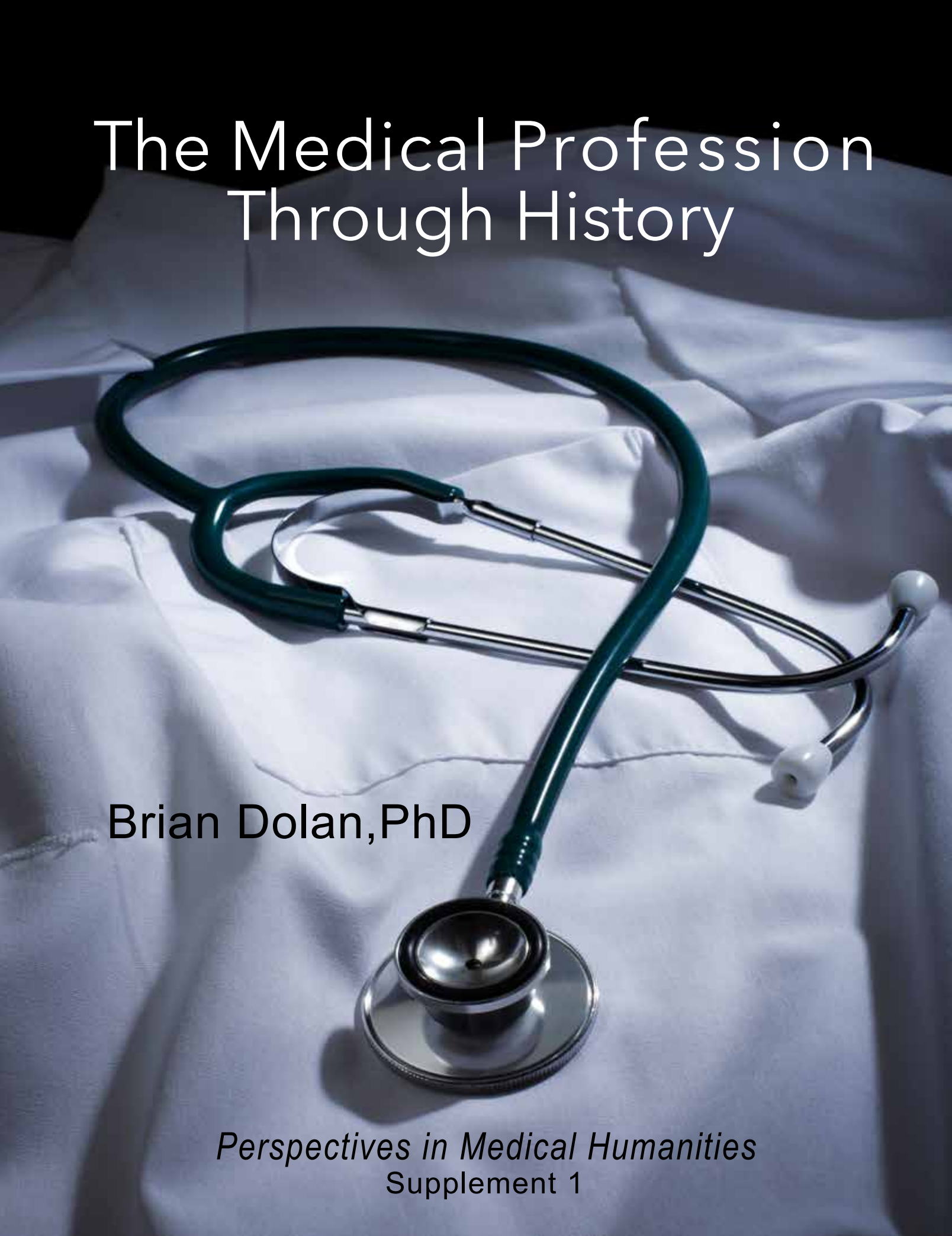
# The Medical Profession Through History



Brian Dolan,PhD

*Perspectives in Medical Humanities*
Supplement 1

University of California
Medical Humanities Press

eScholarship
University of California

# *Perspectives in Medical Humanities*

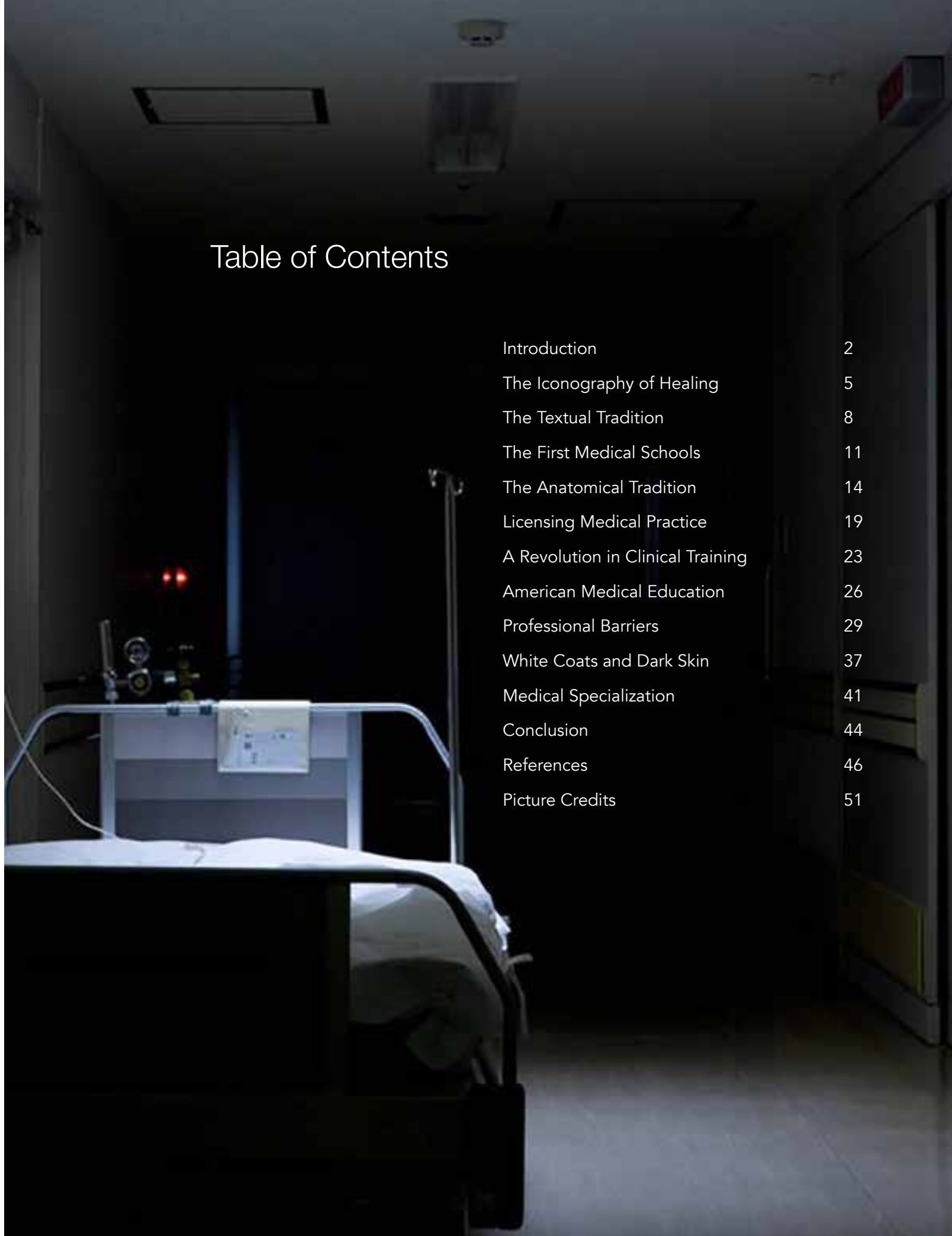
Supplement Number 1

**How to Cite:** Dolan, Brian. The Medical Profession Through History. *Perspectives in Medical Humanities,* Supplement 1 (August 2021)
DOI: 10.34947/M7X596
Permalink: https://escholarship.org/uc/item/04w903fh

**Digital Publication:** August 2021

**Keywords:** medical profession; history of medicine; professionalization; medical education; structural racism; medical licensing; medical specialization

**Peer Review:**
This article has been peer reviewed through a collaborative review process through a platform provided by the UC Medical Humanities Consortium consisting of a multi-disciplinary faculty editorial board. More information about collaborative review can be found at: http://ucmedicalhumanitiespress.com/



# Table of Contents

# INTRODUCTION

In 1993, the first "White Coat Ceremony" was held at Columbia University College of Physicians and Surgeons. It was an event developed by the Arnold P. Gold Foundation to enhance professionalism and humanism in healthcare, and ceremonies such as this are now held in almost every medical school in the United States, and many others internationally. [1] It is, as the Gold Foundation says, "a rite of passage" for aspiring physicians, nurses, and physician assistant programs. The donning of the white coat represents a commitment to scientific rigor and laboratory-based research that underpins modern medical knowledge. But students also take a Hippocratic-style Oath, pledging their commitment to ethical conduct and compassionate care for patients. The ceremony is fundamentally about transforming one's identity by becoming a *professional*, marked by a special garment representing medical status, and by one's commitment to adapting the character of a trustworthy expert. Before any formal education in the theory of medicine or training in the skills to practice it, the ceremony confirms that something special is about to happen.

*Rites of Passage in Medical Education*: Fig. 1. (opposite page) White Coat Ceremony at Icahn School of Medicine, Mount Sinai; Fig. 2. (below, left) Class of Medical Students at Tulane University, circa 1900; Fig. 3. (below, right) Medical Students in the Dissecting Room at Women's Medical College of Pennsylvania, 1892

This essay provides a brief history of the evolving process by which physicians have become professionals. It provides an overview of the conditions that have developed over thousands of years – since before Hippocrates himself – that identify the healer as knowledgeable, competent, and trustworthy. It is a story of the consolidation of this process around very specific qualifications that assert this special status.

Throughout history, the medical professional has been someone who the governing body of a population (be that Royalty, the Church, or the Supreme Court) has declared to be a legitimate practitioner, who possesses accredited knowledge and skills to manage a patient's health. The crucial qualifying terms here are "legitimate" and "accredited." Obviously, not everybody who believes that they can help someone who is ill is considered a medical "professional." In the West, a spiritual guru is not considered a medical professional; a homeopath or herbalist is not considered a medical professional. Yet, two hundred years ago, when America was expanding into western frontiers, homeopathic remedies were a foundational resource for healing. Furthermore, plants and herbs demonstrably provided the best therapies for many ailments. However, at some point during the process of professionalizing medicine in the nineteenth century, those who identified themselves as homeopathic practitioners – mainly women, who founded or attended colleges to train people in homeopathic healing – were deemed *illegitimate* practitioners and *discredited*.

As this essay will explore, this was not a consequence of "evidence based medical" practice, but rather a social and cultural fight over control of the medical marketplace. To be sure, this essay is not about the allopathic versus homeopathic debate, or the history of "regular" versus "alternative" medicine. Nor is it a history of medical *knowledge*—theories of disease, interventions, or drugs. (Those topics are approached

in other Supplements in the *Perspectives in Medical Humanities* series.) This is a story about the evolving definition of medical professional, about qualifications, image, and character.

This essay examines the ancient myths that speak of the origins of the healing arts, and it discusses the role of medieval universities, Renaissance guilds, and modern hospitals in the making of a professional doctor. It also looks at the foundations of medical education, exams, and licensing laws in providing documentation of such status.

Medicine as a profession, referring specifically to the MD, is part of a universe of healthcare provision that is hierarchical. That is part of the professionalization story that is considered here. And while histories of the professions of nursing, pharmacy, dentistry, and others, are not examined here, the processes of exclusion and turf wars that carved out separate spaces for each is necessarily part of the story.

Establishing what constitutes *legitimate* qualifications and *accredited* knowledge for professional status has, throughout history, been controversial and aggressive. Creating an exclusive status for one person necessitates the subordination of someone else. The medical profession was built as much upon a desire to protect self-interests as it was to endorse a particular medical epistemology. This presentation is not meant to diminish the virtues of those who wish to heal others, but to point out an historical fact that medical professional identity carries with it centuries of baggage that we have to sort through today.

While it is ambitious to provide a history of a *profession* that covers two thousand years (in 50 pages!), it is not as ambitious as trying to provide a history of the practice of medicine. Medical knowledge itself has changed radically over the centuries. However, the process by which the professional identity of a Western medical practitioner is formed has changed relatively little over all that time. And if there is a lesson to be learned from this brief overview, it is that this lack of change in professionalization is a problem for us today. It is a problem because it shows us that the historic forces at work to assert and reinforce the exclusive identity of the legitimate professional are very strong, leading to less diversified and less accessible healthcare provision.

