could have copied his treatment from Guillemeau (who cited Hippocrates, Galen and others) or from a variety of sources.[623] Did Wolveridge repeat Guillemeau's Hippocratic enema of marsh-mallow roots and a dozen other ingredients for retained lochia?[624] In his chapter on retention of the lochia Guillemeau offered diet, physical means (baths, binding, blood-letting), and a large range of plant remedies (administered by apozemes [lozenges], clysters, fomentations,

[620] Hobby, 'Early Modern Midwifery Manuals and Herbal Practice', p. 72.
[621] Wolveridge, *Speculum Matricis*, 1670, p. 129.
[622] Wolveridge, *Speculum Matricis*, 1670, p. 120.
[623] Guillemeau, *Childbirth,* pp. 225, 220; Temkin, *Soranus' Gynecology,* p. 163; Beck, *Dioscorides*, p. 147.
[624] Hobby, 'Early Modern Midwifery Manuals and Herbal Practice', p. 72.

fumes, Hiera purgative powders) and *Benedicta Laxativa* that contained twenty-four ingredients but not marshmallow.[625] At the conclusion of the chapter Guillemeau directed the reader to the previous chapters 'wherein I have treated of the means how to make the child or after-birth come foorth.' The statement was important in relation to the enema quoted above. A clyster to aid childbirth in Guillemeau contained thirteen ingredients, two of which were compound medications.[626] Of the nineteen ingredients in Wolveridge for suppression of the lochia only three or 29 percent matched Guillemeau. In Guillemeau's clyster to expel the after-birth there were fifteen ingredients (one of which was compound in nature that contained a further twelve ingredients).[627] Wolveridge named nineteen ingredients of which only seven or 36 percent were present in Guilliemeau. It was clarified that Wolveridge's clyster for lochial retention included mallow (*Malva Sylvestris*) rather than marsh-mallow (*Althaeae Officinalis*). Also, the prescriptions in Guillemeau were printed in Latin (Fig. 5.2) and include a clyster to facilitate delivery of the after-birth.[628] Fundamentally, it appears that Wolveridge worked creatively to shape his manual, and he probably used Guillemeau selectively in part of his independent design, while using his own training and plan to vary that. It is striking how often Wolveridge's marginalia at this point turn to Greek – as he cites Hippocrates (pp. 119, 151, 155, 157, 159).

[625] William Salmon, *Pharmacopoeia Londinensis: or, The New London Dispensatory* (London, 1716), p. 582.
[626] Guillemeau, C*hild-birth,* 1612, p. 122
[627] Guillemeau, C*hild-birth,* 1612, p. 181.
[628] Hobby, 'Early Modern Midwifery Manuals and Herbal Practice,' p. 75; Guillemeau, *Child-birth,* 1635, p. 181.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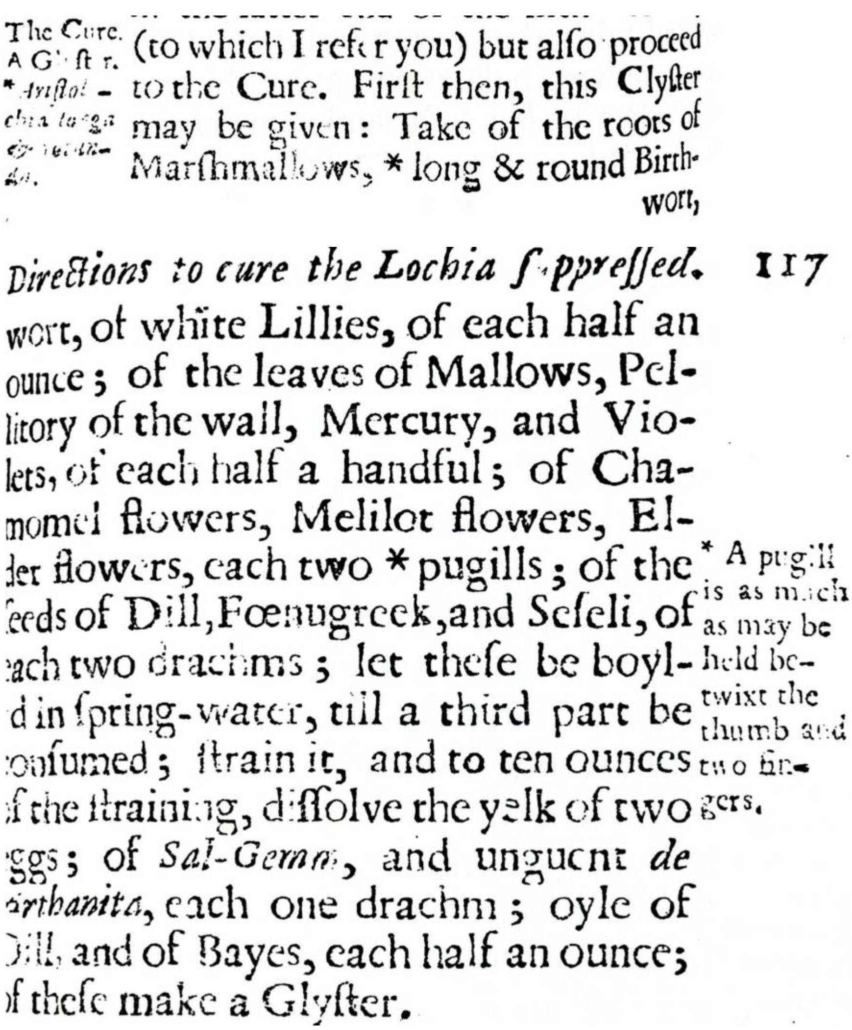
more moiſt and fit to looſen the after-burthen. At the ſame time you ſhall give her this Clyſter.

A Clyſter.

℞. *Rad. Lilior. albor. Bryon. recent. an.* ℥ *ij. Malue, Biſmal. totius,* Caulium, *Matricar. Mercur. an. m. ſem. Lini, fœnugr. an.* ℥ *s. flor.* Camem. *Meliloti an. m.i. fol. Senæ Mund.* ℥ *s. fiat decoct. de qua cape quartar. iij. in quibus diſſolve Diaphœnic. Hieræ. an.* ʒ *iij. Mel. Mercur.* Ol. *Lilior. Aneth. an.* ℥ *ij. fiat* Clyſter.

Fig. 5.2: A prescription from Guillemeau’s 1635 edition of *The Happy Delivery of Women*.


The Cure. A Glyſter. * *Ariſtolochia longa & rotunda.*

(to which I refer you) but alſo proceed to the Cure. Firſt then, this Clyſter may be given: Take of the roots of Marſhmallows, * long & round Birthwort,

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wort, of white Lillies, of each half an ounce; of the leaves of Mallows, Pellitory of the wall, Mercury, and Violets, of each half a handful; of Chamomel flowers, Melilot flowers, Elder flowers, each two * pugills; of the ſeeds of Dill, Fœnugreek, and Seſeli, of each two drachms; let theſe be boyled in ſpring-water, till a third part be conſumed; ſtrain it, and to ten ounces of the ſtraining, diſſolve the yelk of two eggs; of *Sal-Gemm*, and unguent *de Arthanita*, each one drachm; oyle of Dill, and of Bayes, each half an ounce; of theſe make a Glyſter.

* A pugill is as much as may be held betwixt the thumb and two fingers.

Fig. 5.3: Wolveridge, a clyster for lochia suppressed, pp. 116, 117.

Wolveridge gives his prescription for a clyster in treatment for suppression of the lochia in English (Fig 5.3).

During this directed study and review of the relevant chapters in Wolveridge and Guillemeau (1612 and 1635) that dealt with retention or immoderate flow of the lochia the texts were subjected to scrutiny. Guillemeau indicated that other medicines for those conditions were also written of in his chapters relating to delivery of the child or the retained placenta, and so were also scrutinised.[629] The 1635 edition of his book was also analysed.[630] As outlined above the analysis of the relevant portions of Guillemeau and Wolveridge devoted to materia medica revealed that they were markedly dissimilar.

