The
Dr. Morris Fishbein Collection
An Exhibition of Selected Books in the History of Medicine and the Biological Sciences
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INTRODUCTION

This exhibition is the first opportunity for the University of Chicago Library to present the Dr. Morris Fishbein Collection to a wide audience. It has been prepared with the cooperation and support of the Morris Fishbein Center for the Study of the History of Science and Medicine and the Division of the Social Sciences. It is also a public expression of appreciation to Dr. and Mrs. Fishbein and their friends whose generosity has supported the Library's efforts to strengthen and to expand its historical holdings in medicine and related areas.

Since its inception sixteen years ago, beginning with books from Dr. Fishbein's personal library, the Collection has been shaped by a number of requirements. First is the active research and teaching programs of the Morris Fishbein Center for the Study of the History of Science and Medicine. The support of these programs through the acquisition of historical sources is a basic function of the collection. The prior holdings of the Library have naturally influenced our policy. At the time that the Fishbein Collection was established, the Library already possessed such distinguished medical collections as the Mortimer Frank Collection on the history of anatomy, the Ablfeld-Frankenthal Collection on the history of obstetrics and gynecology, and the William Beaumont Collection. These specialized collections have been supported by a wide-ranging general collection of primary and secondary sources. More recently, the books added to the Fishbein Collection have played a strategic role in reinforcing older interests as well as offering the means for developing new ones.

The selection which follows is meant to convey some sense of the Library's response to various trends and needs in the history of medicine and the biological sciences. Traditional names and books of singular importance already familiar to many readers have not been ignored. They give the collection a presence as well as serving as reminders of the major accomplishments of the past. Beside the writings of Vesalius, Paré, Jenner, Ludwig, and Fleming are less known efforts of men who either followed in their wake or were sounding the way to new developments and new attitudes in medicine. One may also discern other emphases
within the collection in works relating to the impact of chemical knowledge on medicine, the social context of medical practice, and the influence of mysticism and the occult. The presence of various opera omnia of physicians is part of a calculated attempt to include large blocks of past literature in the collection.

The annotations in this catalogue are intended to place the individual books in their medical and historical context. To render such supreme works as the Fabrica within such limits obviously leaves much unsaid and perhaps raises questions of relative emphasis. Such questions are not only inevitable but also reflect new research on the impact and meaning of landmark works of scientific discovery. On the other hand, many works included here probably are being exposed to scrutiny through public exhibition for the first time. To the non-specialist we hope these latter works will suggest the variety and richness of the sources in medical history.

This task of judicious compression and historical exploration has fallen to Mr. Michael Walton, a graduate student in the history of science. Mrs. Carolyn Baldwin, of the Department of Special Collections, has been responsible for general editing of the text and for the visual presentation of the exhibition.

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Robert Rosenthal
Curator
Special Collections

ANATOMY AND PHYSIOLOGY

1. Jacques Dubois (1478-1555)
Commentarius in Claudii Galeni
Venice: Valgrisi, 1556
The rediscovery of Greek learning and adulation of the ancients characteristic of Renaissance humanism began to influence medicine by the sixteenth century. For nearly a millennium medical education and practice had been based on Arabic interpretations of Greek medicine, notably Avicenna's Canon of Medicine. Medical humanists, among whom Jacques Dubois (Jacobus Sylvius) was an intellectual leader, attacked the Arabic influence as corrupt and sought to re-establish the "purity" of Hippocratic and Galenic practice. In the Commentarius Dubois translated Galen's writings on fevers, avoiding reference to the medieval Arabs who had annotated the same work. Dubois transmitted his belief in Galen's medical superiority to his pupil, Vesalius.

2. Andreas Vesalius (1514-1564)
De humani corporis fabrica
Basel: Oporinus, 1543
The study of anatomy received a great stimulus in the early sixteenth century with the recovery of the anatomical treatises of Galen, which far surpassed in accuracy and detail anything previously available in Europe. As a medical student at Paris during the mid-1530's Vesalius mastered the contents of the Galenic treatises and attained considerable skill at demonstrating them by the dissection of the human cadaver. On this basis he was named professor of anatomy and surgery at the University of Padua in 1537. Vesalius at first assumed, as did his contemporaries, that Galen's treatises represented a basically accurate description of the human body, but as his own experience at human dissection increased he noticed a growing number of instances where Galen's descriptions seemed to fit various animals rather than man. By about 1540 he reached the general conclusion that Galen's
anatomy was based entirely on the dissection of animals, and thus undertook an intensive, systematic correction of Galen through his own studies of the human cadaver. The results were presented in the monumental treatise On the structure of the human body, which, although it did not entirely displace the works of Galen, soon became the chief foundation of subsequent anatomical investigation.

The text of the Fabrica was written in a difficult Latin style, and was of interest chiefly to other anatomists, but the work achieved much wider renown through its numerous beautiful woodcut illustrations prepared by an artist from the studio of Titian working in close collaboration with Vesalius. These illustrations were copied (often badly) in many other anatomical texts of the sixteenth and seventeenth centuries (see item 4).

3 Gabriello Fallopio (1523-1562) Opera omnia
Frankfurt: Wechel, 1584
The venerable chair of anatomy at the University of Padua became the center of original anatomical study with the arrival of Vesalius. He was succeeded by Realdo Colombo, discoverer of the pulmonary circulation, and then by Gabriello Fallopio. As Vesalius had corrected Galen (indirectly contradicting his teacher, Du bois), so Fallopio indicated the errors of Vesalius. His collected works range in subject from ulceration to venereal disease. Observationes anatomicae, included in the Opera, describes the ovarian tubes which bear his name.

4 André DuLaurens (1558-1608) Toutes les ouvrages anatomiques
Paris: Metayer, 1613
The anatomical writings of DuLaurens, physician to King Henry IV and professor of medicine at Montpellier, typify the derivative character of anatomical work in northern France in the sixteenth century. The illustrations closely follow those of Vesalius in form if not in artistic presentation. The text is based on Hippocrates and Galen, adding only the generally accepted discoveries of the Paduan anatomo-

mists. In contrast to the lively cherubs who perform various medical tasks in the woodcut initials of Vesalius' Fabrica, the decorative initials in this work are solemnly religious.

5 William Harvey (1578-1657) Anatomical exertationes...concerning living creatures
London: Fulley, 1653
6 Opera
Leiden: Kerckhem, 1737
Harvey is most widely known for his De motu cordis in which he describes how his research in comparative anatomy helped him to discover the circulation of the blood. However, the culmination of his life-long study of various animals is presented in the extensive and detailed Concerning living creatures. Like De motu cordis, this work stresses the dynamic aspects of life—emphasizing growth and change—rather than the static and descriptive. While the book reflects a traditionally Aristotelian view of material and efficient causes, it is not slavishly tied to ancient authority. It reemphasizes the originality of Harvey's thought which caught the spirit rather than the word of Aristotelian doctrine.