Fig. 4. Chryses persuading Apollo to send the Plague upon the Greeks. Attributed to Jacopo Alessandro Calvi (1740 - 1815)

# The Iconography of Healing

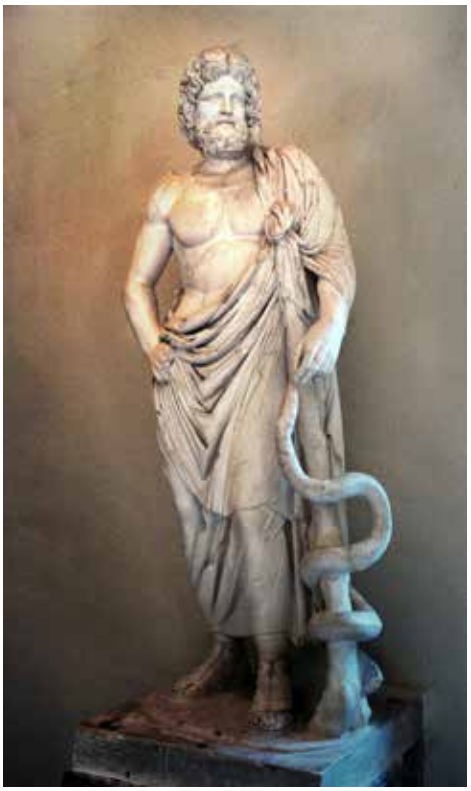


Fig. 5. Asclepius with his serpent-entwined staff. Archaeological Museum of Epidaurus

The act of caring for another life is innate. The act of rationalizing how it should be done is a culturally embedded performance derived from a long history of myths, beliefs, and observations. As with most origin stories, the further back we look for distinguishing characteristics of a medic, or healer, the more uncertainty we find over boundaries between spiritual beliefs, philosophical musings, and practical training.

Having expertise or authority in the practice of medicine is something acquired through a system of learning that is culturally specific and which developed over thousands of years into a specialized body of knowledge. In the earliest days when meditation about the cause of disease and remedies for illness were becoming processes distinct from spiritual or supernatural considerations, medicine, or the practice of a medic, was synonymous with what we might collectively call the healing arts. Consider the etymology of the term medicine, which finds its roots in *med* (meddix or medeor), referring to an act of contemplation or use of judgment. It's a root similarly found in words including meditation, mediate, medium, remedy, and medication. [2]

Over time as the craft became more specialized, new terms developed that became associated with other branches of healthcare, including nursing, pharmacy, social work, dentistry, and medical technicians, as well as the plethora of sub-specialties within medicine. To use the term "medical" today in the context of broader healthcare practices is often seen to reinforce a healthcare hierarchy, a structure in which medicine is seen as superior to other areas of healthcare work. Yet this was a notion that didn't exist when the term medicine was first used thousands of years ago. Then, and occasionally in this essay, it is employed to describe a more general way of thinking or acting for the care of another that was distinguished from acts of prayer or magic.

In the canon of ancient writings before the common era (BCE), we find references to illnesses alongside musings of their supernatural causes. The gods in Greek mythology, as written about by Homer in the *Iliad*, are responsible for both causing and curing disease (*dis*-ease, an altered physical or emotional condition). For example, an angry Apollo shot arrows into an advancing army that caused plague.

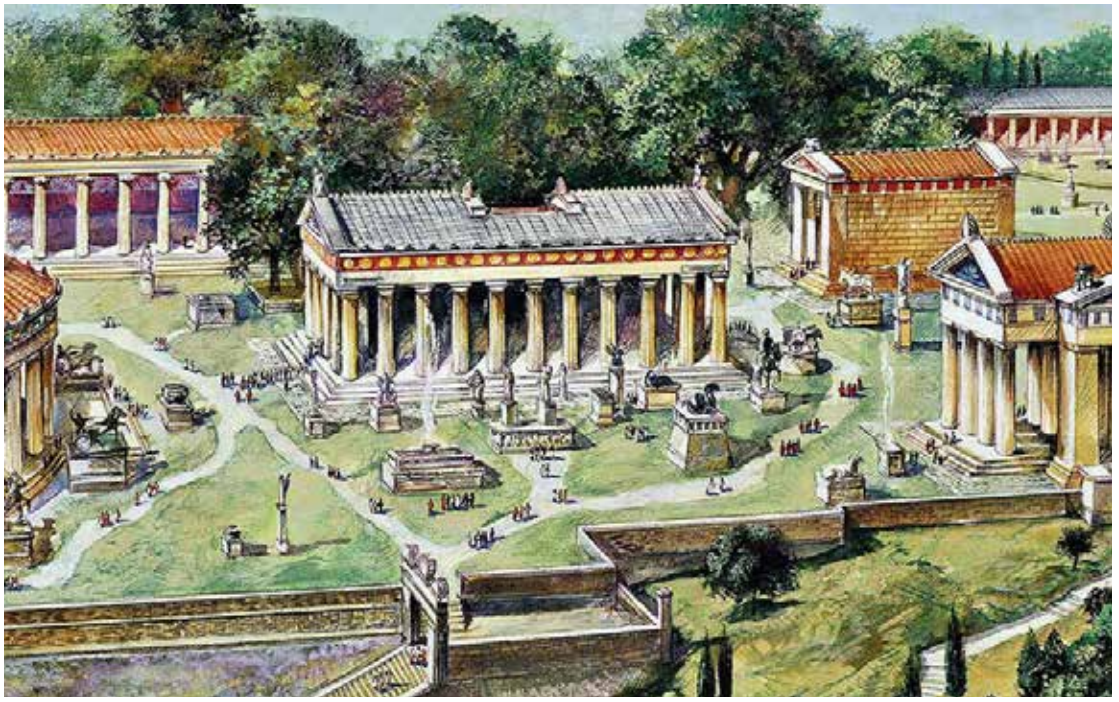


Fig. 6. Asclepieion at Epidaurus, ancient healing sanctuary featuring the Temple of Asclepius in the center

[3] [Fig. 4] Meanwhile, the son of Apollo, Asclepius, was able to heal the ill as they slept, entering convalescents through their dreams. In a valley in the Peloponnesus region of Greece, a famous temple was built in the fourth century BCE, the Asclepeion of Epidaurus, as a sanctuary for recovery. [4] [Fig. 6] Depictions of Asclepius showed him with a staff – a walking stick that offers support for the uneasy – with a single snake coiled around it. [Fig. 5] In Egyptian and Greek mythologies, the serpent is ubiquitous, its ability to shed its skin representing rejuvenation. The staff with entwined snake, known as the Rod of Asclepius, therefore became emblematic of the powers of healing.

In 1910, the American Medical Association decided to use the Rod of Asclepius as its professional symbol, as did the Royal Army Medical Corps in the U.K., and the French Military Service. By referencing such ancient roots associated with divine powers, the medical profession thereby embraced as its mascot the snake wrapped around a walking stick.

Interestingly, another similar looking piece of iconography has also become associated with the health professions, though it seems likely that this emerged from historical ignorance.

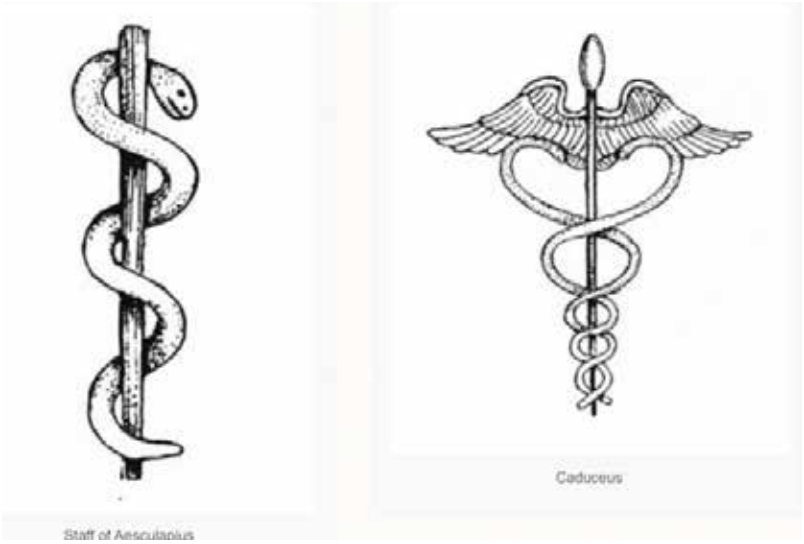



Fig. 7. (far left) Rod of Asclapius, the single snake wrapped around the staff, associated with healing and medicine
Fig. 8. (right) Caduceus, a staff entwined by two serpents, and surmounted by wings, representing Hermes, the messenger of the Olympian Gods, associated with commercial dealings until misappropriated by healthcare organizations in the early 1900s



Figs. 9, 10, 11. Hygiea (left) Greek goddess of healing; Panacea (middle) Greek goddess of remedies; Hippocrates (right), Greek physician (ca. 460-370 BCE)

The ancient god in Greek and Roman mythology Hermes, also known as Mercury, was considered the prince of knaves and thieves, invoked by merchants as a symbol of cunning and shrewdness in commercial dealings. Encountering copulating snakes which Hermes separated with his staff, he found that the two snakes became entwined around his stick. [5] Hermes was also a herald or messenger of the Olympian gods, adorned with wings, and the image of two snakes wrapped around a staff that is crowned with wings is called a *caduceus*, which throughout history has appeared embossed on coins. [Figs. 7 and 8] For reasons presently unknown, the US Army Medical Corps adopted the winged caduceus as its emblem in 1902, contributing to enduring confusion as to what relevance it has to the health professions. For over a century the caduceus has repeatedly been used as a generic emblem of healthcare in academic publishing and advertising. [6]

In 2016 a study was conducted counting the use of the Rod of Asclepius versus the caduceus in the branding of 482 health professional schools and it found that over 30% used the caduceus, though the use of the Asclepian rod was more prevalent among medical schools, suggesting "an educational opportunity for the medical profession to define for itself and the public the correct symbol of an interdisciplinary mission of healing." [7] This observation draws our attention to the relevance of ancient emblems to the creation of professional identity.

Specialized groups distinguish themselves using imagery, vocabulary, and particular sources of knowledge. In terms of cultural history, the "medical self-image" has been studied as a construction drawing on all forms of historical reference. The myth of Asclepius itself is thought to reinforce, if even subconsciously, the notion that there is something godly about healers, a facet of professional self-perception among Western doctors that might foster unrealistic expectations of their duties given the challenges inherent in healthcare. [8]

Ancient mythology created not just an image adopted in medical self-fashioning but a story of healing traditions, of heritage. Asclepius had two daughters: Hygeia, the goddess of cleanliness and sanitation, and Panacea, the goddess of healing and curing. [Figs. 9 and 10] It was to these deities that physicians historically pledged their ethical conduct in the Hippocratic Oath. [Fig. 11]

# The Textual Tradition


Fig. 12. Monument to Charaka at the University of Patanjali, India. Charaka was an editor of *Charaka Samhita*, a foundational text on Ayurveda

Hippocrates, a physician from the Greek island of Kos who lived in the fourth century BCE, was an actual person but whose reputation has grown to mythical proportions. In the Western medical tradition, he is known as the "Father of Medicine," famous for the Oath in addition to what historians refer to as the "Hippocratic Corpus." An author of a number of works on the healing arts that included theories of disease and their treatment, it is not known precisely what he authored as opposed to what was written by his students or disciples. Besides elaborating fundamental concepts that were to dominate medical thinking for millennia, such as the four humors of the body (black bile, yellow bile, blood, and phlegm) that mediated health when "balanced" within an individual, the Hippocratic Corpus is significant for eschewing magic or divine intervention as an explanation of cures. As one historian put it: "Here for the first time in the history of medicine is displayed an entirely rational outlook towards disease, whose causes and symptoms are now accounted for in purely natural terms." [9] [Fig. 11]

This notion of rationality or knowledge built on empirical observation, more akin to the log-ic of science than religious dogma or supernatural insinuations, is what began to distinguish the healing arts from the powers of shamans or mystics. And as a rational enterprise, the early literature began to establish tenets of training and ways of preparing remedies for illnesses, like recipes, that informed the activities of the medical practitioner. While Hippocrates has dominated the historical mentality in the Western hemisphere, similar appeals to rational inquiry also emerged in Asian, Arabic, and Indian writings. In early Sanskrit, a Hindu physician named Charaka was presented as a great teacher who wrote commentaries on the Ayurveda (estimates date it between 100 BCE and 200 CE) where he recommends that prospective students find a teacher "whose precepts are sound, whose

practical skill is widely approved, who is clever, dexterous, upright, and blameless: one who knows also how to use his hands, has the requisite instruments and all his senses about him ….” [10] [Fig. 12]

Historians have also traced the exchange of information by travelers between Asia, South Asia, and the Middle East, carrying seeds, herbs, and texts which were translated between Chinese, Arabic, and Hindi (and later into Latin). Referring to institutions established in Asia in the early medieval period (circa 1000-1300 CE), the Pakistani scholar of Eastern medicines, Hakim Mohammed Said, wrote that in China the flow of information was such that at one point the “system of healing was purely Arabian and the drugs used in the treatment of the sick were herbs or their compound preparations prescribed by Avicenna in his ‘Ash-shifa.’” [11] [Fig. 13] The reference is to *Kitāb al-Shifā’* (*The Book of Healing*), by Ibn Sina, also known as Avicenna, which is an encyclopedic philosophical treatise that was finished circa 1020 CE. However, as that work deals more with metaphysical matters than medicine, it is more likely to be relevant that Avicenna discusses drugs in his *Canon of Medicine* (finished ca. 1025 CE). [Fig. 14] However, both works are among the most influential Islamic texts, and Avicenna’s commentaries on the Hippocratic Corpus had a profound effect on asserting the importance of empirical reasoning in medical practice rather than deductions from universal principles. His works,