Did Wolveridge draw on Guillemeau and Rueff to claim that there is nothing worse to child-bearing women than cold air?[631] Wolveridge referenced the first instance of that particular insight (p. 31) to Castro.[632] On the second appearance of that recommendation in Wolveridge (p. 116) he appears to follow the generally held continental European dictum (not necessarily English practise) as voiced by Guillemeau; 'cold, which the woman hath taken, which shutteth up the veins of the matrice' (an outward cause of lochial suppression).[633]

Were the first twenty-five pages of the *Speculum Matricis* a synopsis of Rueff.[634] Wolveridge's 'Section 1, Of the True generation of the Parts' pages 1-13 (14 pages) does bear similarity in some parts to Rueff Chap V pages 27-42 (16 pages). For example the section heading on the topic reads as follows in Rueff 'Of the true generation of the parts, and the increase of the features, according to the daies and moneths.'[635] Wolveridge wrote similar words 'Of the True generation of the Parts, and Increase of the Infant

[629] Wolveridge, *Speculum Matricis,* 1670, pp. 115-120, 129, 130-1; Guillemeau, *Child-birth,* 1635, pp. 220-27, 227-32, Chap XXIIII, pp. 176-84; Guillemeau, C*hild-birth,* 1612, p. 232.
[630] Guillemeau, *Child-birth,* 1635.
[631] Hobby, 'Early Modern Midwifery Manuals and Herbal Practice,' p. 73.
[632] Wolveridge, *Speculum Matricis,* 1670, p. 31, 116; Castro, *De universa mulierum,* p. 302.
[633] Guillemeau, *Childbirth*, pp. 228-9.
[634] Hobby, 'Early Modern Midwifery Manuals and Herbal Practice,' pp. 72, 75, 84, 73, 84.
[635] Rueff, *The Expert Midwife*, p. 27.

in the Womb, according to the daies and times, till the time of birth.'[636] Other similarities occur but with alteration in the wording and additional comments added so it appears that Wolveridge derived his text in part from Rueff. Unlike Rueff however, Wolveridge quoted a biblical 'the original of the pith of the back-bone, called the silver cord, Eccles. cap12, ver. 6.'[637] Wolveridge additionally carried an illustration of a fourteen-eighteen day old fetus derived from Severinus Pineau (1641).[638] In his 'The Author to his Book' Wolveridge distanced himself from Rueff when he wrote 'Thou [the book] shew'st no monstrous births that may affright.'[639] Rueff had included two fanciful figures of monstrous infants in his tract on imperfect children.[640] As clarified in my chapter on the illustrations of the *Speculum Matricis* Wolveridge copied 26 of the 33 images from Rueff's *The Expert Midwife*. Wolveridge's text with regards 'Of the True generation of the Parts' derived from Rueff is some areas but was not a direct copy.

With regards to materia medica, Rueff dealt with medical ingredients in *Liber Sextus* of the Latin translation of his book. As in Guillemeau the scripts were highlighted, italicised and indented. *Liber Sextus* is a repository of very numerous prescriptions and complex materia medica, mainly compound in nature with multiple ingredients (thirty-three ingredients in one script).[641] The *Sixth Book* of the English version is like the Latin, but the prescriptions were integrated without any highlighting and the ingredients were in English.[642] Wolveridge's *Speculum Matricis* contained a much briefer and simpler materia medica not apparently copied directly from Rueff. The results of this directed review with regards to Guillemeau and Rueff indicated that Wolveridge did not copy his materia medica from either but

[636] Wolveridge, *Speculum Matricis*, 1670, p. 1.
[637] Ibid., p. 11.
[638] Pineau, *De integritatis,* pp. 113 and 114.
[639] Wolveridge, *Speculum Matricis,* 1670, Sig. a4r.
[640] Rueff, *The Expert Midwife,* pp. 157-8.
[641] Jacobi Rueffi, *De Conceptu Et Generatione Hominis* (Francoforti as Maenum, 1580), Liber Sextus, pp. 61-101, compound script, pp. 66-7.
[642] Rueff, *The Expert Midwife,* 1637.

derived portions of his text for 'Of the True Generation of the Parts' from Rueff.

To proceed further, were there derivations from the midwifery treatises of Nicholas Culpepper or of François Mauriceau? In his epistle dedicatory for his 1651 manual Nicholas Culpeper penned the words 'To the Midwives of England' and referred to them as 'Grave Matrons.'[643] Wolveridge wrote of 'Grave and Serious Matrons' in his *Author to the Reader*. Apart from those words there was little textual similarity between the two. The second part of Culpeper's *Directory for Midwives* (of 1662) was a much more accomplished treatise, owing much to Daniel Sennert. The book did not contain an index of materia medica and so the current study investigated the ingredients used for retention of the lochia and its immoderate flow, as for Guillemeau above. The treatments for sore nipples consequent on breastfeeding were also studied. The results allowed comparisons to Wolveridge's therapies.

Culpeper's clyster for retention of the purgations after child-birth contained fourteen ingredients; Wolveridge's clyster had nineteen and the authors shared only seven ingredients in common[644] With regards to treatments for immoderate flow of the lochia Wolveridge and Culpeper were quite different. The elements shared were those advocating rice and quinces in the diet, cupping under the breasts, and application of *Unguentum Comitissae* to the loins or the belly respectively. Wolveridge included twenty-one ingredients in treatment of sore nipples while Culpeper offered sixteen.[645] However only *Alum*, a lead preparation, fat or grease of capon and *Tutia* (tutty) were common to both.

In the review of François Mauriceau's book it was found that his prescription for a clyster in treatment of suppression of the lochia contained seven ingredients compared to Wolveridge's nineteen; five of which were in

[643] Culpeper, *A Directory for Midwives,* 1651, Sig.2r, and 7r.
[644] Culpeper, *Culpeper's Directory for Midwives* 1662, pp. 190-1; Wolveridge, *Speculum Matricis,* 1670, pp. 116-7.
[645] Wolveridge, *Speculum Matricis*, 1670, pp. 138-9; Culpeper, *Culpeper's Directory for Midwives* 1662*,* p. 217.

common or 26 percent.[646] In the treatment of sore nipples Mauriceau offered six remedies, with only *Alum* shared in common with Wolveridge.[647] Based on these observations and a review of the three manuals it appears very unlikely that Wolveridge copied his materia medica from either Culpeper or Mauriceau. Finally, review of Daniel Sennert's *Operum Tomus Quartus* revealed many different medications to Wolveridge, and of interest Sennert cited Castro, a source for the *Speculum Matricis*.[648] The materia medica of Philip Barrough's *Method of Physic* also differed to that of Wolveridge.

The subjects of midwifery and the medications for female conditions were items of prurient curiosity in the 17th century and the midwifery manuals were widely read, a cause for concern among medical authors. Almanacs were also among the valued sources of medical and midwifery information for both the lay reader and the well-informed with almost fourteen thousand being published between 1640 and 1700.[649] The first series of almanacs for women was written by Sarah Jinner (1657-1664) and dwelt about sexuality and female conditions.[650]

Another source of information for medical treatments was women's writings on female complaints, cookery and household recipes, an example being that of Elizabeth Grey, Countess of Kent's *A Choice Manual of Rare and Select Secrets* published in 1653 some two years after her death.[651] The Countess of Kent's *Select Secrets* contained a long list of ailments and recommendations for treatments with medications. Many of the remedies were complex but still contained fewer ingredients when compared to Wolveridge's prescriptions. For example an entry in Grey's manual for 'A medicine for a woman that hath a dead child' advised four ingredients, Date-

[646] Mauriceau, *The Diseases of Women with Child,* p. 332; Wolveridge, *Speculum Matricis,* 1670, p. 116-7.
[647] Mauriceau, *The Diseases of Women with Child,* p. 350; Wolveridge, *Speculum Matricis*, 1670, pp. 138-9.
[648] Sennert, *Quartus,* p. 741.
[649] Curth, English Almanacs, pp. 255-282.
[650] Thauvette, 'Sarah Jinner', pp. 243-49; Weber, 'Almanacs,' pp. 358-401.
[651] Grey, *A choice manual of rare and select secrets,* pp. 74-5.

stones, Cumin-seeds, Grains and English Saffron in Malmsie (sweet Canary wine).[652] Wolveridge, unlike Grey, dealt with methods to diagnose intrauterine death but left the cure to 'expert Physitians and Chirurgeons.'[653] Despite his disclaimer Wolveridge offered a prescription of six ingredients to facilitate the birth including Cassia lignea (*Cinnamomum cassia*), Cinnamon (*Cinnamomum tamala*), Mummy (*Mumia,* dried mummy from Egypt or the liquor running from such bodies), Myrrh (*Commiphora myrrha*, a tree resin), Saffron (*Crocus sativus*) and Styrax Calamita (*Styrax officinalis*) all ground to a powder and taken in white wine, a drachm at a time for a week.[654] The ingredients were more exotic and expensive that Grey's. The *Mumia*, a blend of spices and resin, was thought to have expulsive properties.