7 Santorio Santorio (1531-1636) La Medicina station
Venice: Occhi, 1743
The movement of the physical sciences toward quantification prompted Santorio (or Sanctorius) to embark on his famous experiments in metabolism. In Medicina station he outlines the measurement of pulse and temperature and describes the techniques used in experiments with his famous weighing chair. His efforts, although limited by seventeenth-century technology, were so impressive that the book was frequently reprinted and remained an important part of medical literature for nearly two hundred years.
8 Marcello Malpighi (1628-1694)
Epistola de bombyco
London: Martyn and Allestry, 1669
The development of microscopy in the seventeenth century provided biologists with a valuable tool. As one of the earliest scientifically-trained microscopists, Malpighi developed the art to the limits of contemporary optics. In the *Epistola de bombyco*, a detailed study of the silkworm, Malpighi skillfully describes the anatomy and growth of the insect far beyond any observation possible for the naked eye. The study of silkworms had economic as well as academic value because silk was a major trade item in Europe. Malpighi's earlier microscopic studies, dealing with capillaries and red blood corpuscles, helped to establish the validity of Harvey's circulation theory.

9 Albert Kyper (d. 1655)
*Anthropologia corporis humani*
Leiden: Wijngaerden, [1647]
The philosophical tone of the *Anthropologia* was not exceptional at a time when all university teaching, including medical education, was rooted in Aristotelian thought. The work contains a series of questions and answers on medicine, man, and philosophy. "What is the object of medicine?" asks Kyper. "Nothing other than man." "What is the nature of man's soul?" "It is matter and immateriality." Kyper sought to establish that the soul is material in order to explain its controlling influence on the body, yet he believed it must be immaterial to preserve its immortality.

10 Werner Rolfink (1599-1673)
*Dissertationes anatomicae*
Nuremberg: Curabat, 1656
The Italian zeal for dissection and anatomical research spread through Europe. Rolfink, while he added nothing original to anatomical knowledge, was a competent anatomist who did much to disseminate the ideas and discoveries of others in his *Dissertationes*. The work contains a large section on the conflicting opinions as to the circulation of the blood of Galen, Cesalpino, Plem, Hofmann, and Harvey. Rolfink's command of anatomical knowledge is apparent in his clear explanation of the anatomical details of the circulation question. His anatomical demonstrations were viewed with dismay by the German peasantry who guarded their fresh graves to keep them from being "Rolfinked."

11 Bernard Siegfried Albinus (1697-1770)
*Exspositio tabularum...Eustachii*
Leiden: Langerak and Verbeek, 1747
The copper engravings of Eustachius, a contemporary of Vesalius, were anatomically superior to those of the Fabricius, but lay long forgotten in the Papal library. Over two hundred years after their execution, Bernard Albinus drew attention to their extraordinary detail and accuracy, particularly in regard to the muscular nerves, abdominal glands, and the sympathetic nervous system. His erudite commentary on Eustachius' plates served to further establish Albinus as one of the leading anatomists of the eighteenth century.

12 Theophile Bordeu (1722-1776)
*Recherches anatomique sur la position des glandes*
Paris: Quillau, 1751
As the dominant philosophy of early eighteenth-century France, Cartesian mechanism sought to reduce all phenomena to mechanical laws. Bordeu represents an obscure effort to introduce a vitalistic philosophy in opposition to the prevailing mechanistic view. His physiological research convinced him that the basis of life was not reducible to mechanical terms, but was ultimately unknowable. Bordeu's view, as shown in the *Recherches anatomique*, evolved from investigations in which he demonstrated keen ability to describe fine anatomical structures such as glands. Although he had a facility for original thought, Bordeu's contributions have yet to be explored by modern scholarship.
Albrecht von Haller (1708-1777)

*Elementa physiologiae* 8 volumes

Lausanne and Berne: Bousquet et al., 1757-1766

The eighteenth-century tendency to encompass and codify all learning in Haller's *Elementa*, an attempt to assimilate physiological knowledge into a single system. Haller studied under Boerhaave, an important advocate of mechanism, but he avoided the unwarranted use of mechanistic medical theory in discussing physiology by concentrating on conclusions which could be drawn from observation. For example, while Boerhaave postulated circulatory systems other than the cardio-vascular and the lymphatic, Haller rejected the idea because no other systems had been demonstrated.

Leopoldo Marco Antonio Calsani (1725-1813)

*Ioomes anatomicae* 4 volumes

Venice: Picotti, 1801-1813

*Calsani* studied under Morgagni and succeeded his mentor in the chair of theoretical medicine at Padua. His most famous work, the encyclopedic *Ioomes* and its accompanying commentary, *Ioomes*, were prepared with the help of his nephew Floriano Calsani, also a professor at Padua. Together they summarized contemporary anatomical knowledge, with magnificently engraved plates drawn from the works of many great anatomists including William and John Hunter, Haller, and Albinus. The commentary, derived from the writings of others, is interpreted in light of Leopoldo’s vast anatomical knowledge. Shown here is volume two, illustrating the muscular structure with plates taken primarily from Albinus, with its accompanying commentary.

Claude Bernard (1813-1878)

*Leçons de physiologie expérimentale*

Paris: Baillièere, 1855-1856

Early in the nineteenth century medical practice in France took a strong empirical turn. Clinical experience was emphasized and internships were established, while pure physiological research began to develop independently. Bernard, a leader in this new attitude toward physiology, was widely acclaimed for his basic research using the vivisectional techniques of his teacher, Magendie. His successful application of rigorous experimentation laid a solid foundation for the future growth of physiology. *Leçons de physiologie expérimentale* is a plea to base medicine upon objective experiments rather than on speculation. It includes his seminal work on the function of the liver and gastric glands.

Johannes Müller (1801-1858)

Eine Physiologische Untersuchung ueber die phantastischen Geisteserscheinungen

Coblenz: Colscher, 1826

Müller's career reflects the evolution of physiological investigation in nineteenth-century Germany. While still under the sway of the romanticism of naturphilosophie, at the age of twenty-five, he pronounced a theory that the soul was a form of life which could be known only by introspection and hence was beyond empirical investigation. This strongly psychological approach, followed in *Über die phantastischen Geisteserscheinungen*, led him to the law of specific energy of sense nerves, i.e. that nerves respond to stimuli according to their nature. Müller's later and more influential work turned toward rigidly empirical investigations. His writings were instrumental in developing Germany's pre-eminent position in physiological research during the nineteenth century. Müller established an institute for physiological study in Berlin which attracted as students Schwann, Dubois-Reymond, Helmholtz, and Virchow.

Justus von Liebig (1803-1873)

Die organische Chemie und ihre Anwendung auf die Physiologie und Pathologie

Braunschweig: Vieweg, 1842

After the synthesis of the first organic substance—uric acid—by Wöhler in 1828, he and Liebig began the development of organic chemistry. With *Die organische Chemie Liebig*, a professor of...
chemistry at Giessen, stressed the role which modern chemistry could
play in unravelling the complexities of biological phenomena. Through
the systematic application of chemical analysis to physiological func-
tion, he felt that the mechanist dream of fully comprehending the
life processes might finally be realized.