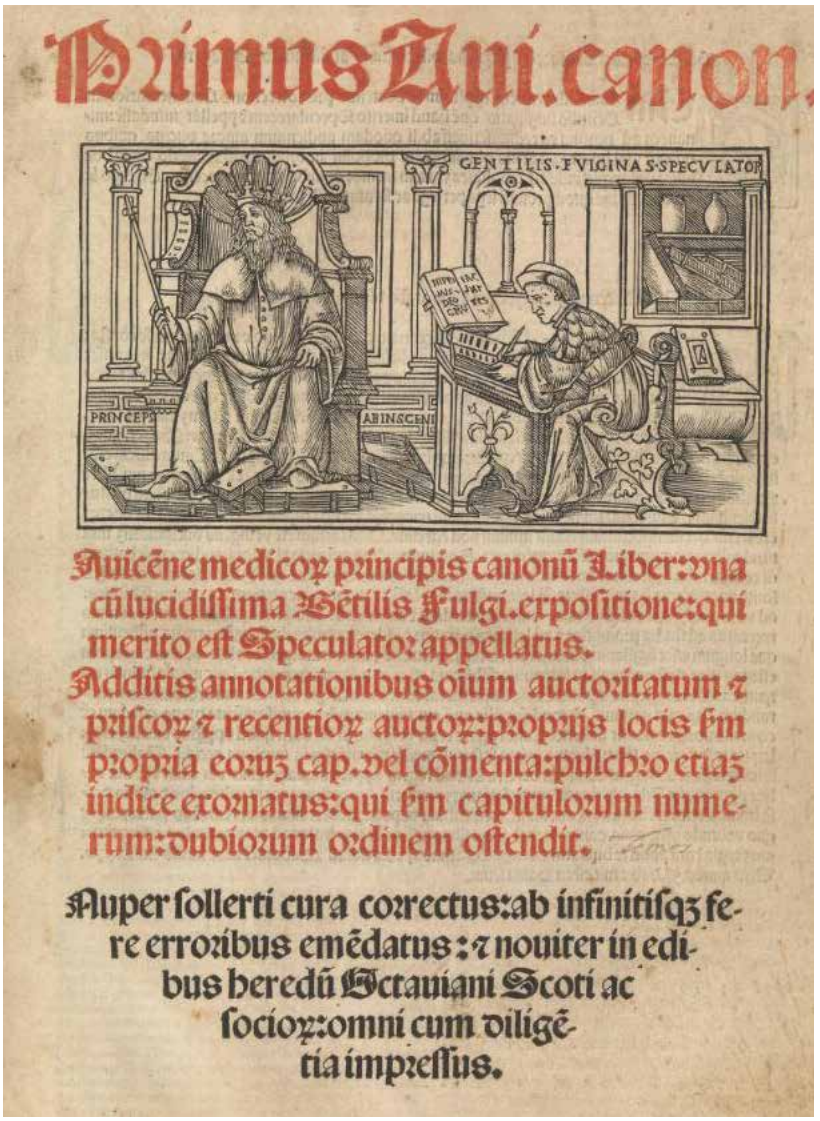



Fig. 13. A title page with woodcut illustration from a Latin translation of Avicenna’s Canon of Medicine (completed 1025 CE), published in Venice in 1520

repeatedly translated and dispersed across Europe and the East, were to dominate medico-philosophical thought for hundreds of years. [12]

The claim here is not that medical practice was made homogenous through travel and translations. Indeed, histories of medicine that delve into regions of the world demonstrate how different cultural contexts work to frame medical theory or the healing arts according to varied belief systems. What is salient for our point is how the act of writing about ailments and their cures, based on local knowledge of *materia medica* (medicinal concoctions

Fig. 14. Persian manuscript copy of Avicenna's *Canon of Medicine* in the Museum at BuAli Sina (Avicenna) Mausoleum, Hamedan, Iran

based on local botanicals or minerals) provides a foundation for cross-cultural articulations of medical knowledge that are *similar* in how they systematically investigate nature's healing powers rather than supernatural forces. [Fig. 15] The emphasis placed on cultivating plants, and on developing observational skill and manual dexterity, underscore how the healing arts were developing along lines of physical training and apprenticeship. Indeed, it is the existence of these texts, produced and reproduced through translations across the globe, that provided the foundation of instruction in medicine that was institutionalized in medieval universities.

Fig. 15. *De Materia Medica*, a painting of Dioscorides' book of herbs, Arabic manuscript copy of the Greek text, ca. 1229

Fig. 16. *Christ Among the Doctors in the Temple* (ca. 1560), Paolo Veronese (1528-1588), depicting (as with Fig. 17) a 12-year-old Christ in Jerusalem demonstrating his theological superiority when arguing with learned physicians and scribes, pointing to divine wisdom above

# The First Medical Schools

The early emphasis placed on manual and observational skills underlying the healing craft is an important distinction from the influence of religion in the medieval world of learning. In fact, throughout the twelfth and thirteenth centuries, the Church in Christendom produced numerous edicts against the ecclesiastical practice of surgery or the study of anatomy citing an abhorrence of blood shedding and the offensive act of dissecting human bodies. [13] This fortified the separation between the spiritual pursuits of the clergy and the secular pursuits of the laity who practiced medicine, even though the healing arts also have their origins as a vocation, a calling from God to service humanity. Thus, while theology may not have been part of the formal education of a physician, it had direct significance on forming the concept of belonging to a profession. And while the tenets governing emerging medical practice were distinct from theological scriptures addressing humanity's wellbeing, this disciplinary divergence does not mean that physicians rejected the idea that ministering to the sick was inherently an act of Christian charity. Like the priest, the physician can claim to be an agent of God's will but who has learned to work in specific ways to retore an ill body to health. In the words of the sixteenth-century physician Ambroise Paré, "I dressed his wounds. God healed him." [14]

In terms of defining a *professional* – an identity as an expert defined by demonstrable knowledge and skills, those warranted to *profess* their knowledge – the medieval university played a pivotal role in professionalizing medicine. And within the university, the preexisting educational programs such as theology and law helped offer legitimacy to a course of study that was based on the investigation of nature and the rationalization of disease. Medicine was not a discipline that was embraced because it had a unique view of causation of disease or theories of cures, but because its different views

Fig. 17. *Christ Among the Scribes (*1630), from the studio of Jusepe de Ribera (1591-1652), depicting Christ pointing to divine wisdom above while scholars search for knowledge in books below

were articulated as interpretations of ancient wisdom (such as Hippocrates and Galen) and rooted in religious mythology (Asclepian power). In other words, specialized training in medicine was allowed space in the emerging world of "liberal arts" of university education (where *artes liberales* meant freedom of inquiry) because its authority was recognized as being derived from ancient beliefs about moral purpose and an underlying order governing the universe.

The first medical schools were founded as, or appeared as part of, the few universities that existed around the eleventh and twelfth centuries. The term *university* is a shortened reference to a university of faculty, a phrase referring to an organized collection (universe) of scholars who oversee the education of others. In medicine, as in law, the faculty present a canon of literature for study, perform examinations to test the students' knowledge of it, and control the right to award degrees that acknowledge the attainment of professional qualifications. Such control over reproducing knowledge through education is an essential step to what sociologists have called the "professionalization process," whereby a new profession is formed when a body of specialized knowledge (theories, vocabulary, etc.) is developed by a group of adepts who come together to provide peer-review. [15]

Among the first places to institutionalize scholarly, book-based medical education was Salerno, in southern Italy. In the ninth century the *Schola Medica Salernitana* was established, and medical education was advanced by a faculty of physicians from then until the twelfth century, when the city was sacked by the forces of Henry VI, Holy Roman Emperor. [16] [Fig. 18] Not only did the faculty teach the craft of healing (medici) but they declared themselves experts in natural philosophy (*physici* or *physick*, from the Greek term meaning natural and from where we derive the word physician). Natural philosophy included the study of chemical elements and forces like magnetism, areas considered to have potential healing properties. [17]

One of the most famous physicians to teach at Salerno and shape the curriculum was Constantinus Africanus ("Constantine the African") who traveled throughout south Asia, the Middle East, and northern Africa, collecting medical treatises. [Fig. 20] Constantine prepared an adaptation of a voluminous Arabic medical encyclopedia by

Fig. 18. (left) *Schola Medica Salernitana*, the first medical school in the West, in Salerno, Italy. Fig. 19 (right) Bloodletting at *Scuola Medica Salernitana*. Miniature paintings from the pages of *Canon of Medicine* of Avicenna. Fig. 20 (below, right)

Fig. 20. Constantinus Africanus, eleventh-century physician and traveler, who translated into Latin numerous books of Arabic medicine which were used as textbooks in universities from the middle ages until the seventeenth century. Image from the fourteenth century (artist unknown) depicts him making a diagnosis by examining urine.

'Ali ibn al' Abbas al Majûsi (known in the West as Haly Abbas), translated an Arabic text by Hunayn ibn Ishâq (known as Johannitius), and prepared translations of the *Aphorisms* of Hippocrates from Arabic into Latin as well as Galen's *Ars Medica* (*Art of Medicine*). These all served as the basis of medical instruction at Salerno. [18]

These texts are historically important not only because they represent the earliest formalized canon of literature for aspiring physicians but because graduates from Salerno would disseminate copies of the works throughout Europe, helping to establish a curriculum at other schools that would become famous in their own right for training doctors, such as in Bologna, Montpellier, Pad-ua, Paris, and Leyden. [19]

# The Anatomical Tradition

Fig. 21.William Cheselden giving an anatomical demonstration to six spectators in the anatomy-theatre of the Barber-Surgeons' Company, London. Oil painting, ca. 1730/1740

One particular area of medical education that was dramatically transformed by the sixteenth century was human dissection and anatomy. The writings of the "ancients" that had been translated and distributed throughout universities in the medieval period contained information about the structure of the human body that was not based on first-hand observation. The deeply rooted power of religion that we alluded to earlier protected the sanctity of the body as God's temple, and ecclesiastics who governed universities prohibited such violations as flaying corpses for a closer look inside.

But after the fall of Constantinople in 1453, Greek scholars who were resettling in Europe brought a slew of new medical manuscripts written in the original Greek. Upon examination, discrepancies were uncovered between descriptions written in these tracts and the subsequent translations into Arabic and Latin that were so heavily relied upon in medieval academies.

This raised a sensitive question regarding the responsibilities of a university: is it the job of the faculty to inspire veneration of ancient authorities, from whom medical educators had first gained their own authority as medical professionals, or is it their responsibility to question and correct information, thereby possibly *displacing* the authority of the ancient authors? As the stranglehold of the Church was loosened and more direct observations were made of, say, the structure of the heart or the number of organs in a human, the question of *what* and *how* to teach medicine was soon to determine the very credibility of medical knowledge. At stake here was nothing less than the integrity of the profession of medicine and the public perception of whether doctors knew what they were doing.