There were nine segments in Elizabeth Grey's book devoted to female conditions that offered remedies to prevent miscarriage, and ways to aid the pregnant woman, to cause easy labour and for mother fits. The remedy for an easy labour included anise-seeds, cow-slip and rosemary flowers, dates, raisins and sugar candy steeped in white wine for twenty-four hours, a glass full to be taken three times a day. Among the medicines on offer were those with names such as The Philosophers Egg, Aqua Mirabilis and the Countess of Kent powder.[655]

The Countess also offered various ointments though she is not connected to *Unguentum Comiti*ssae or Countess unguent / ointment that Wolveridge availed of in the *Speculum Matricis* and applied to the loins for immoderate flowing of the lochia; to prevent abortion; to suppress milk and prevent inflammation; and to anoint 'the reins' (kidneys) and for prolapse of the womb.[656] Culpeper and Sennert advised its use to prevent abortion while Sharp recommended the remedy in prolapse, whereas Barrough availed of the

[652] Grey, *A choice manual of rare and select secrets,* p. 149.
[653] Wolveridge, *Speculum Matricis,* 1670, pp. 108-9.
[654] Ibid., pp. 130-1.
[655] Grey*, A choice manual of rare and select secrets,* pp. 175-6.
[656] Wolveridge, *Speculum Matricis*, 1670, pp. 120, 132, 165.

ointment for immoderate flowing of menstruation.[657] The Countess ointment was included in the *Pharmacopoeia Londinensis* and continued in use in the eighteenth century. During the research for this chapter it became apparent that the Countess ointment was the only compound medication attributed to a woman that became part of the officinal materia medica available in apothecaries' shops. According to the *Ricettario Fiorento* the Countess ointment was named for Contessa di Guglielmo da Varignana in northern Italy.[658] However the woman in question appears to be Countess di Vadra, the ointment being prescribed to her by Giulilemo Varignana (c. 1260-1339) a physician from Bologna, for the prevention of miscarriage.[659] The second part of Elizabeth Grey's book was devoted to cookery.

Classical sources

Wolveridge's materia medica was compared to that compiled in ancient Greece and Rome. When the materia medica of the *Speculum Matricis* was evaluated in comparison to the *De materia medica* of Dioscorides (2nd century A.D.) it was discovered that Wolveridge shared 148 of 221 ingredients (67 percent) in common with the Greek author, as outlined in Tables 5.12 and 5.14. That was the highest percentage of commonality found throughout the entire number of studies undertaken for this chapter. The result does not indicate that Wolveridge read a copy of the *De materia medica* when writing his midwifery manual but does confirm that most ingredients in Wolveridge's materia medica can be traced indirectly to Greek antiquity. When Wolveridge availed of an ingredient for a female condition an important ancillary finding showed that his practice was supported by Dioscorides' conclusions with regards to actions and efficacy of the

[657] Culpeper, *Directory for Midwives, the Second Part,* 1662, p. 174; Sennert*, Quartus*, p. 730; Hobby, *Jane Sharp, The Midwives Book*, p. 185; Barrough, *Physick*, p. 279.
[658] *Ricettario Fiorentino,* Arte de' medici e degli speiali (Florence, 1573), p. 256 https://play.google.com/books/reader?id=YX5DAAAAcAAJ&printsec=frontcover&output=reader&hl=en&pg=GBS.PP1 (accessed 10 January 2017).
[659] Brought to Life, Exploring the History of Medicine, Science Museum http://www.sciencemuseum.org.uk/broughttolife/objects/display?id=4156 (accessed 10 January 2017).

particular remedy in 119 (54 percent) instances. Dioscorides was a physician who wrote the definitive five volume Greek text on materia medica that became the basis for later herbals and pharmacopoeia.

The harmonization between Wolveridge, the midwifery text of Soranus and the *Alphabet of Galen* was less so, although the materia medica of Soranus's manual bore many similarities to that of the *Speculum Matricis*. In a comparison of ingredients used by Wolveridge and Soranus it was revealed that 80 (36 percent) were shared of which 72 (33 percent) were for similar female conditions. *The Alphabet of Galen* shared 70 (32 percent) of its medical ingredients in common with the *Speculum Matricis* (Table 5.13).

Author	**Number**	**Percent**	**Similar use**
Wolveridge	221	100	
Dioscorides	148	67	119 (54%)
Soranus	80	36	72 (33%)

Table 5.12: Ingredients of Dioscorides' and Soranus' materia medica in common with Wolveridge, and when used for similar indication.

Soranus wrote a celebrated treatise about gynaecology and midwifery and is acknowledged as an original source for both disciplines, his text being based on the writings of his predecessors and on his own practical knowledge. The treatise of Aetius of Amida (6th century A.D.) devoted to gynaecology and obstetrics was chosen to represent Byzantium. Aetius was a Byzantine Greek physician who wrote extensively on various aspects of medicine and midwifery.

Author	**Number**	**Percent**
Wolveridge	221	100
Dioscorides	148	67
Soranus	80	36
Alphabet	70	32
Aetius	102	46

Table 5.13: Ingredients of materia medica from ancient Greece, Rome and Byzantium; their number and percent in common with Wolveridge.

In a comparison study, it was established that Wolveridge and Aetius shared 46 percent of their respective medical ingredients in common, or ten

percentage points higher than for Soranus. That finding could relate to the fact that the translated text of Soranus text was found to be incomplete because seventeen of its seventy-eight sections (twenty-two percent) were deemed to be missing from the final translation to English. The ingredients of materia medica shared with Wolveridge from the selected works from ancient Greece, Rome and Byzantium are presented in Table 5.13. A key study of ancient Greek pharmacology that explored various remedies of animal, plant and mineral origin, their usage and their dosages, concluded that 'Western medicine got off to an auspicious start with such a rational application of (Hippocratic) drugs and their administration.'[660] Another study of the Hippocratic recipes from the fifth and fourth century B.C. found that 85 percent of the Greek medical recipes from antiquity were for female conditions. However, in terms of actual medical practice this was not the case as many non-gynaecological medical conditions were simply treated with *pharmaka* (drugs) without the details of the actual recipes being offered.[661] The historic medications of Europe and the Mediterranean littoral from ancient Greece to the 1500's, with lists of the materia medica in English and Latin, and a comparison of Dioscorides' remedies are available.[662]

The acknowledgement of their original sources was important to each of the authors whose works are quoted or analysed throughout this chapter. It could be argued that perhaps the writers' intent was impress the readers, but the actual result was to illuminate the names and achievements of diverse personalities over the centuries. For instance, in his *De materia medica* Dioscorides acknowledged Crateus the root cutter, Andreas the physician, and eight other sources, when writing his own text concerning