19 Charles Bell (1774–1842)
The Hand
London: Pickering, 1833
While vivisection was essential to the great physiological advances
of the nineteenth century, it was not popular in England. Bell applied
it sparingly and was one of the last researchers to make significant
discoveries using the increasingly anachronistic structural approach
to physiological investigation. By careful observation he was able
to demonstrate that sensory and motor functions depend on separate
nerves and that these nerves originate on different sides of the
spinal cord. Bell’s classic description of the hand is an example
of a brilliant anatomist developing a teleological argument from
keen observation and analysis—essentially the approach used by
Calen and Vesalius.

20 Hermann Ludwig Ferdinand von Helmholtz (1801-1894)
Beschreibung eines Augenaplastegle
Berlin: Försten, 1851
Helmholtz was one of a group of young Germans called organic physicists
who tried, without notable success, to reduce all organic functions
to physical and chemical terms. Some remained in physiology, but
Helmholtz moved into pure physics where he formulated the law of
the conservation of energy. Seeking instruments to explore and monitor
bodily functions, Helmholtz used his knowledge of anatomy and optics
to invent the ophthalmoscope. The instrument and its construction
are explained in Beschreibung eines Augenaplastegle.

21 Karl Ludwig (1816-1895)
Die physiologischen Leistungen des Blutdruckes
Leipzig: Hirzel, 1865
Ludwig, another organic physicist and professor at Leipzig, became
interested in empirical physiology after failing to establish sweep-
ing laws for organic behavior. Die physiologischen Leistungen des
Blutdruckes, one of his many physiological studies, is based on a
lecture concerning blood pressure. It sets forth his ideas regard-
ing the roles of experimentation and reason in science, and suggests
that the motion of the blood is the source of life.

22 Emil Dubois-Reymond (1818-1896)
Die physiologische Unterrichtsanordnung und der Stützen
Berlin: Hirschwald, 1876
Dubois-Reymond, successor to Müller in Berlin and editor of the
Archiv für Anatomie und Physiologie, was well qualified to write
Die physiologische Unterrichtsanordnung. It is an account of the growth
of physiological research in the nineteenth century from Magnenstie
Müller, Bernard, and Ludwig. His own dream, shared by other organic
physicists, of establishing electrical processes as the principle
of life, was never realized, a fact which he lamented at the end
of his career.

23 Herman L. Lebert (1813-1878)
Traité d’anatomie pathologique
4 volumes
Paris: Bailliere, 1857
Medical illustration was a principal beneficiary of the advances in
printing technology of the nineteenth century. The craftsmen who
produced works such as Lebert’s pathological atlas achieved surpris-
antly great fidelity in their mechanically reproduced images even before
the advent of photographic techniques. The illustrations suggest an
intimate relationship between the author and the artist-craftsman who
was necessary to produce work of such accuracy and artistry. The
Traité is one of many works written by Lebert, a distinguished Parisian
clinician. There are two volumes of text beginning with a history of
pathological anatomy adapted from the work of Karl Spengel. The
text continues with descriptions of pathological alterations of the fluid and solid parts of the body, including inflammations, ulcerations, and hemorrhage. These conditions are extensively illustrated in the final two volumes.

24 Santiago Ramón y Cajal (1852–1934)
*Nuevo concepto de la histología de los centros nerviosos*
Barcelona: Henrich, 1893
Among the few Spanish physicians of international note in the nineteenth century, Ramón y Cajal was an outstanding neuro-physiologist at the turn of the century. He discovered the olfactory lobes and the optic chiasm. The *Nuevo concepto* includes his theory of neurons as well as original work on the function of the medulla, the cerebellum, and the cerebral nerves. Ramón y Cajal’s position in medicine was established by his early work, but he continued to contribute to his profession as a researcher and teacher. At the time of his death, he was considered the grand old man of physiology.

25 Josef Halban (1870–1937)
"Die innere Secretion von Ovarium und Placenta"
in *Archi für Gynaekologie*, Berlin, 1905
The study of hormones and their action has become an important aspect of twentieth-century medicine. Halban, an Austrian gynecologist, was an early student of glandular secretions in pregnant women. With works like *Die innere Secretion*, medicine has fully reached the modern stage, for it is a scientific paper in the current sense, presenting important early discoveries about the effects of hormones. In the article, Halban correlates the growth of the ovum and placenta with changes in the mammary glands leading to milk production.

**SURGERY**

26 Ambroise Paré (1510–1590)
Les Oeuvres
Paris: Buon, 1575
This work shares a pre-eminent place with the *Fabrica* in the medical literature of the sixteenth century. It is the repository of the vast experience and consummate skill of the premier surgeon of the Renaissance. Paré had to overcome the prejudice which physicians attached to the practice of surgery, then considered little better than a trade. So great was his renown that he was eventually elected to the Paris College of Physicians.

The anatomical descriptions and illustrations of the *Oeuvres* were derived from Vesalius, with whom Paré consulted at the bedside of Henry II. Paré’s work had particular influence in disseminating the Paduan advances in anatomy to his unschooled surgical colleagues. A man of great practical sense, Paré denounced the use of boiling oil in the treatment of gunshot wounds and described improved methods for amputation and cutting for the stone.

27 Peter Lowe (1550–1612)
A Discourse of the whole art of surgery
London: Furfoot, 1612
Lowe, a careful student of surgical practice, spent much of his early career in France where he learned the techniques of Paré. A *Discourse* is a manual for the beginning surgeon and includes among its important teachings the use of the ligature in amputation, a practice reintroduced by Paré. Like most manuals intended for general surgeons, it was written in the vernacular. The book had a wide acceptance and was reprinted until the middle of the seventeenth century.
28 Marco Aurelio Severino (1580-1656)
De aiboessum recondita natura
Leiden: Kerckchem, 1724
In Severino’s day the term abscess referred to any swelling, so De aiboessum covers a vast number of different disorders ranging from infections to tumors of the humerus. This work, the first comprehensive text on surgical pathology, was published in 1632 and was not superseded for over a century. Recent studies have shown that Severino was an early supporter of Harvey, from whom he received a complimentary copy of De motu cordis.

29 Jean Louis Petit (1674-1750)
Traté des maladies des os 2 volumes
Paris: Cavelier, 1749
Although in earlier centuries surgery held inferior status in medical practice, by the eighteenth century it was becoming a respected specialty. Petit’s career is indicative of the high station to which a surgeon could aspire. He was a member of both the French Academy and the Royal Society. His skills were sought by the kings of Poland, Spain, and Prussia. The description and treatment of bone disorders, with special emphasis on fracture reduction and bandaging, are among the topics covered in the Traté des maladies des os.

30 Thomas Goullard (fl. 1730-1760)
Oeuvres de chirurgie
Paris: Pezenas, Gentier, and Fauré, 1766
Goullard held a respected position as royal demonstrator of surgery at the Montpellier military hospital. His first written work, on the subject of urinary diseases, engendered some controversy as it advocated a wonder drug—a lead compound—which cured all urinary problems. Oeuvres de chirurgie includes relatively straightforward discussions of fistula, inflammations, ulcers, etc., based on Goullard’s observations and treatments of military men.