Fig. 22. Depiction of Mondino de Luzzi instructing the dissection of a cadaver, adapted from the frontispiece of his *Anathomia Corporis Humani* (ca. 1316). From the *Fasciculus Medicinae*, 1493 (Collezione Putti, Istituto Rizzoli, Bologna)

Salerno again plays a pivotal role here. In the thirteenth century, Frederick II, King of Sicily and Holy Roman Emperor, authorized an imperial code that included edicts for medical training and licensing. [20] A ruler driven by curiosity, who was referred to by contemporaries as *stupor mundi* (a wonder of the world), Frederick II himself had some medical education and determined that intimate knowledge of

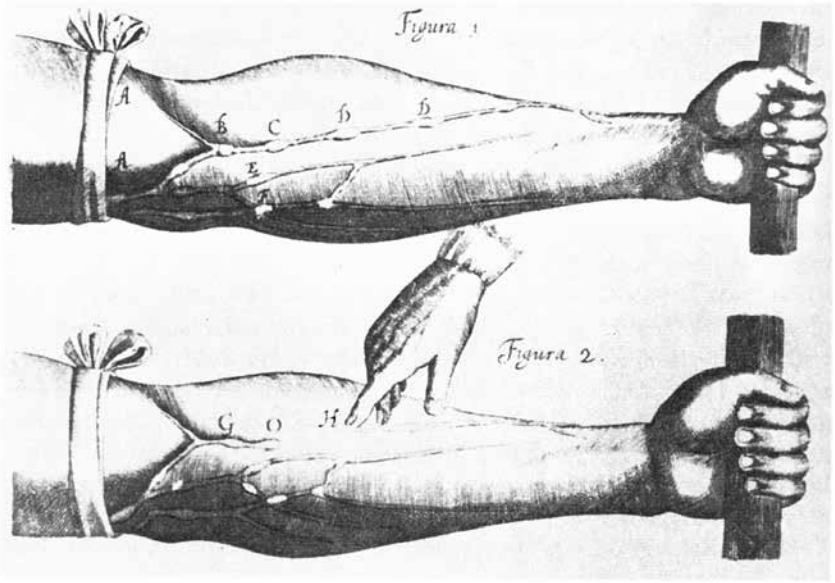



Fig. 23. Image from Harvey's *De Moto Cordis* (1628), showing that the blood circulated. When a vein was blocked with a tourniquet, it swelled up, the blood unable to escape back towards the heart

human anatomy was essential for future doctors. Therefore, he authorized the dissection of a cadaver every five years as part of required medical instruction. [21] [Fig. 21]

A half century later, human dissection was formalized at the University of Bologna, the result of which was the production in 1316 of a new treatise on anatomy, *Anathomia Corporis Humani* (*Anatomy of the Human Body*), by Mondino de Luzzi, known as the "Restorer of Anatomy" because of the detailed information derived from his dissections. [22] [Fig. 22] This watershed publication established the importance of learning from real bodies and not relying on ancient descriptions. It also set a precedent and guide for anatomical studies at schools elsewhere. [23] At Montpellier, dissections (performed on condemned criminals) were permitted every two years beginning in 1340, making it the first French school to engage in such activities. [24] By the early 1400s, dissection was also performed in the medical school at Padua. [25]

I briefly plot the introduction of dissection to medical education to locate an important shift in the professionalization of medicine. First, these new methods of hands-on training yielded new insights that became foundational to medical knowledge, opening a path for physiological studies. It was owing to his anatomical studies at Padua that the English physician William Harvey was able to write *Exercitatio Anatomica de Motu Cordis et Sanguinis in Animalibus* (*Anatomical Exercise on the Mo-tion of the Heart and Blood in Animals*, 1628), the magnificent treatise describing how

Fig. 24. Rembrandt's *Anatomy Lesson of Dr. Nicolaes Tulp* (1632)

blood circulates through the body. [Fig. 23]

But anatomy also became emblematic of the power of medicine, demonstrating mastery over a sacred form. The public was captivated: no other scholarly discipline had done anything as dramatic as expose the inner secrets of the human body. These new opportunities for anatomical instruction were famously portrayed by artists in paintings such as Rembrandt's *Anatomy Lesson of Dr. Nicolaes Tulp* (1632), capturing simultaneously the privilege of medical training, the ascendancy of secularization within universities, and the transformation of earthly existence shown through the remains of lacerated flesh. [26] [Fig. 24] Interestingly, this painting created a visual tradition of representing anatomical instruction that inspired generations of group photographs taken in dissecting rooms in the twentieth century, depicting a rite of passage to a new professional identity. [27]


Fig. 25. Frontispiece to Vesalius' *De humani corporis fabrica* (1543), showing the anatomist dissecting a female corpse in a crowded amphitheater

These inquiries helped to boost the authority of the profession of medicine. While students were typically supervised in private while performing dissection, some medical schools built anatomical theaters to accommodate a public gallery where bodies were dissected in front of an audience. [28] [Fig. 25] Not only did these events make the public aware of this rite of passage in medical training, but the spectacle of human dissection was a money maker for medical schools. As the historian Giovanna Ferrari pointed out, in the 1640s Bologna started hosting annual public anatomy demonstrations to coincide with the Carnival, where spectators would appear in the "magnificently decorated theater" wearing masks and would applaud in amazement at the unraveling of the human body. [29] [Fig. 26]

The underlying importance of these developments in anatomy, both in terms of the new visceral observations made by practitioners and the observations of their work by the public, was that it demonstrated that medical knowledge is not static; it is not fixed in words inscribed on a page that could be relied upon for hundreds of years. Indeed, these acts informed the mindset that was emerging in the sixteenth century that observation and experiment are necessary to fostering human improvement. It was this line of thinking that led to what historians call the Scientific Revolution. This set

the stage for a turn toward practical, hands-on training in medical education and the rise of experimental inquiry as a foundation for medical science.

The popularity of anatomical lectures also caught on and over the following century led to the propagation of public lectures across Europe. [30] As early as the 1730s in London, for example, advertisements for medical teaching were widespread in newspapers and bulletins.

What's interesting about these lectures is that they were offered by individuals, sometimes in association with a hospital, sometimes in a private parlor. Such instruction was unregulated, and the popularity of these lectures created an immensely competitive environment for entrepreneurial medical "training."

However, despite the popularity, the open marketplace for medical education and unenforced licensing requirements for medical practice created conditions that challenged the credibility of the medical profession. [31]

Fig. 26. An anatomical dissection by Pieter Pauw in the Leiden anatomy theatre. Engraving by Andries Stock after a drawing by Jacques de Gheyn II, 1615

# Licensing Medical Practice

Fig. 27. An ijazah (meaning "to make lawful," often translated as a certificate) given to Abdellah Ben Saleh Al Kouta at the University of al-Qarawiyyin in Fez in 1207 and said to be one of the oldest licenses known to exist for the practice of medicine

Even as celebrated as Salerno was for pioneering medical education, receiving a medical degree was not in itself enough to qualify for the practice of medicine. In 1140, the King of Sicily, Roger II, established laws requiring graduates to appear before the royal court with letters from doctors under whom they studied as testimonials "concerning his trustworthiness and sufficient knowledge." [32] The candidate was then examined in the presence of court officers. If successful, a license (sometimes called a warrant or certificate) to use the doctor degree was drawn up. This legislation has been considered a model for procedures that were subsequently imitated across Europe in an effort to uphold the integrity of medical practice. However, the idea of licensing was already introduced in Baghdad in the tenth century when the Abbasid caliph (Islamic ruler), al-Muqtadir (908-932) decreed that a certificate (ijazah) to practice medicine must be conferred by the caliph's chief physician following an examination. [33] [Fig. 27]

Over the next few hundred years, a license or warrant to practice medicine

Fig. 28. Thomas Linacre (1460-1524), English physician who studied medicine at Padua. Namesake of Linacre College, Oxford, and first president of the Royal College of Physicians

or surgery became part of Royal mandates that regulated the profession throughout most of Europe. Because they were based on examinations, they were considered a way of ensuring competency and protecting the common good. [34]

England instituted such measures a bit later. An Act of Parliament was passed in 1511 that called upon bishops to provide licenses conferring the right to practice in their respective dioceses, while those who practiced without a license would face hefty fines. While again this was meant to recognize competency and prevent harm to people by unqualified practitioners, questions emerged about who was to judge competency. A lack of peer oversight among those trained in medicine led to the proposal of an incorporated college of physicians (the word *corporation* derives from corpus, meaning *body*, and in this context refers to a collection of people bound together by laws governing professional conduct).

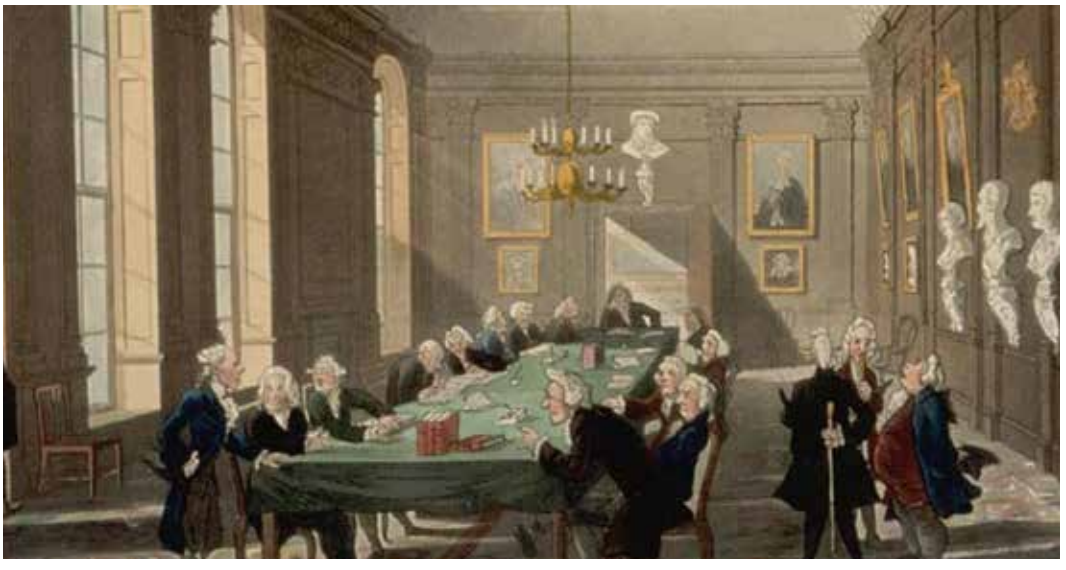


Fig. 29. Meeting at the Royal College of Physicians in the early 1800s, by Augustus Charles Pugin and Thomas Rowlandson

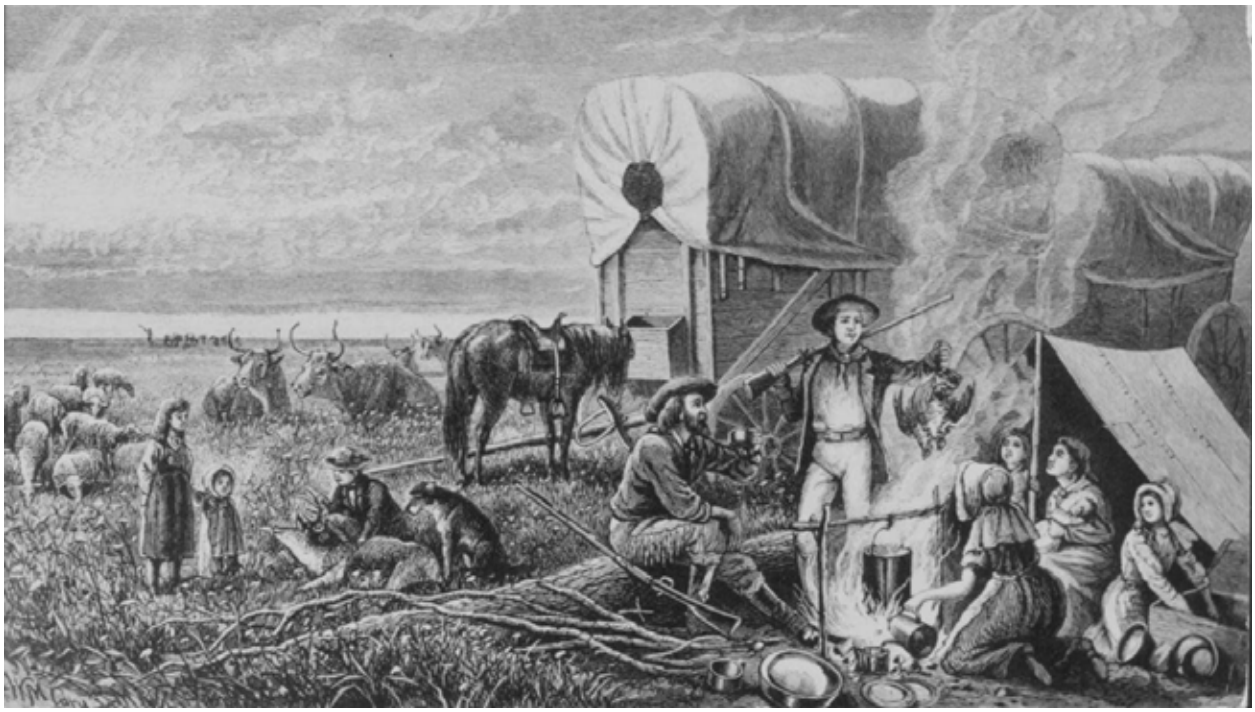


Fig. 30. Families of settlers resting as they migrate across the plains of the American Frontier

A leader of this effort was Thomas Linacre, a graduate from Oxford who then received his medical degree from the University of Padua and, after his return to England, was appointed Royal Physician to King Henry VIII. [35] Easily persuaded by Linacre that the state of medicine in England was "engros'd by illiterate monks and Empiricks" compared to places that excelled in education like Italy, Henry VIII granted a charter to a group of physicians to incorporate the Royal College of Physicians (RCP) in 1518, with Linacre as its first President. [36] [Figs. 28 and 29]

The RCP was the first medical society in England, and it held the authority to grant licenses to those its members deemed qualified, to punish offenders and malpractice, and to regulate and inspect the drugs prepared by apothecaries. Soon the RCP effectively removed control over medical practice from the church and universities, though interestingly it never played a direct role in the training of future physicians. (However, some of its presidents, such as Linacre and John Caius, did establish professorships and endowments to support medical studies at what became Linacre College at Oxford and Gonville and Caius College at Cambridge University.) [37]

In fact, until the mid-nineteenth century, none of the London corporations relating to health – the Royal College of Physicians, the Company (later the Royal College) of Surgeons (f. 1540), or the Worshipful Society of Apothecaries (f. 1617) – organized courses of instruction or required attendance at lectures for membership or for the receipt of a medical license. The RCP required its members and licensees to hold a medical degree, usually from Cambridge or Oxford, but both of those universities had only rudimentary medical programs at the time. The colleges often awarded degrees on the basis of a student having already received training elsewhere in Europe, such as Padua or Montpellier, just as Linacre had. It was not until the General Medical Council was founded upon the passage of the Medical Act in 1858 that a new benchmark of professionalism was established in England. Thus, even though professional societies were established in the sixteenth century and had the authority to regulate and supervise medical competency, the fulfilment of their objectives was slow coming, largely due to practical problems of enforcing their jurisdiction.