[660] Jerry Stannard, 'Hippocratic Pharmacology' in *Bulletin of the History of Medicine*, Vol. 35, (Jan. 1, 1961), pp. 497-518, p. 518.
[661] Laurence Marie Victoria Totelin, *Hippocratic Recipes; Oral and Written Transmission of Pharmacological Knowledge in Fifth- and Fourth- Century Greece,* (Ph.D. Doctor of Philosophy Thesis submitted to University College London; Ann Arbor, MI, 2013), p. 119-120 (http://discovery.ucl.ac.uk) (accessed 4 Jan. 2016).
[662] Paula De Vos, 'European materia medica in historical texts. Longevity of a tradition and implications for future use' in *Journal of Ethnopharmacology*, Vol. 132, (2010), pp. 28-47.

the preparation, properties and testing of drugs.[663] Unusually he did not mention Theophrastus who had written 'of the medicinal juices of plants and the collection of them: general account' a tract which also contained ingredients for female conditions e.g. cyclamen (sowbread in English) to induce rapid childbirth.[664]

The tradition of recognising the works of previous authors continued with Soranus and Aetius and thereafter through the centuries. When the *Rosa Anglica* was written c. 1314 the scribe referred to twenty-four previous authors and included Aristotle, Dioscorides, Galen, Hippocrates, and the Arabian and European writers of note.[665] By the seventeenth century when Wolveridge wrote the *Speculum Matricis* the number of authors referenced in some works had grown considerably. Castro named one hundred and ninety, including Dioscorides, Soranus and Aetius in his book on midwifery published in 1604.[666] The authors of general medical texts and of herbals also named their sources of information and prominent among them were the Greek authors Hippocrates, Dioscorides, and Galen. The transmission of knowledge through the ages was evident in all the books mentioned in this chapter.

The provenance of the materia medica

The remit of this specific study was to determine the origins, whether Greek antiquity (directly or indirectly) from Dioscorides, or Renaissance and after, for the general introduction to popular use in Europe of the various ingredients named in Wolveridge's materia medica, within the limits of, and based on, the foregoing studies. Where clarity was required the attributions were also culled from the *Pharmacopoeia Londinensis* (1618), Culpeper's *Pharmacopoeia Londinensis, Or, The London Dispensatory* (1653), John Hill's *History of Materia Medica* (1751), and Maud Grieve's *A Modern Herbal*

[663] Beck, *Dioscorides*, pp. 1-2.
[664] Hort, *Plants*, p. 263.
[665] Wulff, *Rosa Anglica*, pp. 416-19.

[666] Castro, *De universa mulierum*, facing p. 1.

(1931).[667] A proposed provenance for the complete materia medica of the *Speculum Matricis* is presented in Table 5.14.

Sources	Numbers	Percentages
Dioscorides	148	67
Otherwise attributed	20	9
15-17th century	51	23
Castile Soap	1	0.45
Irish Slatt	1	0.45
Total	**221**	

Table 5.14: Wolveridge's materia medica and its provenance including Castile Soap and Irish Slatt.

Of those ingredients 148 of 221 (67 percent) can be traced to Dioscorides in the 2nd century AD. A further 51 (23 percent) were first encountered in the textbooks evaluated for this chapter from the fifteenth to the seventeenth centuries.

Name	Dates	Ingredients
Hippocrates	5-4th c. B.C.	Broth, gruel and mercury leaves
Andromachus	2nd c. B.C.	Treacle vinegar
Galen	2nd c. A.D.	Diacalythios
Aetios of Amida	6th c. A.D.	Ambergreece, camphor
Paulus Aeginata	7th c. A.D.	Cloves
Arabic (Mesue, Avicenna, Moschus, Serapion)	8-12th c. A.D.	Alkermes, borax, caraway, orange/citrus, diamargariton, mosch, oxymel, senna and unguentum arthanita
Nicolaus Salernitanus	13th c. A.D.	Diamargariton
Girolamo Frascatoro	1474-1553	Diascordium
Paracelsus	1493-1541	Laudanum
Theodore de Mayerne	1573-1654-5	Hysterical water

Table 5.15: Twenty ingredients of Wolveridge's materia medica not written of in Dioscorides' *De re medicina* with their likely provenance (noted as 'otherwise attributed' in table 5.14).

The 'Otherwise attributed' group accounted for 20 (9 percent). Two ingredients mentioned by Wolveridge (*Castile Soap* and *Irish Slatt*) were not found in any of the midwifery sources studied for this chapter that were

[667] Maud Grieve, *A Modern Herbal* (Vols. 1 & 2, London, 1931).

published before 1670. The origin of the 'Otherwise attributed' twenty constituents named by Wolveridge in his materia medica but not present in Dioscorides' text is revealed in Table 5.15. The ingredients were traced to treatises from ancient Greece, Byzantium, and Arabia through to 17th century medicine. In the 'Otherwise attributed' group the compound medication entitled *Diamargariton* (powdered pearls mixed with herbs) was recommended by Wolveridge for fainting in pregnancy and was credited to both Arabic and Italian physicians. Another medication in the 'Otherwise attributed' group of 20 was the narcotic remedy *Laudanum* (a tincture of opium and other ingredients in alcohol) which was popularised by Paracelsus.[668] Wolveridge prescribed its use for retention of the lochia, in cure of critical fevers and to prevent convulsions.[669]

Roesslin advocated 'one fifth of a dram of juice called opium' made into little pills to make delivery light and easy.[670] Yet effective safe analgesia was not introduced for labour pains until the late 19th century. Biblical precedence was proffered that women should give birth in pain. Although the original King James Bible version read 'In sorrow thou shalt bring forth children' a review shows many modern bibles still prefer the term pain.[671] Paracelsus gained notoriety when he rejected the medicine of Hippocrates and Galen and instead chose the Arabic alchemical studies on which to base some of his medical rationale.[672] The resultant 'chemical medicines' were detailed in the *Pharmacopoeia Londinensis* of 1618 but were not present in the materia medica of the *Speculum Matricis* (except *Laudanum*), probably because Wolveridge kept his non-physician readership in mind.[673] Theodore

[668] Albert Davis, 'Paracelsus: a quincentennial assessment' in *Journal of the Royal Society of Medicine*, Vol 86, (November, 1993), pp. 653-56, p. 654.
[669] Wolveridge, *Speculum Matricis*, 1670, pp. 118, 125, 161.
[670] Arons, *Eucharius Roesslin*, p. 65.
[671] Genesis 3:16; Bible Hub http://biblehub.com/genesis/3-16.htm [accessed 18 October 2017].
[672] Ole Peter Grell, 'Medicine and Religion in Sixteenth-Century Europe' in Peter Elmer (ed.), *The Healing Arts, Health, Disease and Society in Europe, 1500-1800* (Manchester, 2004), pp. 84-107, p. 94.
[673] Urdang, *Pharmacopoeia Londinensis 1618.*

de Mayerne (1573-1655), the Swiss born physician to James I, is credited with the introduction of *Hysterical Water*.[674]

It was discovered that only 4 percent of Wolveridge's ingredients were of Arabic origin. The Arabic/Muslim medical tradition began in the 10th century and peaked in the thirteenth to the sixteenth centuries. Their medicine incorporated the Greek tradition but ingredients such as cassia (*Cinnamomum cassia, tamala)*, clove *(Eugenia caryophyllata, aromaticus*), manna (Manna ash, *Fraxinus ornus,* concreted exudate of), nutmeg (Nux moschata, *Myristica fragrans*), rhubarb (*Rheum rhabarbarum*) and sugar-cane (genus Saccharum) were eventually added to the European pharmacopoeia.[675] However the author of *A History of Materia Medica* wrote that the ingredient clove was known to the Byzantine physician Paul of Aegina at an earlier time and I included that attribution in the table.[676] This highlights the perils of attribution to named individuals rather than indicating a particular era, especially for ancient sources. It was notable that Wolveridge did not include medicines from the New World such as cinchona *(Cinchoneae, Rubiaceae*), guaiac *(Guaiacum*), or sarsaparilla (*Smilax medica*) in his materia medica.[677] By 1874 it was estimated that twelve percent of plant drugs available in England were of New World origin.[678] Based on the results presented in this chapter it was proven that most of the ingredients of Wolveridge's materia medica could be traced to Greek antiquity.