31 Francois Richard de Hautesierk (fl. 1753-1760)
Réseaux d’observation de médecine des hôpitaux militaires
2 volumes
Paris: Imprimerie Royal, 1772
As a military surgeon to Louis XV, Richard de Hautesierk was a leading specialist in the treatment of wounds. Valuable observations on the kinds of traumatic cases confronted by military surgeons are found in the Réseaux d’observations. One case history, of a patient suffering from an abdominal wound, describes in detail the ensuing fever, delirium, and death. In an attempt to bring some objectivity to the treatment of wounds, Richard de Hautesierk included charts correlating temperature, humidity, and barometric pressure with medical treatments.

32 Carlo Guattani (1707-1771)
De externa aenurgerymatis
Rome: Palearini, 1772
After graduating from medical school, Guattani practiced surgery at the Holy Ghost Hospital in Rome. While there he encountered two cases of aneurysm—dilation of a blood vessel wall resulting in a pulsating tumor—study of which led to his best known treatise, De externa aenurgerymatis. Guattani’s original method of treating the disorder non-surgically, by systematic compression, was adopted by his contemporaries and remained a standard treatment for some time.

33 Giovanni Bononi (1728-1803)
Instruzioni teoriche pratiche di chirurgia
Ferrara: Rinaldi, 1780
As a professor and practicing physician, Bononi had wide experience in both practical and theoretical medicine. This knowledge is reflected in his general surgical textbook, the Instruzioni. Of particular interest are Bononi’s plates depicting various areas of the body where eighteenth-century surgeons often made incisions for purposes of blood-letting—a particular province of surgery at that time.
34 William Lawrence (1783-1867)
A Treatise on ruptures
London: Gallow, 1810
In a country where the name of John Hunter represented the quintessential surgeon, other men were contributing to the knowledge of surgical procedure. Lawrence’s career demonstrates the breadth of skill required of early nineteenth-century surgeons. As a staff member of the prestigious St. Bartholomew’s Hospital, he was associated with the eye infirmary, but his knowledge and interests extended to abdominal procedures, as the Treatise on ruptures indicates. The book’s twenty-five chapters range from general considerations such as the description and causes of ruptures to specific problems such as ischiatric hernia and strangulation of the bowels. In addition to his interest in surgery, Lawrence compiled studies of anatomy, zoology, and natural history.

35 William Sands Cox (1769-1863)
A Memoir on amputation of the thigh
London: Reeve, [1845]
William Cox followed his father, a Birmingham surgeon, into the profession. An avid student of amputation, he translated Maingault’s treatise on the subject. His own Memoir describes a highly successful radical procedure by which the patient, a young woman, was cured of a gangrenous complication resulting from an earlier operation. Cox’s report is revealing about the state of surgery just prior to the introduction of general anesthesia.

36 Henry J. Bigelow (1818-1890)
"Insensibility during surgery"
in The Boston Medical and Surgical Journal, Volume XXXV, No. 16
(November 18, 1846)
Bigelow, a leading surgeon who practiced at Massachusetts General Hospital, announced to the world the age of anesthesia in his article "Insensibility during surgery." Ether was first used at Massachusetts General at the prompting of William Morton, a friend of Horace Wells who discovered its effects. The introduction of effective anesthesia offered new hope to surgeons and their patients that pain would no longer be a barrier to surgical treatment.

37 Jean Fernel (1497-1558)
Univervos medicinae
Geneva: Stoer, 1637
Fernel’s genius for language and philosophy established his great reputation for interpreting texts and debating points of medicine. In the Univervs, a collection of his works, Fernel exhibits original thought that goes beyond Galenism. The extent of his originality remains enigmatic, but in part it lies in his conception of disease as a local condition rather than the prevailing notion of disease as caused by a general imbalance of humors. While a professor at Paris, Fernel counted Vesalius among his students.

38 Leonard Fuchs (1501-1543)
Hippocratis et medicorum
Basel: [1544]
Fuchs, a radical in the cause medical humanism, fought vigorously to establish the primacy of classical learning, publishing fierce diatribes against the medieval interpreters. Even humanist scholars who agreed with Fuchs’ position that the medieval commentators should be supplanted, disapproved of his vituperative style. In the Col medicorum Fuchs translates and comments upon the numerous Aphorisms of Hippocrates in light of Galenic teachings. For example, Fuchs discusses the secular meaning of the first aphorism—"life is short and the art is long"—that there is much to learn about medicine in a mere lifetime. He then takes up the religious significance of life, expounded by David in the Psalms. Galen’s commentary on the Aphorisms is appended to Fuchs’ remarks.

39 Jacques Houllier (d. 1562)
Omnia opera
Geneva: Stoer, 1623
Houllier was among the Parisian medical humanists who established Galenic teaching in place of the medieval commentators. The Opera,
first published in 1612, contains Houllier's surgical works, tracts on internal medicine, and commentaries on Galen. His two most famous books, commentaries on Hippocrates, do not appear in the collected works, as they were readily available in separate volumes. Houllier was considered an important author for over a century, and his collected works were reprinted as late as 1674.

40 Leonard Fioravanti (1530-1588)
Tesorone della vita humana
Venice: Briga, 1673

Unusual among sixteenth-century Italian physicians, Fioravanti based his practice on the doctrines of Paracelsus. Following the Swiss physician's advice, he wrote the Tesoro in the vernacular. The book discusses surgical practice, sympathetic cures, and chemical medicine. Known for his success in rhinoplasty, Fioravanti attributed his good fortune in operations of this type to washing the severed member in urine before reattaching it.

41 Johann Michaelis (1606-1667)
Opera omnia
Nuremberg: Hoffmann, 1698

Paracelsian iatrochemistry, the application of alchemical doctrines to medical thought and practice, began to spread only after its founder's death in 1541. Michaelis, a relatively minor figure, contributed to the dissemination of chemical medicine by editing the works of two important early Paracelsians—Hartmann and Croll. A typical chemical approach to medicine, the Opera presents numerous chemical remedies and describes disease in chemical terms, speaking for example, of invisible "seeds" which localize in organs and impair their function.

42 Jan van Beverwijck (1594-1647)
Werken der Genees-Konst
Amsterdam: Schipper, 1680

A celebrated and versatile Dutch physician, Beverwijck subscribed to Harvey's theory on circulation and uses illustrations from

De motu cordis to expound upon it. In this edition, Beverwijck's writings are accompanied by verses of the Dutch poet, Jacob Cats, and plates from other anatomists, including Vesalius and Harvey, are used to illustrate various sections. Following Beverwijck's complete works on the art of healing and the origins of disease, the book concludes with a collection of correspondence between Beverwijck and such noted thinkers of his time as Harvey, Buxgens, and Descartes.