In Britain's North American colonies, the preexistence of these chartered professional organizations did little to establish a template for promoting competency in healthcare. The American medical environment was as

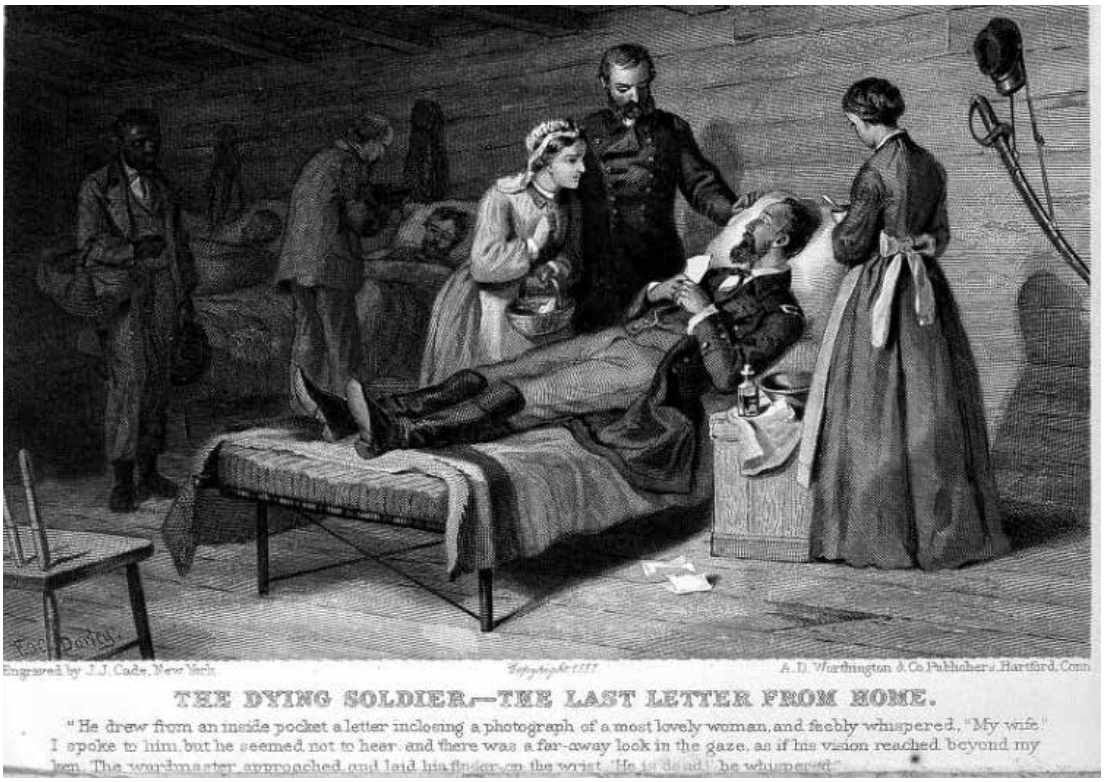



Fig. 31. Illustration from Mary Ashton Livermore, "My story of the war: a woman's narrative of four years personal experience as nurse in the Union army, and in relief work at home, in hospitals, camps, and at the front, during the war of the rebellion."

rugged as the frontier landscape. Very few people who called themselves practitioners, whether physicians, druggists, or surgeons, had formal education. A loosely defined period of apprenticeship was used to assert competency, with "ship's surgeons" being counted as the most skilled.

Historian Richard Shryock writes that, in the mid 1700s, "there were about 3,500 established practitioners in the colonies and that not more than 400 of them had received any formal training. Of the latter, only about half – or barely more than 5 percent of the total – held degrees." [38] The inability to raise professional standards was in part a matter of numbers: the colonies lacked a critical mass in any one place to incorporate a college.

The lack of leadership has been explained based on the lack of desire among educated elite physicians from London to emigrate to a land that lacked opportunities worthy of their prestige. And where there were no institutions to provide or enforce standards, there was freedom to roam at will, and this complemented the settler mentality. [Fig. 31]

It wasn't until the 1760s that an institutionalized approach to medical training began to form in colonial America. This in large part was owing to the efforts of those trained in Europe and inspired by new models of education who arrived in America with new ideas.

# A Revolution in Clinical Training

In the late eighteenth century, hospitals became important sites for the training in healthcare, creating a field of what was called "hospital medicine." In this period, hospitals were urban institutions, sweeping up the ills of an overgrown population, littered with accidents and diseases. Inherently different from universities that remained driven by book learning, hospitals were sources of practical instruction.

The idea of walking the hospital wards with groups of students for on-site observation of patient conditions was developed in places including Edinburgh and Vienna in the 1770s. The utility of this model was commented on by a contemporary, who noted that students were "let into the large wards which daily contain all species of disease... and by practicing at their own expense, they form a certain practical judgement and obtain a singular faculty of discernment, indispensable qualities for whoever wishes to practice medicine with success and which reading alone will never give." [39] [Fig. 32]

However, it was Paris that this model was most convincingly organized to make hospital medicine the core of instruction and the means of fashioning a professional. Paris had some thirty hospitals, treating twenty thousand patients who were used to teach students. While a necessary condition for the creation of a new way of training practitioners, it was

Fig. 32. The Middlesex Hospital: the interior of one of the female wards. Colored aquatint by J. C. Stadler, 1808, after A. C. Pugin and T. Rowlandson

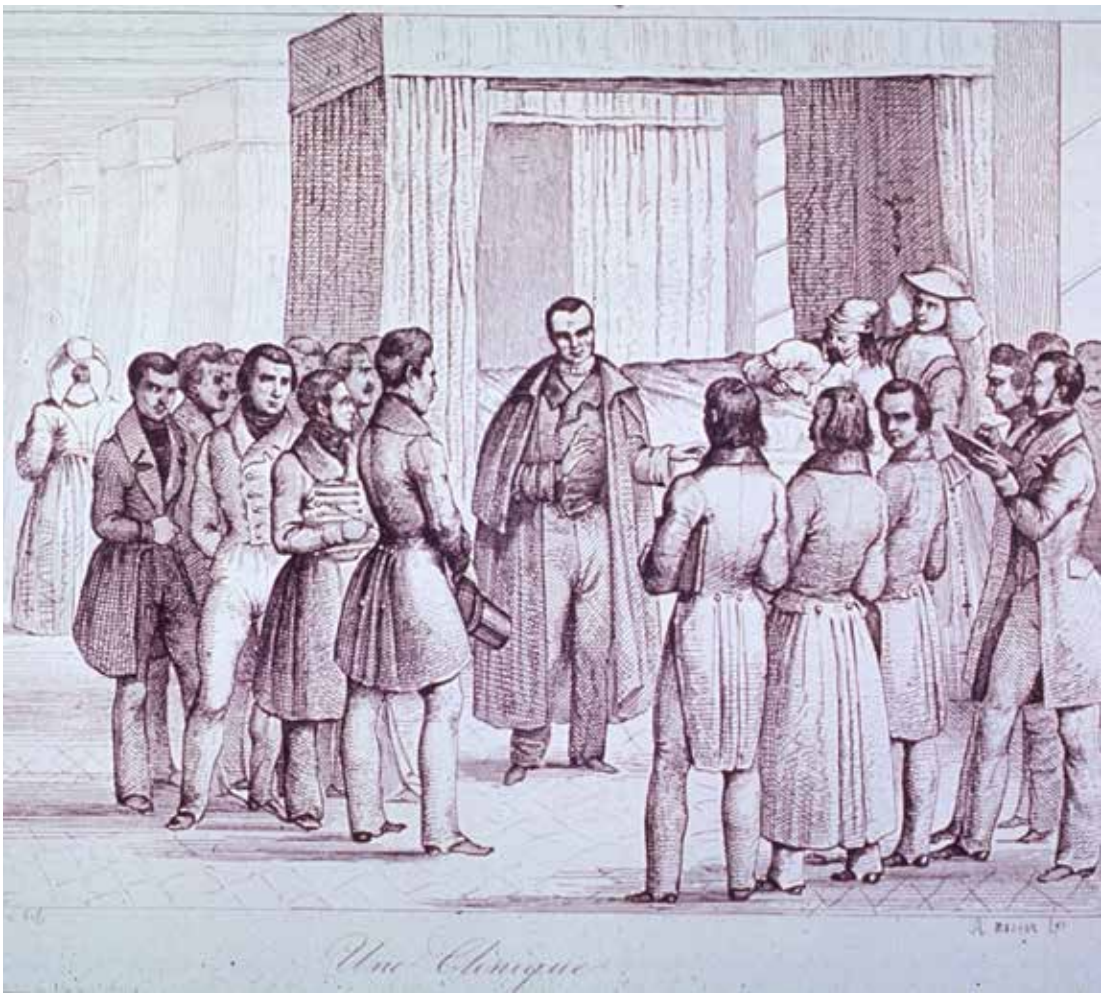



Fig. 33. *Une Clinique*, The Clinic, showing a doctor discussing a patient in a Paris hospital ward, 1830s. Etching by Alexandre Lacauchie

the social transformation driven by the French Revolution that had a profound effect on the organization of medicine and, consequently, the professionalization of it.

Between 1790 and 1794, all medical institutions that had been established under the *ancien régime* (the old order established by the Church and Crown) were reconfigured. This ended the clerical control over university education and the oversight of French hospitals. Heading into the nineteenth century, secular state administrators took responsibility for the structure and function of medical training. Specific aims and objectives were established for physicians, surgeons, pharmacists, nurses, and midwives. In 1795, three new schools, "faculties of medicine," were established in Paris, Montpellier, and Strasbourg. Equally important, the function of the hospital was reconceptualized from a place of rest to a center for scientific research. Hospitals were urban institutions, and the volume of patients seen in cities was the foundation of clinical science. To have the privilege of working in a hospital set one apart from practicing elsewhere, creating a healthcare hierarchy that resulted in professional differentiation. [40]

The bedside was now considered a site for training and not passive treatment. Physicians were taught to hone their physical exam skills to acquire "the clinical sense," the nuances of signs and symptoms that informed therapeutic options. [41] Simultaneously hospitals began to classify patients according to types of hospital service, such as trauma, childbirth, and psychiatric admissions.

As the French philosopher Michel Foucault suggested, these changes point to the "birth of the clinic," remembering that word *clinic* has Greek roots referring to bed (which also gives us *recline*) but has come to refer to a course of instruction on a particular

Fig. 34. Hôtel-Dieu, Paris, the oldest existing hospital in the world. It was largely rebuilt after a fire in 1772. As part of a hospital reform movement, its winged wards were designed to increase air flow, providing better conditions for the large volume of patients in the teaching hospital

subject (like a golf clinic). [Fig. 33]

So renown was the French system of clinical training that it created a medical education tourism industry. Paying handsomely to follow famous physicians on clinical rounds, to tour medical museums, and try their hand at surgical techniques on cadavers, one could acquire the "Parisian polish," in the words of an American traveler. [42] One result of such success was the rising cost of such medical training. What helped push costs up was that the medical faculties of Paris, Montpellier, and Strasbourg were given a state monopoly of the right to award degrees in medicine and surgery, ostensibly to protect status and avoid cutthroat competition. This in turn resulted in higher costs of healthcare services.

The problem with the monetization of medicine from its earliest manifestations in the marketplace was that practitioners stayed within urban areas to seek more opportunities and wealthier patients. In France, doctors saw no incentive in taking up rural practice where there was little hope of receiving a profitable return on their investment in costly medical education. To help address growing disparities in access to care, the post-Revolutionary French government established a less demanding and less expensive degree that led to the *officiat de santé* (health officers). [43] Yet even this solution to rural healthcare was subject to criticism from elitist physicians who claimed that such positions led to professional overcrowding and diminished the prestige to which the medical profession was entitled by virtue of (their) education and service. Historians have argued that public dissatisfaction with provincial care was driven more by lack of regulation of service than "overcrowding," but the consequence was such allegations was a reinforcement of inequitable access to healthcare.