[674] *Ibid.,* p. 8.
[675] Efraim Lev, 'Reconstructed materia medica of the Medieval and Ottoman al-Sham' in *Journal of Ethnopharmacology*, Vol 80. Issues 2-3 (May, 2010), pp. 167-79.
[676] John Hill, *A History of the Materia Medica* (London, 1751), p. 456.
[677] Teresa Huget-Termes, 'New World Materia Medica in Spanish Renaissance Medicine: From Scholarly Reception to Practical Impact' in *Medical History*, Vol. 45, (2001), pp. 359-76
[678] J. Worth Estes, 'The European Reception of the First Drugs from the New World' in *Pharmacy in History*, Vol. 37, No. 1 (1995), pp. 3-23.

Conclusion

No definitive published account of the materia medica in the *Speculum Matricis* is available so this chapter provides novel evidence of Wolveridge's medical materials, their preparation and administration.

A comprehensive database of the materia medica was compiled which contained all the details of Wolveridge's ingredients with the common name and Latin title for each, the locations in his text, and the indications for their uses. Two hundred and twenty-one ingredients were identified in the materia medica of the *Speculum Matricis*. Only samples from the database were included in this chapter but various remedies for use in midwifery and the necessary dietary advice were commented upon. The modes of application of the medications were clarified and the weights and measures with the frequency of administration of the prescriptions were presented.

The treatises of Johannis Pulverinii, Guilelmus Hildanus, Rodrigo de Castro and Johannia Fernelii whom Wolveridge cited were evaluated and their influence on the *Speculum Matricis* was clarified and validated. It may be that Wolveridge also used Robert Lovell as an unacknowledged source for his midwifery remedies, but this remains unproven.[679] It was notable that Wolveridge quoted both Galen and Hippocrates in the text of his materia medica and twice alluded to humoral medicine.

The ingredients of Wolveridge's medical materials were compared to those existing in chosen medical and midwifery publications, and to Pharmacopoeiae and well-being books from the 15th to the 17th centuries. His materia medica was also compared to two seminal works from the 12th century. It was established that the materia medica of the *Pharmacopoeia Londinensis, Or, The London Dispensatory* contained the most ingredients in common with Wolveridge at 58 percent compared to the forementioned books.

Directed studies were undertaken into the popular midwifery publications by Jacob Rueff, Jacques Guillemeau, François Mauriceau and

[679] Lovell, *Pambotanologia,* pp. 390-423.

Nicholas Culpeper. It was concluded that Wolveridge but did not copy his materia medica from Rueff. No evidence was uncovered that the materia medica of the *Speculum Matricis* was derived from Culpeper nor Mauriceau, nor from Daniel Sennert nor Philip Barrough. Also, Wolveridge did not appear to derive his medications from Guillemeau.

The materia medica of the *Speculum Matricis* was compared to four edited translations of the Graeco-Roman treatises by Dioscorides, Soranus, the *Alphabet of Galen* (author unknown, pre-2nd century A.D.) and one tract from Byzantium by Aetius of Amida. It was established that Wolveridge shared 67 percent of his medical ingredients in common with the *De re medicina* of Dioscorides, the highest percentage concordance recorded throughout this study of materia medica.

Based on the investigations for this chapter the provenance for Wolveridge's materia medica was 67 percent from ancient Greece, 23 percent from sources in the twelfth to seventeenth centuries; a miscellaneous 9 percent which included Arabian sources and the two outliers *Castile Soap* and *Irish Slatt*. This does not mean that Wolveridge used original sources from those eras for his materia medica. Rather, the premier treatises cited by Wolveridge indicated that he was aware of current therapeutics in medicine and midwifery and conversant with the medical knowledge of antiquity.

Conclusion

This thesis set out to evaluate James Wolveridge's *Speculum Matricis* of 1670, and place it in the context of received (especially classical) knowledge. The author graduated as a physician from Trinity College Dublin in 1664 and wrote his textbook when he had little practical experience of the subject. Whence did he derive the knowledge in this theoretical treatise? Superficial answers to those questions were readily available in the literature.

A crucial paper by Herbert Spencer in 1927 claimed that James Wolveridge had plagiarised the contents of his book from Jacob Rueff's *The Expert Midwife*, an English translation of the original which was published in 1637, along with minor elements copied from the translation of William Harvey's *De Generatione Animalium* of 1653. Spencer's opinions were echoed uncritically by subsequent authors. When I read Wolveridge's manual I confirmed that he cited William Harvey but not Rueff. To my surprise I also discovered that Wolveridge cited many other authors, so the analyses by Spencer and those who followed him had not truly clarified the genesis of the *Speculum Matricis.* Whether, and how much of, the book was copied from Rueff, Harvey or other authors remained to be clarified. I also found that Wolveridge cited Hippocrates, Aristotle and Galen which prompted the question, was the *Speculum Matricis* based on the knowledge of antiquity or could the manual be placed at the vanguard of the new scientific revelations of the era, or both? Those queries led to the thesis 'Wolveridge's *Speculum Matricis*: a mirror on antiquity?'

Essential aspects of this study were to clarify the life of Wolveridge, and locate his *Speculum Matricis* in the context of the midwifery of his era through investigation of similar midwifery manuals and the history of midwifery. Other contextual features were the study of the Galenic medicine of his time, and the academic career of a future physician at Trinity College during the years leading to 1664. A template was developed for Wolveridge by recourse to Laud's University Statutes and those of the principal leading

academic institutes. In that era, the University-trained physician must first graduate as Master of Arts, with a further seven years of study devoted to the medical writings of antiquity, mainly the tenets of the Greek physicians Hippocrates and Galen, or translations and commentaries on their works by a host of later writers, alongside a detailed knowledge of therapeutics. Valuable insights to Wolveridge's academic foundations and the creative elements that informed his writing were possible through this part of the study while analysis of the *Speculum Matricis* provided actual evidence for Wolveridge's education and later influences.

As the study progressed the *Speculum Matricis* was evaluated and the frontispiece, prefatory pages, midwifery, illustrations and materia medica analysed as individual sections, with especial attention to Wolveridge's citations. Upon completion of those individual studies the *Speculum Matricis* was compared to the relevant sections of treatises on midwifery and medicine, and anatomy, herbal medicine, literature specific to women, pharmacy, surgery and self-help books of the era. Online manuscript archives and recent translated texts from antiquity were also consulted.

The frontispiece and initial title *Speculum Matricis Hybernicum* was altered later to *Speculum Matricis, or, the Expert Midwives Handmaid* probably for commercial reasons, and the new title offered a clue to possible origins from Rueff's *The Expert Midwife*. A secondary label proposed the manual as a catechism for Irish midwives while a quote from an ode by Horace bore a stark message on declining morals. The treatise was written in 1669, later clarified as 'from my study in Cork.' Within the prefatory pages Wolveridge dedicated his book to 'Grave Matrons and Midwives' and was respectful to midwives. The author indulged in classical allusions in various messages to the reader, as did friends in their encomiums. William Harvey and his story of an Irish childbirth and the natural hardiness of native Irish women was highlighted in an allusion to the Hebrew women in Exodus, while a remark on man-midwifery showed Wolveridge was not afraid to broach a controversial topic. His text was among the first to do so, but

probably prompted by Rueff's prediction 'a great deal more worke might be made for men-midwives, then yet is.'[680] The index was unusually detailed for the era and reflected an organised mind.

The midwifery component of the catechetical text was enhanced by conversations between the expert midwife Eutrapelia and the doctor Philadelphos. This innovation in midwifery manuals was original to Wolveridge. The technique allowed Eutrapelia to establish her practical midwifery skills for the reader while Philadelphos was eminent in theoretical aspects and hands-on therapeutics. The dialogue set the *Speculum Matricis* apart from other manuals, introduced well observed motivational characters with tales to tell on the wonders of pregnancy, and provided further evidence of Wolveridge's respect for midwives.