43 Vopiscus Plemp (1601-1671)
Fundamenta medicinae
Louvain: Nenpalet, 1664

The Fundamenta, a comprehensive medical textbook, discusses the nature of medicine, outlining physiology, pathology, hygiene, etc. A gifted writer, Plemp contributed to the acceptance of Harvey's theory of circulation when he himself finally recognized its validity about 1644. Editions of the Fundamenta published after that date treat as fact Harvey's view of the circulation of the blood.

44 Fortunio Liceto (1577-1657)
De spontaneo viventium
Padua: Bolzetam, 1618

Liceto, a professor of logic and Aristotelian physics at Pisa, here presents a case for spontaneous generation—a doctrine which had adherents among vitalists who saw life forces coming from fermentation, and mechanists who believed that combinations of chemicals could initiate life. Liceto's generative ideas were especially opposed to those of Harvey who believed that organisms arise only from eggs. He also attacked, in another work, Harvey's theory of circulation using an argument based on Aristotelian physics.

45 Augustin Thoner (fl. 1640)
Observationum medicinalium
Ulm: Gerlini, 1651

Thoner, respected director of the medical college at Ulm, reflects many of the medical currents of the seventeenth century. The
46 Rene Descartes (1596-1650)
De homine
Leiden: Leffen and Moyard, 1662
Descartes regarded science as a logical system built upon first principles from which all phenomena could be explained. One such first principle was the motion of matter; for example, he explained the tides as caused by pressure on the seas from the motion of particles around the earth. This mechanical approach to the physical world is applied to man in De homine. Thus, the sensation of touch results from particles acting on nerves which contain a fluid that transfers an impulse to the brain. But of all living things, he explains, only man is more than a mechanism, for an immortal soul resides in his pineal gland. Descartes' views became enormously influential in the development of physical and biological thought.

47 Jean Baptista van Helmont (1577-1644)
Opera omnia
Frankfurt: Erythropolis, 1682
Van Helmont, a physician, is best known today for his work in chemistry. He advocated the use of chemical medicines and believed that disease was caused by external agents entering the body. Van Helmont rejected the Paracelsian concepts that matter was composed of three principles (mercury, sulphur, and salt) and that astral influences determined health. The Opera omnia includes writings on such diverse subjects as the preparation of chemical remedies, asthma, ulcerations, and the magnetic cure of wounds. Van Helmont remade chemical theory by describing water as the primary substance which yields other materials when activated by fermentation. This theory was based upon studies of digestion and on an experiment in which he concluded that the growth of a tree could be attributed only to added water.

48 Georg Ernst Stahl (1660-1734)
Theoria medica vera
Halle: Orphanotrophi, 1737
Noted as the founder of the phlogiston theory of chemistry, Stahl is also important to medical theory. In Theoria medica vera he argues that while chemistry and physics may explain certain actions of the body and are useful to medicine, life cannot be ultimately reduced to mechanical causes. Stahl's vitalist position, held in common with Paracelsus and van Helmont, conceived of life as an indwelling, non-material principle. This view put him at odds with his fellow professor at Halle, Friedrich Hoffmann, who saw life in mechanistic terms--as the motion of particles within the organism.

49 Friedrich Hoffmann (1660-1742)
Medicina polittina
Leiden: Bonk, 1738
Hoffmann adhered to the Cartesian belief that science must be based upon reason. The Medicina polittina, often discussed as a treatise on medical ethics, is also a discourse on the principles of rational medicine. The physician must know geometry, mechanics, and hydraulics in order to discover the laws of motion which govern the materials of the body. Hoffmann felt that Stahl's medical theory was defective and irrational because it did not completely explain the human mechanism in terms of scientific laws. He and Leibniz were critical of Stahl's Theoria medica vera (item 41) for resorting to occult causes of the kind espoused by Paracelsus and van Helmont.

50 Disputationes medicae
Halle: Jena, et. al., 1681-1730
The Disputationes is a collection of doctoral dissertations in medicine presented at Halle. It includes dissertations by students of the great professors Hoffmann (item 49) and Stahl (item 48), each of whom wrote a paper introducing the work of his own students. Because professors played a prime role in the preparation of the dissertations, the Disputationes sheds considerable light on the contrasting vitalist and mechanist viewpoints of Hoffmann and Stahl.
51 Michael Etmüller (1644-1683)  
*Opera omnia* 5 volumes  
Venice: Hertz, 1734  
Etmüller, traveled extensively before settling in his birthplace, Leipzig, where his reputation as scholar and teacher attracted many students. His work owed much to Sylvius de la Rue who sought to apply the ideas and techniques of chemistry to physiology and pathology. The *Opera* includes an otherwise rare text on chemistry along with Etmüller's textbook *Institutes of Medicine*, a discourse on the *Properties of natural bodies*, and tracts on pharmacology, in which he describes the preparation of typical chemical medicines and tries to analyze chemical products from animals.

52 Francesco Torti (1658-1741)  
*Therapeuticon specialis*  
Modena: Solmani, 1712  
A widely-traveled Italian physician, Torti is known for his advocacy of quinine in the treatment of malarial fevers, described in this book. Though quinine had been prescribed before Torti's publication, his work secured its place as an effective medication. Many physicians in their zeal misapplied quinine, however, using it as a remedy for all fevers rather than as specific for malarial-type fevers. The cinchona tree, from which quinine is derived, was pictured by Torti and is shown here in a contemporary drawing.

53 Rudolf Vogel (1724-1774)  
*Opuscula medica*  
Göttingen: Kublerum, 1768  
Well grounded in both chemistry and medicine, Vogel aspired to develop a complete medical system based upon the "true principles" of chemistry. This goal is indicative of the unsettled state of medicine in the period. It is interesting to study the work of such relatively unknown figures as Vogel who sought the same kind of grand synthesis that his great contemporaries—Hoffmann and Boerhaave—could not fully achieve. The *Opuscula medica* is a collection of writings expressing Vogel's ideas, goals, and instructions in practical medicine.

54 Theophile Bordeu (1722-1776)  
*Recherches sur le poux*  
Paris: de Bure, 1756  
Diagnosis through changes in pulse, practiced from antiquity, was influenced by the eighteenth-century preoccupation with quantification. In the *Recherches*, Bordeu presents numerous cases histories in which changes in pulse rate are correlated to the improving or worsening condition of the patient. Bordeu expected that this mass of data would help physicians to predict crisis stages in disease.

55 John Abernathy (1764-1831)  
*An Enquiry into . . . Mr. Hunter's theory of life*  
London: Longman, Hurst et al, 1814  
Abernathy, the son of a merchant, gained a wide reputation as an anatomist, surgeon, and physiologist. Like Hoffmann (item 49), he believed that reason, correctly applied was the basis for medicine. *An Enquiry* is at once a foray into philosophical speculation and a tribute to his great colleague, John Hunter. In it Abernathy tries to substantiate Hunter's dictum that life is that which "prevents chemical decomposition." However, Abernathy's major contributions to medicine were practical rather than theoretical. His *Surgical works* went through eight editions in his lifetime and he was named by the Royal College of Surgeons to its professorship in anatomy, the highest honor an English surgeon could receive.