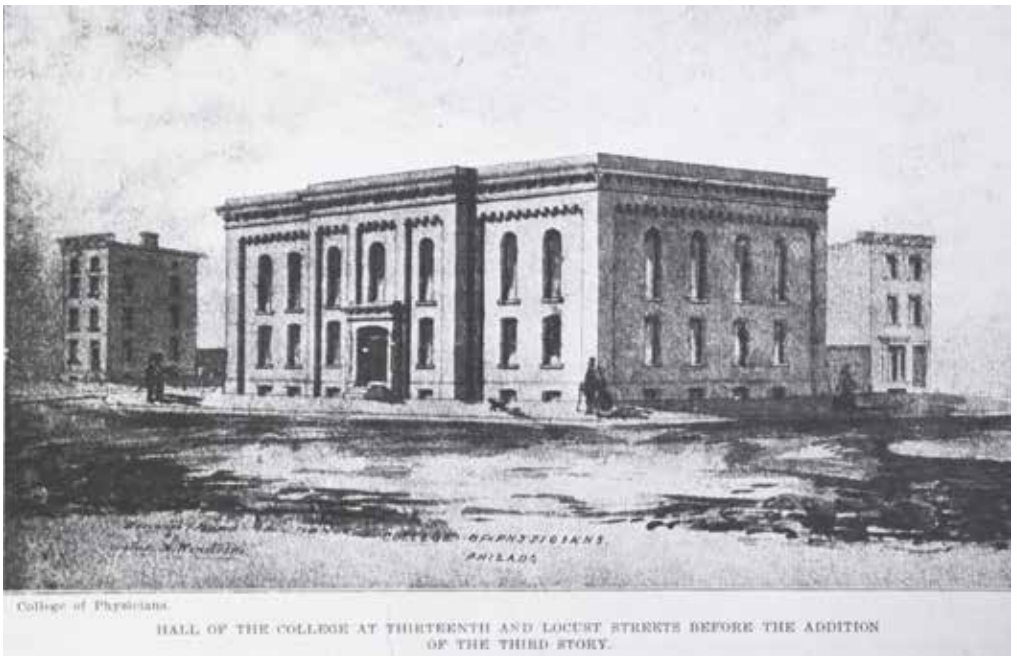



Fig. 35. College of Physicians of Philadelphia, the oldest private medical society in the United States (f. 1787)

# American Medical Education

Late eighteenth-century American medicine was more akin to the unregulated marketplace that we found in London a hundred years earlier. In contrast to the well-organized hospital programs in Paris, the available venues for clinical investigations were lacking. Medical training was highly variable, with no procedures in place to identify a qualified practitioner. One person who was determined to improve the system of medical education in the US was John Morgan.

Morgan was part of the first class to graduate from the College of Philadelphia in 1754 (which in 1791 was to become the University of Pennsylvania). As an undergraduate he took an interest in medicine and worked in the Pennsylvania Hospital as an apothecary. In 1760 he went to the University

Fig. 36. Surgeon's Hall, University of Pennsylvania, 1799, the site of medical lectures from 1765 - 1801

of Edinburgh where he received his medical degree in 1763 and spent the following year training on the wards at Paris hospitals. He gained many patrons in the medical community and by 1765 was elected as a member to the Royal Academy of Surgery in Paris, and the Royal College of Physicians in both Edinburgh and London. [44] [Fig. 35]

Upon returning to America in 1765 he partnered with his colleague and fellow Edinburgh graduate, William Shippen, Jr., to draw up plans for the establishment of a systematic course of medical studies at the College of Philadelphia. Shippen had returned to Philadelphia in 1762 and is credited for establishing the first series of lectures in anatomy to be offered in the colonies. [45] While in the United Kingdom, Morgan met Thomas Penn, son of William Penn, the founder of Province of Pennsylvania, who had inherited the position of Proprietor of Pennsylvania. Morgan had secured a letter endorsing his plan from Penn which he presented to the trustees of the College, who also noted "the Honors paid to him by different Learned Bodies & Societies in Europe." [46] Immediately persuaded of the benefits, Morgan was elected by the trustees of the College to the chair of "theory and practice of physic," the first medical professorship in the United States.

Within the next ten years, two other medical schools were founded, one at King's College (now Columbia University) (1768) and at Harvard (1783). The first "regular" (non-homeopathic) medical school exclusively for women was established in 1850

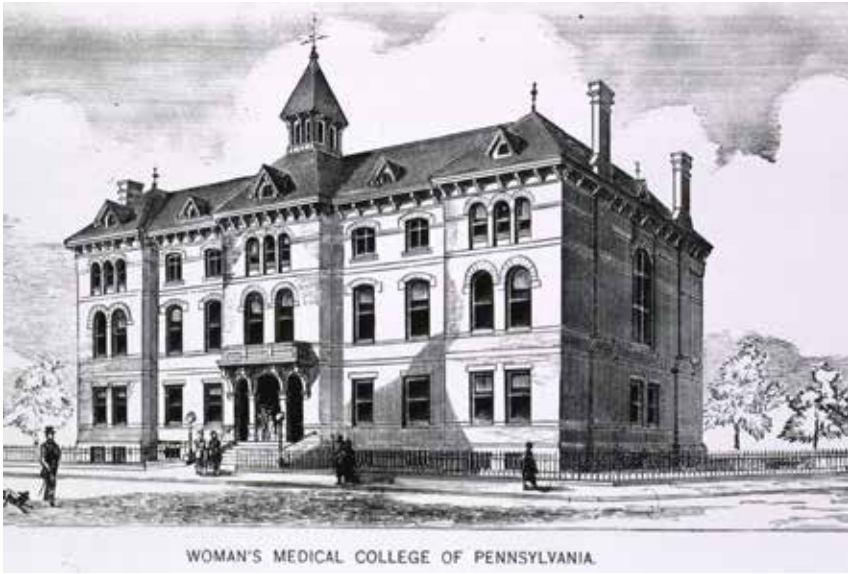



Fig. 37. Women's Medical College of Philadelphia (f. 1850), the first medical school exclusively for women

as the Women's Medical College of Pennsylvania. [47] [Fig. 37]

Throughout the nineteenth century in America, medical education could still be pursued in a variety of ways, either through private medical colleges, or at hospitals affiliated with universities, or even through apprenticeship with a local doctor. Medical colleges themselves varied widely in entrance requirements – some not requiring even a high school diploma as a prerequisite – subject matters taught, and length of study. [48]

Obtaining a medical degree was no problem if one had a bit of money, and the lack of laws (or even professional oversight) regulating the conferral of degrees led to the proliferation of "diploma shops." In many states, a proprietary medical school could be established under business laws with the right to sell medical degrees. Whatever it proclaimed to teach was irrelevant since there was no accreditation from a governing body that would enforce standards or have the content reflect the integrity of the degree.

In 1846, a meeting was held at the Medical Department of New York University that was attended by some eighty physicians from across the colonies to discuss the topic of medical education. This convention, chaired by Dr. Nathan Smith Davis, decided upon a plan for a "National Medical Association" that would establish standards of education for all medical schools, including general education prerequisites for admission, and which would develop a code of ethics be adopted by the medical profession. At a meeting one year later in Philadelphia, a constitution was established for the newly formed American Medical Association (AMA). In an article celebrating the centenary anniversary of the AMA, members of the

British Medical Association (which was founded fifteen years before the AMA, in 1832) applauded the AMA as being "a forthright opponent of quackery and has always attacked the purveyors of nostrums and secret remedies with a freedom and courage with which we may envy." [49]

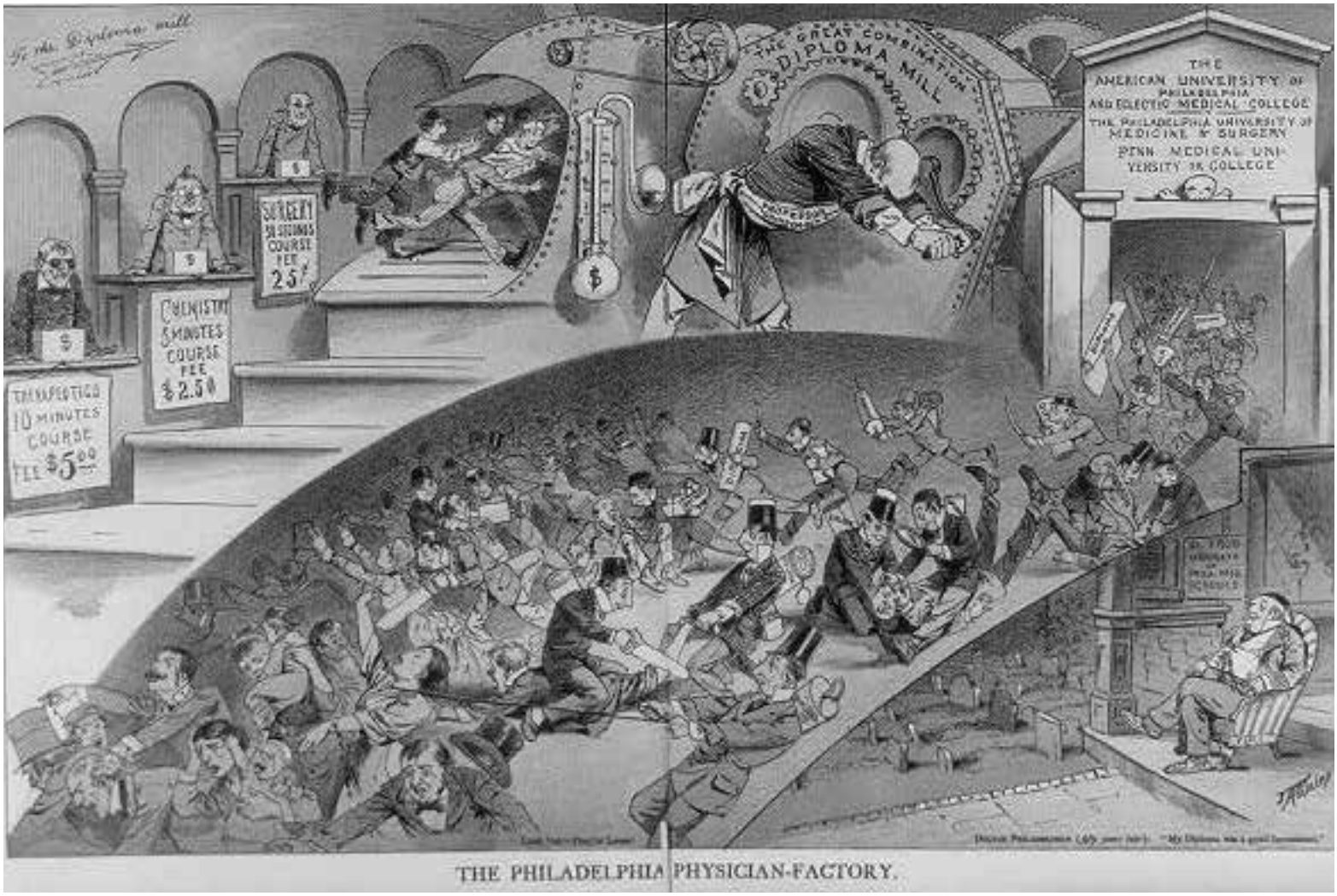
While controlling the proliferation of profit-seeking medical schools was an important goal, the founding of the AMA in 1847 was also an answer to a call by elite members of prominent local medical organizations for a coordinated effort to protect physicians' interests; in their words, to maintain "their honor and respectability" among pill peddlers and piss prophets who claimed to have miracle cures for all ailments. Banning together in a centralized organization allowed them to limit membership to whom they defined as legitimate practitioners, working toward a monopoly on medical practice that also worked to protect their own commercial interests. [50] Consolidating the strength of "regular" medicine also worked to derail the populist tide of homeopathy, which in early nineteenth-century America referred to the widespread appeal of preparing herbal remedies gathered from nature instead of proprietary chemical concoctions. [51] Another goal of the AMA was to provide oversight of national standards of medical care. While enforcing standards involved distinguishing between what was deemed "regular" from "irregular" healing practices, it also meant determining what a representative of proper medical care looked like.

If membership was to showcase professional identity, in pre-Civil War America that identity was distinctly white and male. As an assembly that was responsible for asserting the legitimacy of types of medical science, the Association was able to endorse works that articulated a "science of race" that asserted an inferiority of Blacks and women to discriminate against their membership. In the words of historian Douglas Haynes, the AMA's "organizational and discursive practices combined not only to secure the widest representation of states in the union, including the slave South, but also consolidated the social identity of medicine as white and male based on the subordination of blacks as well as women." [52]

One notorious example shows how racism defined professional boundaries in the AMA. At the annual meeting of the organization in 1870, a group of delegates from the National Medical Society—the only biracial medical society in the US at that time—were denied admission based on allegations of unprofessional conduct when members of the NMS challenged segregationist membership policies of another medical organization. [53] While some in the AMA leadership declared that the decision was unrelated to considerations of "race or color," historians have clearly documented that the Southern members of the AMA found the consideration of allowing Black physicians into the AMA an insult. [54] The event demonstrated not only the challenges to establishing racial equity in postbellum America, but long-rooted discriminatory practices in the medical profession.

Scrutiny of the ways professional boundaries were policed provides other examples of arbitrary or unfounded allegations of unprofessional conduct. In the 1870s, the Illinois state medical board was given legal authority to investigate and prosecute practitioners deemed to be unethical or fraudulent, resulting in a volume of complaints that quickly overwhelmed the resources it had to pursue inquiries. But when it did investigate, the board discovered that most complaints were unfounded, lodged by physicians against other physicians with the aim of clearing competition. [55] It is fair to say that the business of medicine in the nineteenth century was cutthroat, and that because of this, healthcare activities and the qualifications of practitioners needed regulation.