It was established by this study that Wolveridge derived part of his midwifery from Hippocrates, and the treatises of Harvey, Castro, Hildanus and Bartholin, all of whom he cited. But it is evident that Rueff was an unacknowledged source, possibly with Guillemeau, Roesslin and Culpeper. The childbirth sequences in those latter treatises (as with Wolveridge) can be traced to Soranus. Although the manual was named for the speculum matricis midwifery instrument, the text did not contain any reference to tools to expedite childbirth, probably because the manual was written for a general readership as well as 'grave matrons' and midwives. However, there were detailed instructions on the conduct of normal and abnormal childbirth and related topics so practical matters were dealt with throughout the text as if the author had experience in those areas, but the tracts were likely sourced from textbooks. Regardless of the extent of chapters on generation, childbirth, the lying-in period, and the associated ailments and conditions that befall women, there is no doubt that the midwifery of the *Speculum Matricis,* although derived indirectly from early modern sources, was based almost exclusively on knowledge from antiquity. The writings of Soranus, and others of the time, provide that evidence.

[680] Rueff, *The Expert Midwife*, Sig. A4v.

The materia medica of the *Speculum Matricis* abounds in the latter third of the book, a 'physician only' realm where Philadelphos demonstrates expertise. It was established that Hippocrates, Galen, Castro, Fernel, Hildanus, and Pulverinii were cited in the materia medica portion of the manual. It was proven that Wolveridge did not derive his medications from Rueff, nor from Guillemeau. A practical midwife or grave matron would require Wolveridge's manual as an aid, otherwise how would it be possible to recall the complex prescriptions on offer for female conditions without the thorough education in therapeutics required of a physician? A potential drawback was obvious during the study of the materia medica since many medical ingredients had variant spellings and alternate names in the text, most were in older English, while compound medications with multiple ingredients to be obtained from apothecaries were in Latin and recorded as a single title, for instance *Unguentum Comitissae*. Recourse to herbal medicine textbooks of the era revealed there were many optional names for each ingredient and correct identification of some was a challenge.

A further complication was that the authors Wolveridge cited wrote their treatises in Latin, the 'medical' portions being accessible, the herbal titles and alternates less so; the document search facility was of partial benefit only, online translations within texts often nonsensical, and indices being limited on occasion. It appears that Wolveridge's materia medica was sourced from recent publications, but the provenance of the medical materials was evident as follows, c. 67 percent from ancient Greece as found in the herbal of Dioscorides; c. 23 percent from texts of the late medieval or early modern period; and a further c. 9 percent with origins from ancient Greece, Byzantium, Arabia, or Europe. The *Unguentum Comitissae* or *Countess Ointment* of Wolveridge's materia medica was the single product in the text named for a woman, the Bolognese Contessa Vadra, being used to prevent miscarriage. The materia medica of the Americas did not feature in the *Speculum Matricis* most likely because physicians such as Wolveridge were notably cautious about new medications until they displayed proven

efficacy. The chemical medicines of Paracelsus also did not feature, probably for the same reason, but Wolveridge prescribed *Laudanum* (an analgesic tincture with opium) which the Swiss-born physician popularised.

With regards to the *Speculum Matricis* illustrations the following results were established during the study; twenty-six (79 percent) of the 33 images derived from Rueff; two frontispiece plates were original to Wolveridge and his illustrator Thomas Cross; a further two were also original, being based on textual information from Hildanus; finally, one image each derived from Bartholin, Casserius and Pineau, and should be credited to those sources. Eighteen of the illustrations were birth figures that displayed the fetus in utero. In a novel study Wolveridge's birth figures were compared to those in Rueff, through Roesslin, and via selected MS to Muscio in the 5th century A.D. who derived from Soranus in turn. The *Speculum Matricis* birth figures were ultimately compared to simulated versions based on Soranus's text and a match of 67 percent was recorded. Wolveridge's anatomical diagrams were traced via Bartholin, Casserius and Geminus to Vesalius. With regards to the embryology diagrams copied from Rueff to Wolveridge I propose the former was the likely originator of the genre.

Taken in its entirety, the *Speculum Matricis* was a re-telling (with little difference) of the midwifery of antiquity as exemplified by Soranus, combined with a materia medica of compound medications, in the Galenic mode, with few indications for blood-letting and cupping. With regards to the foetal presentations they illustrated, the birth figures of the manual had not altered from antiquity, apart from an additional figure illustrated by Wolveridge, based on the text of Hildanus. So also, the birth stool, but the anatomical, embryological and other images were of recent origin.

Spencer's opinion of the *Speculum Matricis* unduly influenced many subsequent authors, but he was ill-informed. His article revealed some notable features of the manual, and its association with Rueff, but perhaps his primary aim was to promote the translation of Harvey's *De Generatione*

Animalium as the first original work on midwifery in English, as claimed in his opening statement. However, Harvey's book contained little of use for practical midwifery and could not be confidently stated to be a textbook for 'Grave Matrons and Midwives' during pregnancy, childbirth and the lying-in period. Spencer's association of Wolveridge with Rueff was correct in part but this study proved that Wolveridge also derived the *Speculum Matricis* from other authors he cited.

The *Speculum Matricis* was completed in Wolveridge's Cork study in 1669, and bearing in mind his graduation and marriage five years earlier, followed by a move from Dublin, that was a notable feat, since it must have taken more than two years to write the manual. While he cited many of his sources, but not others, it must be borne in mind that books were very expensive at the time, so it is likely that some were borrowed, or that he relied on lecture notes he took as a student to inform his writing.

The sources of importance to Wolveridge's when he wrote his midwifery manual were those of Hippocrates, Aristotle and Galen and the treatises of Harvey, Castro, Hildanus, Valles and Bartholin, all of whom he cited. But it is evident that Rueff was an unacknowledged source, possibly with Guillemeau, Roesslin and Culpeper. For materia medica the authors Wolveridge cited were Castro, Hildanus, Fernel, and Pulverinus. The anatomy publications of Bartholin (translated by Culpeper) was cited, while Casserius, Pineau nor Rueff were not acknowledged but were sources. Wolveridge may have had access to the Byzantine midwifery by Paul and Aetius (with Soranus being cited), also the Arabic medical works, possibly those of Paracelsus, the books he read as an undergraduate, finally a bible and notes he made during lectures. It is my view that Wolveridge chose Rueff's *Expert Midwife* as a guide when he began writing, but as confidence grew he adopted other recent and ancient authors whom he cited. Meanwhile, during the writing phase, Wolveridge sourced a London publisher who appointed an engraver, allowed a year from completion of his treatise to publication, with imprimatur by Thomas Tomkyns to follow.

From an Irish perspective, the next important midwifery manual would be Fielding Ould's *A Treatise of Midwifery* in 1742.[681] Ould was born in Galway in 1710, became an anatomy prosector at Trinity College Dublin, studied midwifery in the acclaimed Hôtel-Dieu de Paris, and returned to practice in Dublin where he became a renowned man-midwife, second Master of the Rotunda Lying-In Hospital, author and Knight of the Realm. Ould's treatise decried the midwifery of the ancients, and dispensed with the detailed materia medica that graced Wolveridge's manual, as also the many illustrations, a new era dawned. Based on his practical experience, and that of acclaimed recent French and English authors such as Pare, Guillemeau, Mauriceau, Chamberlain and Deventer, Ould's book on midwifery was considered 'the first obstetric treatise having any pretensions to merit and originality' in the English language.[682] The art of midwifery moved from its origins in antiquity, and in its train the procedures and instruments thought to embrace the scientific revolution were developed.

Nothing illustrates so clearly just how conservative Wolveridge was than a comparison with Ould's work almost eighty years later. There is a far greater gap between Ould and Wolveridge than between the latter and Rueff. Medical (and indeed intellectual) history should not focus exclusively on the new, the pathfinders of the road to 'progress'. Rather Wolveridge is worthy of study as someone embedded in the natural philosophy of antiquity in a way that would simply not be credible a generation or two later.