56 Edward Jenner (1749-1823)  
*An Enquiry into the causes and effects of . . . vaccination*  
London: for the author, 1798  
Although Jenner's name is universally associated with his work on smallpox, he was not the first to observe the relationship between cowpox and smallpox or to vaccinate. Lady Wortley Montague brought the idea of innoculating with a mild form of the disease to England from Constantinople in 1721. *An Enquiry* is an account of Jenner's systematic investigation of inoculation and describes a safe procedure for it. The copy in the Fishbein Collection was presented by Jenner to his nephew, the Rev. George Jenner.
57 Henri Husson (1772–1853)  
Recherches historiques... sur la vaccine  
Paris: Gabon, 1803

Husson recognized the value of vaccination and set about surveying the history of the subject and adding his own research. This book served to popularize vaccination in France at a time when the practice aroused wide controversy. After serving in the French public health, during which time he was allowed to vaccinate Napoleon's son, Husson retired to a distinguished career in private practice.

58 James Clark (1788–1870)  
The Influence of climate...  
London: Underwood, 1829

Clark was educated as a surgeon but turned to internal medicine. In connection with his special interest in lung disorders, he studied the temperature, rainfall, and barometric ranges of various areas of England. The meteorologic information presented in The Influence of climate was intended to guide physicians in choosing areas where patients could best recover. Special attention was given to climates beneficial to lung and digestive diseases.

59 Edwin Chadwick (1800–1890)  
An Inquiry into the sanitary conditions of the labouring population of Great Britain.  
London: for Her Majesty's Stationery Office 1842

Chadwick, a lawyer and poor law commissioner, played a prime role in establishing preventive medicine in England. His studies using bills of mortality, published in the Inquiry into sanitary conditions, concluded that the living conditions of the poor contributed to disease. Basing his position on the idea that filth, carried in air and water, produced disease, Chadwick lobbied for the eradication of open sewers and improved water supplies. The germ theory gave new impetus to his fight for better living conditions in England.

60 Louis Pasteur (1822–1895)  
[Writings on Immunology]  
Paris: Gauthier-Villars, 1880–1881

By inoculating animals with pathogenic agents, Pasteur, a chemist, was able to prove that microscopic organisms caused disease. He thus answered a question which had puzzled scientists for centuries. His work provided the basis for two new biological disciplines: bacteriology and immunology. Pasteur's discoveries led not only to vaccines for anthrax and rabies, but also to economic advances by isolating the organism which soured wine. Although the nature of the immune reaction was not understood in his day, the methods which he developed for growing and using attenuated organisms to produce immunity became the foundation for later research. Pasteur's studies on anthrax and chicken cholera, sent to the French Academy of Sciences, are found among the off-prints in this collection.

61 Robert Koch (1843–1910)  
"Die Aetiole der Tuberculose"  
in Berlinsches Klinische Wochenschrift, No. 15 (April 10, 1882)

A younger contemporary of Pasteur, Koch was a pioneer in the fields of bacteriology and immunology. It was Koch who helped to isolate the anthrax bacillus and who developed bacterial staining techniques using m拟定 dyes. His important discovery of the causative agent of tuberculosis and postulates for establishing the identity of pathogenic organisms are announced in "Die Aetiole der Tuberculose."
PHARMACOLOGY

62 Antonio Brasavola (1500-1555)
Examen omniae simplicior medicament
Venice: Valgrisi, 1548

Brasavola, a student of the humanist Leoniceno, deals with simple or non-compounded medicines in *Examen simplicior medicament*. Like other pharmacopoeias before the development of chemical medicines, it deals primarily with plants and their medicinal value. Though many remedies are derived from Dioscorides, Brasavola's work is notable because it contains the first reference to guaiac bark as a medicament. Guaiac, discovered in the New World, has no medicinal value, but was believed by some in Brasavola's time to cure venereal disease. The remedy remained popular for two centuries.

63 Johannes Mylius (fl. 1600-1640)
Opera medica-chemica
Frankfurt: Innais, 1618

The *Opera medica-chemica* of Mylius, a rather obscure iatrochemist, includes a pharmacopoeia in a work on general medicine. The large section on chemical medicines and their preparation describes many of the remedies used by Paracelsus. Other sections of the book treat humors, the elements, and the creation of the world.

64 Johann Michaelis (1606-1667)
Disseratio pharmaceutico
Nalle: Hubneri, 1678

Michaelis compiled the *Disseratio* to instruct physicians in the new chemical remedies and their application, collecting hundreds of prescriptions for the work. A typical remedy is that preferred for fever and impurities of the blood: tincture of bezoar, a calcified mass found in a goat's stomach.

65 Jean Prevost (1585-1631)
Medicina pauperrum
Venice: Turinnum, 1654

Prevost's pharmacopoeia and medical instruction book provides alternative prescriptions within the means of the poor. Covering the whole range of disease, *Medicina pauperrum* offers inexpensive medicines and treatments said to be equally efficacious as those given to the most wealthy. It claims that vinegar, sugar, and tobacco are as effective as rare spices and gums in treating most disorders.

66 Pierre Pomet (1658-1698)
Histoire . . . des drogues
Paris: Loyson, 1694

Pomet, a spicer, went beyond a mere list of drugs in the *Histoire*. It is an encyclopedic natural history, containing descriptions of the habitats of both plants and animals. It includes discussions of the preparation of herbal medicines along with prescriptions from famous physicians. The work is of special interest for the beauty of its many illustrations.

67 Mathias Tiling (1634-1685)
Ginnabaris mineralia
Frankfurt: Seyler, 1681

Chemical medicines were widely accepted by the end of the seventeenth century. In *Ginnabaris mineralia* Tiling explains the preparation and use of mercury, a traditional prescription for the treatment of venereal disease. Tiling, a professor at Rinteln, was an iatrochemist who looked to chemical principles for the explanation of life processes.

68 Christian Herzog (1680-1713)
Hymographia medica
Encha: [1716]

Among the most bizarre medicaments ever prescribed is mummy. Medications containing ancient Egyptians were widespread in Thomas Browne's day, and he commented about them (item 85). Herzog, an apothecary, claims in the *Hymographia* that such disparate aliments as dizziness, ear ache, sore neck, and coughing will respond to this unusual treatment.
69 Friedrich Zobell (fl. 1600-1630)
Chymische Medicinische Perle
Dresden: Winkler, 1701
Zobell was physician to the prince of Holstein and chemist. His
Chymische Medicinische Perle, a relatively early chemical pharmacopoeia,
was first compiled about 1636, and proposes such medicines as distilled
crab water and butter and fat oil. This eighteenth-century edition
attests to the work's sustained popularity.