Returning to the problem of determining whether medical diplomas were any guarantee of competency, it was at the discretion of state licensing boards to accept diplomas as a qualification for a license to practice. In 1877, for example, Illinois passed a medical licensing law which created the Illinois Board of Health, responsible for regulating physicians and midwives, creating and implementing sanitary regulations, and enforcing public quarantine. This board was comprised of a mixture of regular, homeopathic, and eclectic physicians, unlike California, which established separate boards for each of the sects. A revision to the law in 1887, however, began to provide closer scrutiny to other areas of practice that laid claim



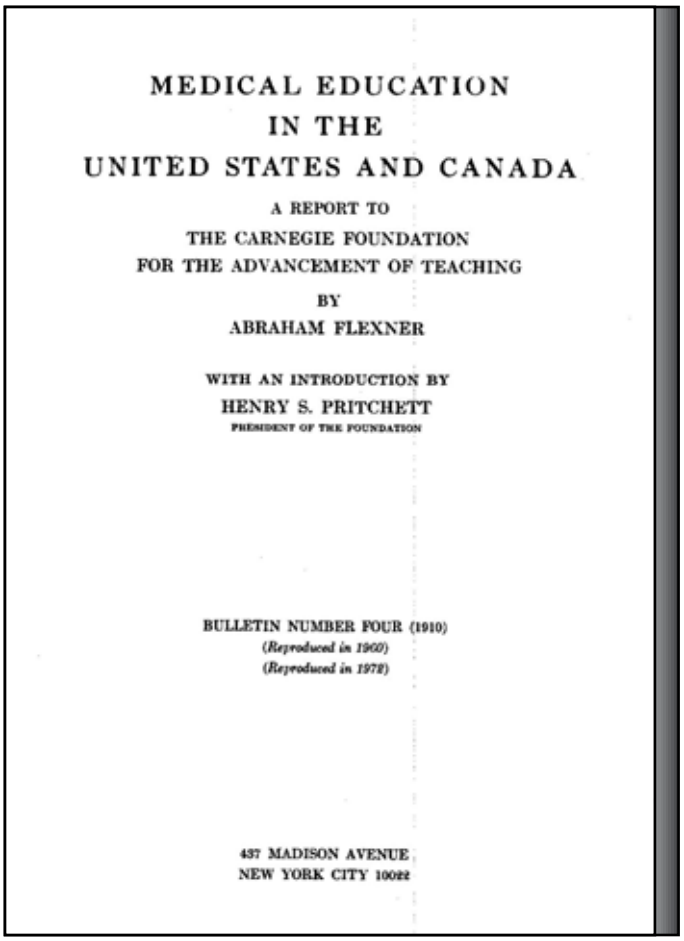
THE PHILADELPHIA PHYSICIAN-FACTORY.

to healthcare, including opticians, clairvoyants, Christian Scientists, and osteopaths.

The medical board decided that it would not accept a school's medical diplomas if the institution was known to sell diplomas without providing instruction. In the 1880s the board identified around 30 diploma mills. At that time, the state had approximately 7400 physicians, and only about half were graduates from medical schools deemed to be in good standing, resulting in 2000 "doctors" fleeing the state to avoid prosecution.

In 1877, a convention of representatives from 26 medical colleges that were (in their words) "recognized as 'regular'" by the organizers established the American Medical College Association, which in 1890 was renamed the Association of American Medical Colleges (AAMC) and immediately acquired a membership of approximately 70 medical colleges. The aim of the Association was to establish a common policy among the schools regarding length of medical study, subjects of instruction, and examination requirements. In 1900, the AAMC passed a resolution requiring all matriculants to "possess a diploma from a high school, academy, normal school or college, giving a thorough preliminary education …." [56]

In 1908, the president of the AAMC recognized an announcement by the American Medical Association (AMA) to "weed out" medical schools "that cannot justify their existence." [57] To this end the AMA's Council on Medical Education partnered with the Carnegie Foundation for the Advancement of Teaching to conduct a survey of medical education with reforms in mind that would lead to the proposed elimination of schools the AMA felt did not meet its standards. The person chosen to lead the study was the educational philosopher and employee of the Carnegie Foundation, Abraham Flexner.



MEDICAL EDUCATION
IN THE
UNITED STATES AND CANADA

A REPORT TO
THE CARNEGIE FOUNDATION
FOR THE ADVANCEMENT OF TEACHING

BY
ABRAHAM FLEXNER

WITH AN INTRODUCTION BY
HENRY S. PRITCHETT
PRESIDENT OF THE FOUNDATION

BULLETIN NUMBER FOUR (1910)
(Reproduced in 1960)
(Reproduced in 1972)

437 MADISON AVENUE
NEW YORK CITY 10022

Fig. 38. "Flexner Report," Abraham Flexner's Assessment of the State of Medical Education, 1910

Flexner assessed all 155 medical schools across the nation and in 1910 described the "wretched" conditions he found in most of them in what is commonly called the "Flexner report." [58] [Fig. 38] His recommendations to improve medical education involved lengthening the course of study and improving the curriculum, raising admission standards, providing laboratory facilities for scientific training, and requiring rigorous licensing exams.

The question of "admissions standards" and "rigor" of the curriculum may seem objective, but legacies of discrimination underpinned exclusionary policies for medical education. In the 1850s the establishment of women's medical colleges in places such as Philadelphia, Boston, and New York began to overtly challenge patriarchal control over access to education, but the male-dominated state professional societies in turn refused to recognize female graduates. Since some of these medical schools were associated with homeopathy, which was a field being marginalized in the medical marketplace, sexism among professional societies simultaneously cast women and certain "sects" as unorthodox. [59]

The AAMC's requirement that a high school diploma be a necessary prerequisite posed a challenge for the schools to meet, and as a result of increasing pressure to implement stricter admissions criteria, enrolment numbers began to decline nationally. After the Flexner report of 1910, schools that required at least one year of college-level premedical education saw a drop in enrolment of one-third on average. [60] For historically Black medical colleges, these trends toward increased admissions requirements placed particular stress on the recruitment of students, with only three percent of Black youths attending high school in the south around the turn of the century. [Fig. 43]

# Professional Barriers: Overcoming Exclusionary Practices

In 1849, Elizabeth Blackwell became the first woman to receive a medical degree in the United States. After applying to dozens of medical schools for admission, only one accepted her. Geneva Medical College in upstate New York had asked all of its male medical students to vote on whether she should be offered admission. The "rude, boisterous, and riotous" students (in the words of their classmate) took it as a joke and voted yes. The dean of the college then wrote to Blackwell saying that she would be welcome to the school, to "elevate yourself without detracting in the least from the dignity of the profession." [61] She attended, and two years later she graduated and opened a medical practice in New York City. [Fig. 39]

In 1864, Rebecca Lee Crumpler became the first Black woman to receive a medical degree in the United States, graduating from New England Female Medical College which had admitted its first class of students, twelve women, in 1850. Her preparation for medical training was working as a nurse in the 1850s (receiving on-the-job training since this was before the first nurse training program was established in the 1870s). Upon graduation, she started a practice in Boston. [Fig. 40]

While enormous historical attention has been given to the White women who followed the pioneering achievement of Dr. Blackwell into medical careers, little attention has been given to the efforts of Black women who followed Dr. Crumpler's achievement.

However, as Meg Vigil-Fowler discusses, in the period up to WWII, an additional 130 Black women

Fig. 39. (top, left) Dr. Elizabeth Blackwell, the first woman to receive a medical degree in the United States (1849)
Fig. 40. (top, right) Dr. Rebecca Lee Crumpler, first Black woman to receive a medical degree in the United States (1864)


Fig. 41. The Medical Committee for Civil Rights (MCCR) was founded in 1963 by Dr. Walter Lear to address racism in the American Medical Association (AMA)

became doctors in America. Most of the women graduated from either the Women's Medical College of Pennsylvania, Howard University College of Medicine, or Meharry Medical College. Without these colleges that provided educational opportunities to women and African Americans, and without the determined efforts of the first students to "storm the citadel," the medical profession would have remained exclusively white and male. The shaping of the medical profession in this way had little, if anything, to do with competency in medical knowledge. As late as 1945, 26 of the 78 accredited medical schools in the US barred admission to Black students, including all schools in the South. [62]

In nineteenth-century America, as Flexner was acutely aware, educational prerequisites for entering medical school were nearly non-existent. A high school diploma was recommended, and some undergraduate college courses were favorable. Depending on family circumstances, either private tutelage or a vocational training or apprenticeship was considered adequate preparation. For a profession working on an image for itself as excelling in a domain of technical knowledge, the lack of educational standards was striking. Yet, universities that provided medical training for women or African Americans were subject to particular critique for being under-resourced and accused of being incapable of meeting the rigors of scientific education.

While these separatist schools (WMCP for women, Black and White, and the others for African American students) provided unique opportunities for medical training, adapting to post-graduate professional life was more challenging. After the Flexner report in 1910, the push for additional training in clinical internships as a precursor to state licensing exams created another level of access that was difficult to attain for these aspiring

doctors, ultimately leading to a decline in the number of practicing Black physicians, men and women. The professionalization process was laden with discriminatory practices, creating obstacles for women and people of color to receive accredited education, to becoming licensed, and to participate in professional societies.

To be sure, many professional organizations refused membership to women and African Americans. During the national meeting of the American Medical Association in 1868, the leadership raised the question of whether women physicians should be admitted as members of the organization. The matter was considered by the Ethics Committee who stated the view that sex was no grounds for refusing admission and therefore membership should be extended. One of the Society's founding members and recent past president, Nathan Smith Davis, had a different view, declaring that membership decisions relating to "sex or color" should be left to local chapters and that anyone denied admission "should not claim the legislative power of this Association to pass *ex post facto* laws for their especial benefit." [63] The position of the ethics committee was tabled.

However, the national meeting of the AMA the following year became notorious when an integrated delegation of physicians from Howard University and the Freedmen's Hospital were refused seats to attend. All licensed physicians, they were representatives from the Washington, D.C.-based National Medical Society, founded in 1868 as an alternative to the all-white Medical Society of the District of Columbia. The actions of the AMA made explicit their policy of discrimination and made it clear that, for the majority of voting delegates who denied their colleagues admission, the identity of a medical professional was White, and preferably male (though women were admitted to the AMA meetings).

Black physicians were repeatedly denied membership in state, county, and municipal medical societies throughout the American South and in many of the border states. As historian Robert Baker writes, "Exclusion from these medical societies meant more than just professional isolation; it also restricted access to training and limited professional and business contacts." [64] For the next century


Fig. 42. Dr. Ernest Mae McCarroll: first Black physician to be appointed to the staff at Newark City Hospital (1946); became Deputy Health Officer of Newark (1953); in 1963 she became the first woman to be pictured on the cover of the Journal of the National Medical Association, the professional organization established by African American physicians as an alternative to the AMA

the AMA eschewed responsibility for setting policy on membership decisions, however prejudicial they may be, until Civil Rights legislation outlawed race and gender-based discrimination. [Fig. 41]

Many of those who overcame discriminatory practices subsequently created professional and clinical spaces for themselves. American hospitals in the nineteenth century offered little opportunity for Black health professionals to work or were segregated to inferior wards. In the 1890s this gave rise to the "Black Hospital Movement," with physicians such as Daniel Hale Williams and Nathan Mossell establishing Black-administered hospitals in Chicago and Philadelphia, respectively, as a protest against American racism. This grew by the 1920s to a movement with proponents including Booker T. Washington and the Tuskegee Institute and the National Medical Association. Limited financial resources and opposition to the separatist strategy by some within the African American community (such as the NAACP) as well as agencies offering alternative paternalistic support (such as the Duke or Rockefeller foundations) led to the movement's demise by WWII. [65]

The aforementioned National Medical Association was established by African American physicians in 1895 as a another means of consolidating their own professional status. The Association promoted the education and training opportunities for Black healthcare professionals, to assess the healthcare needs of underserved communities, and to increase the number of physicians of color who can adequately treat the underserved. The organization still exists, and its leadership has played prominent roles throughout the twentieth century in lobbying for civil rights and advancing the awareness of, and debates about, healthcare disparities. [Fig. 42]

Considering this historical perspective, it is surprising that it has taken so long for academia to recognize the strength and longevity of structural racism in medicine.

Fig. 43. Howard University, Washington, D.C., ca. 1900 - class in bacteriology laboratory

Fig. 44. Charles Drew sitting with medical residents at Freedmen's Hospital, Howard University, ca. 1945

In the 1910s and 1920s, nearly half of the medical schools in the US merged or were closed. The deep-rooted disparities in primary education, in addition to extreme economic challenges of the Great Depression, substantially hindered access to training for healthcare careers. [Fig. 44]

After the Civil War a number of abolitionist missionary organizations from the North opened schools for African Americans, including establishing medical institutions for training Black physicians. Some were established independently by African Americans as small proprietary schools offering a range of medical classes. Altogether around 1900 there were some 14 Black medical schools or departments. [66] These schools graduated the majority of Black physicians since few northern schools accepted African American candidates for a medical degree. [67] (In 2020, 70% of Black physicians graduate from Historically Black Colleges and Universities.)