Wolveridge stands at the end of a medical tradition which was old, learned and apparently unassailed by doubt. Wolveridge might admire Harvey whose theory on the circulatory system contradicted that of Galen yet he uncritically accepted ancient precepts and nostrums. However, the *Speculum Matricis* is not the derivative work that others have taken it to be.

[681] Ould, *Treatise*.

[682] Ould, *Treatise*, p. 4; A. McClintock, 'On the rise of the Dublin School of Midwifery; with memoirs of Sir Fielding Ould, and Dr. J. C. Fluery in Dublin Quarterly Journal of Medical Science, Vol. 25 (1858), p. 7.

Instead, it demonstrates how an Irish-educated physician uses his training and expertise to transform the existing midwifery manual into a practical but highly knowledgeable guide for a general reader. With regards to the thesis 'Wolveridge's *Speculum Matricis:* a mirror on antiquity?' it is evident that his manual derived mainly from ancient knowledge although sourced from the premier medical treatises of his era.

Appendix

Materia medica of the *Speculum Matricis*, as written by Wolveridge, with binominal name in Latin and brief explanation.

Acatia. *Acacia*, *Gum Arabic,* derived from *Acacia Senegal.*
Agarick. *Amantia muscaria,* fly agaric, a fungus like mushroom.
AEgrimony. Agrimony. *Agrimonia eupatoria.*
Alkermes. *Kermes-berries, cocci, of the Scarlet Oak,* the work of an insect.
Almonds (sweet). *Prunus Amygdalus dulcis*.
Aloes. *Aloe Vera.*
Allom. *Alum. Sulphate of aluminium* and of an alkaline earth element or ammonium, also known as *Stupteria*.
Amber. *Amber,* the fossilized resin of *Populus nigra*, Black poplar.
Ambergreece. *Ambergrease,* a waxy substance originating from the intestine of the sperm whale *Physter catodon.*
Angelica. *Angelica archangelica.*
Annis. *Anise, Pimpinella anisum*. Aniseeds.
Asafoetida. An oleo-gum-resin from *Ferula foetida* and other *Ferula* species, also known as Devil's Dung.

Bagg. Bag. *Sacculi Medicinales*, remedies compounded and tied in a bag.
Baulm. *Balm. Melissa officinalis.*
Barberry. *Barberis vulgaris.*
Barley. *Hordeum*.
Bayes. *Sweet Bay, Bay Laurel, Laurus nobilis.*
Beer. Beer, brewed from *Barley.*
Beets. *Beet. Beta maritima.*
Betony. *Stachys officinalis*.
Bezoar stone. *Bezoar Orientale,* and others, stony concretions found in animal stomachs.
Birds of the mountain. As distinct to domestic fowl.
Birth-wort. *Birthwort, Aristolochia Rotunda, A. Longa, A. clematis,* Long and Round.
Bistort. *Polygonum bistorta.*
Bole Armeniack. *Bolus Armena Rubra* a simple native earth.
Borax. *Borace,* salt made of Sal Armoniac, Nitre, Tartar calcin'd, common Salt with Alum.
Brandy. *Spiritus vini vitis.*
Bramble. *Rubus ulmifolius,* blackberry, *Rubus fructicosus*.
Brimstone. *Sulphur (Sulfur).*
Broth. A thin soup prepared by boiling meat and/or vegetables.
Bryonie. *Bryonia dioica.*
Butter.

Caesaris. Possibly *Ophrys incubacea* subspecies *castri-caesaris,* Orchidaceae (Orchid).
Calamint. *Calaminths officinalis.*
Calamita. Possibly cryptogamic plants (algae, fungi, mosses, ferns). Or, fossilised plant material.
Calf.
Camphor. A waxy solid from *Cinnamomum camphora*. Camphor laurel.
Capon. A castrated cock fattened for food.
Caraway. Seeds of *Carum carvi.*
Cassia. *Cinnamomum cassia, tamala*
Castile soap. Became available in England during the 16th century.
Castor. *Ricinis communis.*
Castoreum. An exudate from sacs under the tail of the Beaver.
Chamomile. Camomile. *Anthemis nobilis* (*Chamaemelum nobile).*
Cherry. Black-cherry. Possibly *Prunus avium* or *Prunus serotina.*
Chicken, hen.
Cicers. *Cicer arietinum.*
Cinnamon. *Cinnamomum tamala.*
Cloves. *Eugenia caryophyllata, aromaticus.*
Cocci baphici. *Coccus baphica*, pea sized red grains attached to the Scarlet Oak known to the Greeks and Romans as *coccum squarlutinum/ bapticus*. The Arabic name was *Kermes*.
Comfrey. *Symphytum bulbosum.*
Coral. *Coelenterata,* powdered red, white, black and sky colour corals. The coral plant *Jatropha multifida* had red flowers and was found in the Americas.
Coriander. *Coriandrum sativus.*
Cork. From *Quercus Oak*. Finely grated cork
Cowslip. *Primula veris*.
Cummin-seeds. *Cuminum cyminum*.
Cyclamen. Sowbread, *Cyclamen graecum; Lonicera periclimenum; Gnaphalium sanguineum* family *Primulaceae*.
Cypress-nuts. Seeds of *Cupressus sempervirens*.

Date. *Phoenix dactylifera*, Date palm.
Diacalcythios. *Diachalciteos* plaster was credited to Galen.
Diamargariten. *Diamargariton,* a powder composed of pearls with various herbs.
Diascordium. A compound medicine in an electuary.
Dill. *Anethum graveolans.*
Diptany. Dittany. *Origanum dictamnus,* Dittany of Crete.
Dragons blood, Sanguis Draconis. Dragon-tree resin obtained from *Calamus Draco, Dracaena Draco and others.*
Duck fat.

Egg (oyle of, poch'd, yolk of).
Elder. *Sambucus nigra*
Elk-hoof.

Elm. *Ulnus glabra, Ulmus rubra.*
Emplaister. *Emplastrum*, a medicated plaster of oil-like consistency laid on linen or leather, *Emplaster of diacaloythios* and *Emplaster ad herniam*.
Euphorbium. *Euphorbia* species, a gum resin.

Fennel. *Foeniculum vulgare.*
Foenugreek. Fenugreek. *Trigonella foenum-graecum*.
Figs. *Ficus caria*.
Flax. *Linus usitatissimum,* known to the ancient Greeks as *Linon.*
Flour. Ground grain.
Frankincense. *Boswellia species*.

Galbanum. *Ferula galbaniflua.*
Gall. Animal bile.
Garlic. *Allium sativum*.
Gentian. *Gentian purpurea.*
Gold, Leaf-gold. Possibly Golden leaf Sage*, Salvia officinalis*.
Goat. Goat fat, goat horn.
Goose. Fat of geese.
Grass. Knot-grass. *Polygonon aviculare*.
Gromel. Gromwell. *Lithospermum officinale.*
Groundsel. *Senecio vulgaris.*
Grewel. Gruel. Boiled barley, maize or oatmeal in water.

Hagtaper. Hag's taper. *Verbascum,* Mullein.
Hare, wool.
Hart (Burnt harts-horn).
Helbor. Hellbore. *Hellborus cyclophyllus.* Black *Hellbore,* a drastic purgative and white *Hellbore* an emetic.
Hemp-seed. *Cannabis sativa*.
Henbane, Oyle of. *Hyoscyamus* species.
Hiera lo godii. *Hiera logadii.* A purgative for convulsions. Colocynth *Citrullis colocynthis,* a purging herb was one of the ingredients.
Hog, feet.
Honey. Alone or as Hydromel (honey mixed with water).
Horse-tail. *Equisetum silvaticum.*
Hyacinth. *Hyacynthus.*
Hypocistis. *Cytinus hypocystis.*
Hysterical water. *Aqua Bryonie composita*. *Aqua Hysterica.*

Juniper. *Juniperus,* berries.

Kermes. As in *Alkermes*, above.
Kid.

Land-fowl. In diet of pregnant women.
Laudanum. Medicine with opium from the poppy, *Papaver somniferum*.