70 Johann Jungken (1648-1726)
Corpus pharmaceuticum . . .
Frankfurt: Knochi, 1732
Choosing to travel rather than establish himself in one city after
graduating from the University at Heidelberg, Jungken collected a
wide variety of prescriptions. In typical fashion, the Corpus
pharmaceuticum, first published in 1697, is divided into sections
dealing with waters, syrups, spirits, etc. Many of the drugs listed
were taken from the official pharmacopoeias of London and Vienna,
while others were borrowed from the works of such famous physicians
as Sennert and Etzmüller.

71 Giuseppe Donzelli (fl. 1620-60)
Teatro farmaceutico
Venice: Poletti, 1728
Chemical medicine did not spread as rapidly in Italy as in the North,
probably because of the entrenched state of traditional medicine.
Donzelli's Teatro, completed in the middle of the seventeenth century,
would have been an innovative chemical work for the South had it ap-
peared at that time. However, it was not published until after
Donzelli's death when his son saw the work through the press.

72 Dispensatorium
Vienna: Collegii Pharmaceutici Vienensis, 1737
The trend to official pharmacopoeias, begun in the late fifteenth
century in Florence, was firmly established after publication of the

Pharmacopoeia Londonensis of 1618. By the end of the eighteenth
century official collections were dominant, resulting in a uniform-
ity of treatment impossible when individually compiled lists were
widespread. The Dispensatorium is noteworthy for its excellent organi-
zation and clear language and for the fact that it is highly selec-
tive, excluding most questionable preparations.

73 Balthasare Tralles (1708-1797)
Vesus opit: 2 volumes
Breizau: Meyer, 1757
Tralles, respected throughout Europe as a medical writer, had a
special interest in pharmacology. In Vesus opit he surveys the history
of the use of opium from its introduction into Europe by Paracelsus
through the works of Paré, Sennert, Morgagni, and others. Tralles
describes contemporary applications of the drug in relieving pain and
diarrheic fevers, and warns readers about its depressive nature and
addictive powers.

74 William Withering (1741-1799)
An Account of foxglove
Birmingham: Robinson, 1785
Although foxglove, a source for digitalis, had appeared in many
pharmacopoeias, it was Withering who described its effects on the
patients of an old woman in Shropshire and thus established its medical
effectiveness. An Account of foxglove describes experiments with fox-
glove and recommends it in the treatment of dropy. From Withering's
time, digitalis has had an important place in medical therapy.

75 Alexander Fleming (1881-1955)
Penicillin, its practical application
London: Butterworth, 1946
The recognition of the bacteriocidal nature of penicillin is among
the greatest modern advances in pharmacology. Sir Alexander Fleming,
its discoverer, was the editor and largest contributor to Penicillin,
the first book designed to guide physicians on penicillin therapy.
It is a collection of articles on the history, preparation, and ap-
lication of this important antibiotic.
SPECIAL TOPICS

RELIGION AND MEDICINE
77 Jonea Baruchampan (fl. 1530-1570)
Steen Van Roos
Nuremberg: Frohman, 1573
The acceptance of and preparation for death remains a perplexing psychological task in the life of man. This dialogue on "The Art of Dying" pits the dying man against the "Adversary" who taunts his victim by saying that God will not forgive all of his sins. The dying man counters with an oration on God's limitless mercy for the repentant sinner. This simply written book is meant to allay the fear of death by bringing the "sinner" into a state of grace.

78 Jan van Beverwijck (1594-1647)
Epistola quaestio de vita termico . . .
Leiden: Maire, 1651
In a period when the authority and concern of the physician was broad enough to encompass theological and philosophical issues, the Dutch physician, Jan van Beverwijck, (see item 42) wrote on the inevitability of death. The spectre of dying retained a strong mystical element, even within medicine, and in this Epistola he gives supporting arguments for and against the pre-determination of the date of death, using an erudition based on quotations from the Bible, Plato, Pliny, the Greek dramatists, and other classical sources.

79 Michael Boulesma (1601-1681)
Ventilarium medico-theologicum
Antwerp: Iuons, 1666
The common interests and practices of medicine and theology are joined in this work by another learned Dutch physician, Boulesma, for he also examines the effectiveness of sacred oil as a medicament. He also considers the physician's position on the question of abortion and his role as an advisor on matrimonial relationships.

80 Nathaniel Spinckes (fl. 1690-1715)
The Stok man revisited
London: Taylor, 1717
The comfort and peace of mind of the dying have long been matters of concern to both medical men and clergy. Spinckes, a presbyter in the church of England, composed this manual for the concerned visitor who wished to brace a sick man for death. Built around a series of six visits to the afflicted, the book presents prayers and moral discourses to prepare the soul to meet its maker and gives final advice on how to bid farewell to one's family.

MAGIC AND THE OCCULT
81 Andrea Argoli (1570-1657)
De diuebus ariticia . . .
Padua: 1639
Experienced in medicine and mathematics, Argoli incorporated the ancient art of astrology into his therapeutic efforts. De diuebus ariticia, a conglomerate of teachings ranging from Hippocrates to Hermes Trismegistus, contains a thorough exposition of judicial astrology and its relationship to medicine. Numerous horoscopes predict world events such as the appearance of plague and the illness and death of popes and kings.

82 Caspar Caldera de Heredia (fl. 1600-1650)
Tribunal medium
Leiden: Elseviersum, 1658
Caldera de Heredia draws a distinction between natural and diabolical magic. He defines natural magic, the goal of science, as man using his
knowledge of nature to control events. Diabolical magic, which is outside the path of the Christian physician, depends on satanic powers to effect cures, to determine events, and to perform unnatural wonders.

83 Philipp Mey (fl. 1620-1665)

Chromonodia medica
Dresden: Löfflers, 1670

The systematic study of the hand touched the practice of medicine as a diagnostic tool. The geometrical relationships of the lines of the hand were the source of both psychic and physical information. Mey claims that variations in these lines can be measured to indicate the state of the patient's health. Observation of such features as spots on the fingernails can also be useful in predicting disease.

84 Jeronimo Cortes (fl. 1720-1760)

Pioenomia
Gerona: Brô, 1766

Physiognomy, along with palmistry, was popularly used to assess both physical illness and personal characteristics in the seventeenth and eighteenth centuries. Unlike most books on physiognomy which are limited to facial features and their meaning, Cortes considers the importance of the entire body in assessing personality traits. Small shoulders, for example, indicate a timid and pacific individual. People with large eyes have poor memory and small intellect, while those with deep-set eyes are thoughtless, cruel, and inclined to deceive.

POLEMICS

85 Thomas Browne (1605-1682)

Pseudodoxia epidemicca
London: Dod, 1684

If Browne's fame was to have rested on his career as a physician his name would have been easily forgotten. After three hundred years, his writings are read and retain a unique place in English literature. His appeal lies in an idiosyncratic style which expressed a peculiarly ruminating and searching mind. In this his longest work—known also by the English title, Vulgar Errors—Browne put together a large collection of esoteric information which he then exposes to a double-edged scepticism, leaving an enigmatically thin line between fact and fancy.

86 John Gregory (1724-1773)

Lectures on the duties and qualifications of a physician
London: Strahan, 1772

John Gregory was physician to the king in Scotland and Professor of Medicine at the University of Edinburgh. His lectures on medical ethics were so well received that they found their way into print via a student's transcript. While apparently not displeased by this, Gregory felt called upon to prepare a revised edition for the benefit of students and colleagues. In conclusion he advises that "the dignity of the profession is not to be supported by a narrow, selfish, corporation spirit: . . . [but] by the superior learning and abilities of those who profess it, by the liberal manners of gentlemen, and by that openness and candour, which . . . boldly bid defiance to all that illiberal ridicule and abuse to which medicine has been so much and so long exposed."

87 Narrative of the conduct of Dr. James Gregory . . .

Edinburgh: Royal College of Physicians of Edinburgh, 1809

In 1754 the Royal College instituted a policy enjoining physicians in Scotland from owning apothecary shops or dispensing drugs. Dr. Thomas Spens in 1796 succeeded in having the rule abolished. James Gregory, son of the famous Dr. John Gregory (item 86), published two pamphlets in which he publicly opposed Spens and his supporters, pointing out the monopolistic character of his motives and upholding the value of the 1754 rule. Resentful of Gregory's public airing of their professional discord, the Royal College printed this account of the case, justifying its suspension of Gregory until he publicly apologized for his conduct.

88 An Exposition of the state of the medical profession in
British Dominions
London: Longman, Rees, et al, 1826

The Royal College of Physicians' monopoly regulating the medical profession is challenged in this polemical tract. Only demand, it argues,
should limit the number of physicians, not the self-serving rules of the College. The writer claims that the shortage of physicians in England resulted from the College's desire to keep fees high by maintaining a small, exclusive guild. Beginning with the reign of Henry VIII, the author recounts the legal action taken by the College aimed at prohibiting non-members from practicing in England. In one case, he noted that an offender was hanged during the reign of Edward VI.

89 Erreurs dévoilées des physiciens modernes
Paris: Dufart, 1831
The Erreurs is not limited to the medical profession, but attacks the very basis of nineteenth-century science. The chief error of science, it claims, is believing that the Newtonian world view represents complete reality. Great vistas will open before men, says the author, when they realize that flights of reason based upon observation will lead to new and greater systems. The writer seems to be turning back to the subjective Cartesian approach rather than forward to the more objective methods of modern science.

90 Samuel Gregory
Doctor or Doctress
Boston: Trustees of the New England Female Medical College, 1868
In this short pamphlet Dr. Samuel Gregory proposes that the title "Doctor" is more fitting to female physicians than "Doctor." Gregory clearly favors the increased participation of women in the medical profession, but some of the arguments he adduces for the use of "Doctress," even those drawn from emancipated women of his time, would surely be branded "chauvinist" today. He suggests, for example, that "Doctress" is a soft, pleasing word properly suited to the sex and mingling tenderness with respect.

RELATED SCIENCES
91 Robert Boyle (1627-1691)
New experiments, physico-mechanical touching the spring of air
London: Robinson, 1662
Robert Boyle's place in the front rank of the scientific revolution was established by his work in analytic chemistry. Best known for developing a law concerning the expansion of gases, he drew his conclusions from experiments using the newly-developed vacuum pump or, as it was then called, the "air pump." Seventeenth-century scientists believed that air was a pure substance and that all gases were simply various forms of air. Boyle broke new ground in the development of analytical techniques which were later used to differentiate the component parts of air. In New Experiments, in addition to probing the elastic properties of air, Boyle explores the relationship between air and life, showing that animals die in a reduced air situation. This research led him to theorize that air is composed of minute parts or atoms. Medical mechanists applied this theory, along with his experiments on animals, to substantiate their contention that life consists of the flow of fine particles through the body.

92 Stephen Hales (1667-1721)
Vegetable Statics
London: Innys, 1727
Hales outlines a series of experiments exploring the circulation of water and the place of air in the development of plants. His description of the flow of sap in terms of circulation is indicative of the influence of Harvey's circulation theory on other branches of biology. Hales' interests were wide-ranging, including besides his botanical studies, experiments with animals and the development of gas collection techniques which were used by Black, Priestly, Cavendish, and Lavoisier in their chemical experiments.

93 Jan Ingen-Housz (1730-1799)
Experiments upon vegetables
London: Elmsly and Payne, 1779
Ingen-Housz, a Dutch physician, gained considerable reputation for his part in introducing smallpox vaccination to Europe. In Experiments upon vegetables, Ingen-Housz notes the purifying effect of plants upon the air, a phenomenon better understood when his contemporary Lavoisier related oxygen to respiration. Although Ingen-Housz's importance has yet to be fully evaluated by historical scholarship, his
work is typical of the kind of experimentation which led to major advances in medical science in the nineteenth century.

94 Michael Faraday (1821–1854)
*On the Practical prevention of dry rot in timber*
London: Weale, 1837
Faraday turned his considerable talents from electrical studies to the practical problem of decay. He noted that fungus and small animals cause timber to rot but also hints of a third cause. The idea that something in the air contributes to decay is a common one before the development of germ theory. Using the ideas of Davy and Berzelius, Faraday suggests that a corrosive compound will prevent dry rot.

**MISCELLANEOUS**

95 Louis Arnault de Nobleville (fl. 1720–1760)
*Le Manuel des dames de charité*
Paris: Devière, 1765
Written as a textbook for eighteenth-century nurses in France, *Le Manuel* begins with a dictionary of medical terms and proceeds to outline the administration of medication and techniques for treating a wide variety of illnesses. Nurses rather than physicians at that time performed many medical functions including midwifery and bleeding.

96 Charles Marc (1771–1841)
*De la Folie*
Paris: Bailrière, 1840
Mental disorders have always been in the realm of medical practice, but it was not until the nineteenth century that psychiatry emerged as a specialty. Marc’s work is a comprehensive examination of mental illness, describing various mania and providing legal definitions of insanity which could lead to commitment. It goes on to outline treatments and techniques for working with the mentally ill.

97 The physician for travellers
London: Fayram, 1729
In a time when travel had its perils, a member of the College of Physicians who chose to remain anonymous produced this compendium of "Directions how Persons on Voyages and Journies, may remedy the Diseases incident to them, without the sorry Assistances they often meet with on the Seas or Roads." Designed as a supplement to the same author's *Family companion for health*, the book lists every imaginable ailment that might be encountered on the road, from weariness and hunger to wounds, bruises, and palpitations and recommends appropriate remedies for each.

98 Elma Stuart (fl. 1830–1880)
*What must I do to get well? and How can I keep so?*
London: Elma Stuart, [1886?]
The Salisbury system, a pseudo-medical treatment, consisted of drinking hot water at specific times to wash out the stomach, liquify the blood, wash away uric acid from the joints, and strengthen shattered nerves. Elma Stuart describes the various ailments which will benefit from such a regimen, provides strict dietary rules, and adds a dose of homely advice on health: "Sleep like money breeds sleep," or "a laugh down to the soles of your shoes is splendid for you."