Lead. Washed lead.
Leather. Burnt as stinking thing to smell.
Leeks. *Allium porrum.*
Lettuce. *Lactuca sativa.*
Licoras. Licorice. *Glycyrrhiza glabra*.
Lillies. *Lilium candidum,* oil of *Lillies.*
Linden. Lime-tree. *Phillyrea or Tilia Europoea*.
Linseed. *Linum usitatissimum,* linen textile was made from Flax *Linum usitatissimum*.
Litharge. A product of lead or silver smelting.

Mace. *Holarrhena antidysenterica,* and/or *Macer Veterum*, the Mace of the ancients, bark of a tree. Now known as the covering of a nutmeg, *Myristica fragrans.*
Maiden-hair. *Adiantum capillis Veneris*.
Mallow. *Malva silvestris*.
Manna. Manna ash, *Fraxinus ornus*. Concreted exudate of.
Manus Christi pearled, *Saccharum tabulatum & perlatum Simplex.*
Marrigold. Marigold, *Calendula officinalis.*
Marjoram. *Marjorana hortensis*.
Marshmallow. *Althea officinalis.*
Mastich. Mastic, *Pistacia lentiscus*.
Mead-sweet. Meadowsweet, *Spiraea Ulmaria*.
Meat. Roast-meats in diet, salt-meats should be avoided.
Medlars. *Mespilus germanica.*
Melilot. *Melilotus officinalis*, Sweet Clovers.
Mercury. *Mercurialis annua*, the leaves of.
Milk.
Milk (almond milk). Almond, *Prunus Amygdalus (Dulcis),* also *Prunus Amara (Bitter)*.
Misleto of an Oak. Mistletoe, *Viscum album*, or, *Hozanthus europeaeus*.
Mithridate. A medicine compounded for King Mithradate as an antidote.
Mosch. *Nux moschata*, Nutmeg, *Myristica moschata*, *Myristica fragrans.*
Mother of Time. Mother of Thyme. Wild Thyme. *Thymus serpyllum*.
Mugwort. *Artemisia vulgaris*.
Mummy. *Mumia.* Dried mummy from Egypt or the liquor running from such bodies. The bodies were embalmed with Aloes, Balsam, Bitumen, Myrrh and other spices. A third sort was known to the ancient Greeks as *Pissasaltus* (Pitch and Asphalt) and found use in uterine disorders.
Muscadine. *Vitis rotundafolia*. A type of rich wine.
Musk. *Moschus,* a perfume from a small deer obtained from slight dark masses found in a sac on the lower part of the belly.
Mustard-seed. *Sinapis alba*.
Mutton.
Myrrh. *Commiphora myrrha*, a tree resin.
Myrtill. Myrtle spurge, *Euphorbia,* a purge.

Nutmeg. Nux moschata, *Myristica fragrans*. See also *Mace*, above.

Oake. *Quercus*. Oak leaves.
Oatmeal. Ground *Avena sativa*.
Olibanum. Frankincense, *Boswellia*.
Onions. *Allium cepa*.
Opium. *Papaver somniferum*, opium poppy.
Orach. *Atriplex hortensis*.
Orange. *Citrus aurintium*.
Orgamint, Orgamine. Probably Oregano, *Origanum heracleoticum*, member of the mint family.
Oyle. Oil. *Oleum*, Latin, *ealoin*, Greek, originally olive oil.
Oxycrat. Oxycratum, a mixture of vinegar and water.
Oxymel. A mixture of Honey, sea salt and vinegar.

Persly. Parsley, *Smyrnium olusatrum*.
Parsnip. *Pastinaca sativa*.
Partridge-feathers. Burnt as stinking things to smell.
Pears. *Pirus communis*.
Pearl. Pearl, *Margarita.*
Pellitory of Spain. *Anthemis Pyrethrum, Anacyclus Pyrethrum*, Spanish Chamomile.
Pellitory of the wall. *Parietaria officinalis*.
Penniroyal. Pennyroyal, *Mentha pulegium*.
Piony. Peony, *Paeonia*.
Pepper. *Piper nigrum*. Black pepper which without the rind is white.
Periwinckle. *Vinca minor*.
Plantane. Plantain, *Plantago*.
Pomegranat. Pomegranate, *Punica granatum*.
Pompholyx. Pompholyx, produced when working copper or calamine.
Poppy. *Papaver somniferum*.

Quince. *Pyrus malus*.

Rabbet. Rabbit, *Oryctolagus cuniculus.*
Rats-dung.
Rennet. Rennet curdles milk.
Rice. *Oryza sative*.
Rose. *Rosa*. Red-rose-water, Syrup of.
Rosemary. *Rosemarinus officinalis*.
Rue. *Ruta Graveolans*.

Sack. A wine called Canary, brought from the Canary Islands.
Saffron. *Crocus sativus*.
Sage. *Salvia*.
St. John's-wort. *Hypericum perforatum*.

Sanguis Draconis. Dragon-tree blood, the resin of *Dracena cinnabari*, known to the ancient Greeks as *Aima Dracontos*.
Sal-gemm. Salt found in quarries.
Salt. *Sal communis*, from sea water.
Savine. Savin, *Juniperus Sabina*.
Scammony. *Convolvulus scammonia*.
Scordium. Water germander, *Teucrium scordium*.
Scull. Skull of man.
Sealed earth (see also Terra sigillata). *Lemnian earth*. Red Lemnian Earth
Senna. *Cassia senna*, *Cassia acutifolia.*
Seselei. *Semina seseleos*, Hartwort seeds.
Sheep. A mash of sheep's head boiled in water.
Shepherds purse. *Capsella bursa pastoris*.
Silk. The silk worm *Bombix mori* grows on the Mulberry tree.
Silver litharge. By-product from the sand when silver or lead are smelted.
Slatt, Irish. Slate, *Lapis hyberniae*.
Sloe. Blackthorn, *Prunus spinosa*.
Smallage. Wild celery, *Apium graveolans*.
Soap (Castile-soap). Available in England in the 16th century.
Sorrel-water. Sorrel, *Rumex acetosa*.
Sowbread. Cyclamen. *Cyclamen graecum; Lonicera periclimenum; Gnaphalium sanguineum*.
Spermaceti. A fatty substance from the head of a whale, originally thought to be whale sperm.
Speremint. Spearmint, *Mentha spicata*, *Mentha viridis*, garden mint.
Spiders alive.
Spinage. Spinach, *Spinacia oleracea*.
Spirit of wine. The oily part of wine tainted by acid salts distilled from Brandy.
Stagg's marrow. Marrow of stag's-bones.
Styrax calamita. *Styrax officinalis*.
Sugar. *Saccharum* (white sugar, loaf sugar, sugar-candy, sugared).

Tansey. *Tanacetum vulgare*.
Tormentill. *Potentilla Tormentilla*.
Treacle-vinegar. *Acetum Theriacale,* treacle derived from *Theriac* also known as *Venice treacle*.
Trotters. Pigs feet.
Tutia. *Tuttie*, from the upper part of the furnace where copper is melted; with the same virtues as *spodium* and *pompholyx.*

Unguentum *Arthanita* whose ingredients included *Sowbread (Cyclamen)* and many others. Unguentum *Comitissae* another compound remedy.

Veal. Calf.
Vervain. *Lycopus europaeus*.
Vinegar. Eight types of vinegar were noted by Dioscorides.
Violet. *Viola odorata.*

Water. Rain-water, sea-water, Smiths-water, spring-water; boiled with herbs and spirit of wine as compound water.
Wax (Virgins wax, White). Virgins Wax was beeswax bleached white by exposure to light or bleached by boiling wax with soda and sea-water.
Wheat. *Triticum*. Formenty (frumenty, a potage or porridge) of wheat.
Wine. Red wine, white wine, spirit of wine.
Withy. Willow, *Salix*
Wool. Burnt wool, woollen-clothes, wool.
Worms. Earth-worms, oyle of worms-whelps.

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