The goals of the AMA went beyond reducing the number of medical schools that were considered "unfit" to survive, to controlling the overall size of the profession itself. By constricting the supply of physicians, it was easier for the chosen ones to obtain high status and income. Because such self-interests led to unequal opportunities for women to have postgraduate training, hospital internships, academic appointments, and participation in medical conferences, in 1915 the American Medical Women's Association was established, being the first national organization of women physicians. [Fig. 45] It was an important space to establish to advance women's careers in medicine. After 1900, the AMA's membership continued to grow through organizational restructuring – by 1920 representing 60% of the nation's doctors – giving it more clout to shape the profession. [68] This flex of professional power was true to the organization's original mission to protect their self-interests (discussed below). [69]

It did so, however, with the help of the foundations of wealthy industrialists who saw a unique investment opportunity. In the 1910s and 1920s, philanthropic support, led by Carnegie and Rockefeller, provided over $150


Fig. 45. American Medical Women's Association (f. 1915)

million to a handful of medical colleges, including Meharry and Howard. The fact that the foundations of major industrialists bankrolled the reorganization of medical colleges speaks to the emerging mentality that medicine itself should be thought of as an industry that could be managed along corporate principles of efficiency. [70] The consequence of this was that entities such as the Rockefeller Foundation were able to structure medical education and care along lines that satisfied their conception of "technological medicine," establishing a long and complicated relationship between private capital and the growth of America's healthcare system. [71]

While this may have complemented the vision for a more "scientific" training, it put unfair pressure on marginalized schools to shift from training in primary care and preventive medicine to raising funds for laboratory equipment and new hospitals. [72] [Fig. 46]

Given the concerns expressed in the content of the Flexner report that catalyzed medical education reform efforts, it is ironic that in the following seventy years – despite the major transformations in the practice of medicine – the way future doctors were educated did not change very much. In 1984, the AAMC acknowledged that "Institutions intermittently have changed their curricula, but unfortunately little progress has been made toward a fundamental reappraisal of how physicians are educated." [73] Instead of readjusting its mission, continual tweaks to course content led to a misalignment between scientific expertise and the social responsibilities expected of healthcare workers.

In other words, the professionalization process that was focused

Fig. 46. Laboratory Medicine Creates Forensic Science; Dr. Alfred Swaine Taylor and George Own Rees in a Laboratory Performing Forensic Analyses in the Nineteenth Century

on extended laboratory and clinical training eclipsed an education that could be attentive to broader social issues affecting population health. The curriculum became overtly dominated by memorization and a reductionist view of disease rather than a patient's holistic wellbeing and underlying causes of illness, leading to widespread charges that medical education "dehumanized" doctors.

In whatever way one could justify the scientific bias (such as pointing to medical and surgical progress throughout the century), the unintended affect it had on the professional image of healthcare was worrying. From the patients' point of view, the biological reductionist view of disease was driving up healthcare costs and creating an alienating clinical encounter—not good for consumer satisfaction. [Fig. 47]

To compound the problems were post-World War II revelations of gross ethical misconduct in biomedical research that caused harm to targeted populations and led to deep-rooted mistrust in the medical profession. [Fig. 48] These bolstered calls for educational reform that offered more attention to professional conduct, doctor-patient communication, and the humanities (history, ethics, social science, etc.). Given the historic ways the profession had defined itself – as a self-regulating peer group established to promote itself – a new ideal had to be introduced. In the 1960s and 1970s, write authors Sylvia Cruess and Richard Cruess from McGill University, "professionalism as a concept was viewed as being flawed, partly because

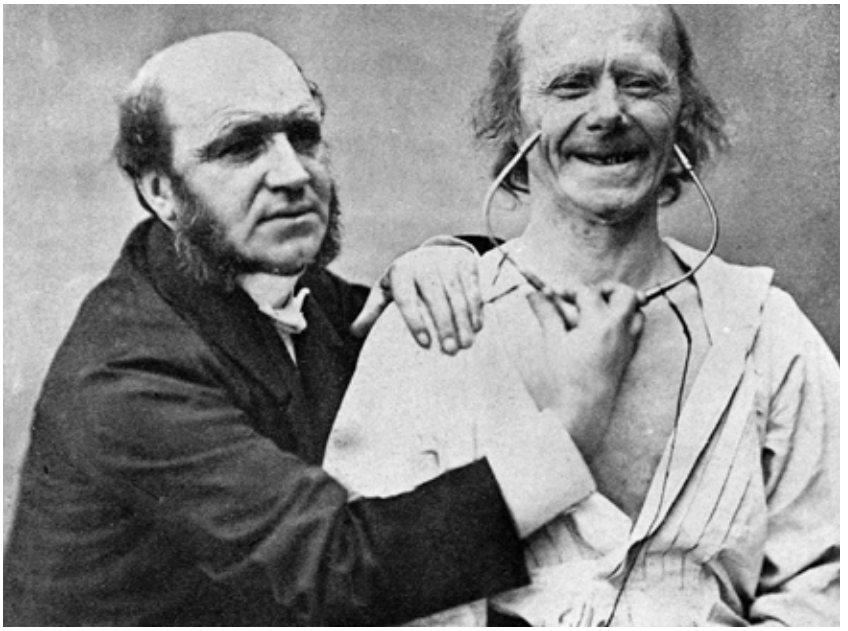


Fig. 47. French neurosurgeon Guillaime-Benjamin-Amand Duchenne (on the left) demonstrates how an electrical current "stimulates" facial expressions with a new medical apparatus in the 1860s

Fig. 48. (below) Front page of *New York Times* article by Jean Heller exposing the Tuskegee study by the US Public Health Service between 1932 and 1972

The New York Times

**Syphilis Victims in U.S. Study Went Untreated for 40 Years**

By JEAN HELLER

WASHINGTON, July 25—For 40 years the United States Public Health Service has conducted a study in which human beings with syphilis, who were induced to serve as guinea pigs, have gone without medical treatment for the disease and a few have died of its late effects, even though an effective therapy was eventually discovered.

The study was conducted to determine from autopsies what the disease does to the human body.

Officials of the health service who initiated the experiment have long since retired. Current officials, who say they have serious doubts about the morality of the study, also say that it is too late to treat the syphilis in any surviving participants.

Doctors in the service say they are now rendering whatever other medical services they can give to the survivors while the study of the disease's effects continues.

Dr. Merlin K. DuVal, Assistant Secretary of Health, Education and Welfare for Health and Scientific Affairs, expressed shock on learning of the study. He said that he was making an immediate investigation.

The experiment, called the Tuskegee Study, began in 1932 with about 600 black men,

of the inherent conflict between altruism and self-interest." What these authors and others recommended for the medical curriculum was to integrate instruction on what responsibilities, duties, and privileges were conferred with the status of being a professional, stressing the "link between professional status and the obligations to society that must be fulfilled to maintain public trust." [74]

Despite an avalanche of literature calling for an overhaul to medical education in the interest of producing a more "humane" and well-rounded physician, institutions were slow to adapt. [75] One reason for this is the very way the Flexner-inspired reforms for medical schools followed a business model of specialized divisions rather than a university model of liberal education.

As Samuel Bloom wrote, "The medical school is above all a variant of modern corporate bureaucracy, presenting a picture of rational organization based upon explicit codified qualifications for entrance and for performance and mobility within the organization. It stresses impersonal criteria of achievement, thus centering on technical standards and on the goal of efficient management." [76]

Interestingly, in the 1990s another critique emerged of medical education alleging that the singular concentration on scientific knowledge meant that future doctors were unprepared for working in the "new corporate culture of health care and its complex and bureaucratic system," despite the similar structure of the schools themselves. [77] According to Arnold Relman, professor at Harvard Medical School and former editor-in-chief of *The New England Journal of Medicine*, medical students were not learning about "the social and economic role of the medical profession in a health care system that is becoming increasingly industrialized and market-driven." [78] This bore upon the performance of future physicians because the forces of commerce have historically been at odds with the moral values of the profession.

What underlay this concern was that the American medical marketplace, as it evolved in the 1980s onward, was under public pressure to control costs while also providing quality managed care—a challenge for all practitioners who were referred to as "double agents" of the healthcare industry. [79]

As we entered the twenty-first century, adjusting the medical curriculum to define and inculcate professionalism has continued, and in 2002 50% of American medical schools reported teaching and assessments on professionalism. [80] This has now expanded to address emerging sensitivities to social justice and healthcare disparities. In 2001 the AMA's Declaration of Professional Responsibility called for physicians to "advocate for the social, economic, educational, and political changes that ameliorate suffering and contribute to human well-being." [81] The new professionalism is shifting from a priority on self-interests and toward using its status to promote civic engagement. [82] [Fig.49]

*"The medical school is above all a variant of modern corporate bureaucracy, presenting a picture of rational organization based upon explicit codified qualifications for entrance and for performance and mobility within the organization. It stresses impersonal criteria of achievement, thus centering on technical standards and on the goal of efficient management."*


Fig. 49. White Coats for Black Lives, a national student organization that aims to dismantle racism in medicine and fight for the health of Black people and other people of color. Pictured are Yale students preparing for a "die-in" demonstration. *Yale News*, December 10, 2014

# White Coats and Dark Skin

The nineteenth-century laboratory revolution in medicine provided enough new information in physiology (gas exchange, blood pressure, the role of the liver in synthesizing glycogen, the digestive function of the pancreas, etc.) and technologies for data collection (the stethoscope, microscopy, x-rays. etc.), that a new epistemology of medicine was established. The expansion of scientific research, in universities and through government funding, shifted the core of the medical curriculum toward chemistry, biology, and physics.

The "scientific method" was elaborated on principles of logic, deduction, and precision (in measurement and calculation). In laboratories, controlled experiments rely on the purity of specimens, and so scientists wore aprons or lab coats over clothes to help prevent external contamination. Therefore, as medicine began to cast its image as more scientific in the nineteenth century, it adapted the appropriate attire. While the general public was not privy to the interiors of

Fig. 50. (left) The emergence of the glowing white coat is famously represented in artist Thomas Eakins' painting *The Agnew Clinic* (1889), which depicts the surgeon Dr. D. Hayes Agnew presiding over an operation in an amphitheater at the University of Pennsylvania School of Medicine. The stylistic shift to white contrasts with an earlier portrait by Eakins, *The Gross Clinic* (1875), Fig. 51 (right), where the surgeon Samuel Gross and his assistants are dressed in conventional black-suit attire

labs, the representation of the purity, logic, and exactitude of its methods was imported to the clinic in the form of the laboratory coat.

The fashion choice of adapting a *white* lab coat for healthcare was symbolic. Western culture has made white the color of purity and cleanliness. To have health professionals walk the wards in white coats was intended to signal to patients the sanitary conditions of the hospital, while also conveying the message that the work of medicine was scientific. [83] In his 1913 book *The Modern Hospital*, John Hornsby wrote that, thanks to science, hospitals were no longer places to die, but places to cure, and therefore doctors, interns, and nurses should wear white to symbolize healing, rather than black, the color of death. [84] Choosing the color white, however, was in fact a departure from the pragmatic laboratory garb, which was usually black or dark colored. [Figs. 50, 51]]

Throughout the twentieth century, the image of the doctor in the

Fig. 52. The white lab coat became standardized attire in hospitals in the late nineteenth century, referencing the role of scientific investigation in making medical knowledge

white coat, usually garnished with a stethoscope draped around the neck, was propagated in advertisements, the media, movies, and TV shows, to the extent that the white coat became *the* image of the professional physician. In 1993, the Arnold P. Gold Foundation started the White Coat Ceremony at Columbia University College of Physicians & Surgeons, when students were given the coat as a symbol of the "inauguration of your careers." [85]

Ironically, the association of the white coat with sanitary conditions has been undermined by studies that suggest the sleeves and pockets harbor and spread infectious agents, being a vector for patient-to-patient transmission of pathologic microbes. [86] For this reason, the National Health Service in the U.K. banned the garment in the 2000s. Before that, certain medical specialties, such as pediatrics and psychiatry, ditched the lab coat because it caused anxiety among patients, part of a wider concern over "White Coat Hypertension," a pathophysiological reaction some people have during medical visits. [87] To some, the scientific method's process of objectification, represented by the lab coat, makes them feel like specimens of investigation, to be probed and dissected, rather than approached in a more humanized manner.

So why keep it? Does the public today need convincing of the scientific underpinnings of medical knowledge? Today, the coat carries less meaning from its laboratory origins but has more cultural capital as a professional uniform that, depending on its length, reflects a privileged place in the healthcare hierarchy. Critics suggest it may foster a sense of entitlement at the expense of public trust, being a symbol of power and prestige. [88] But might it also act as a cloak to cover social disparities, to equalize the status of people of color, underrepresented in medicine?

The British General Practitioner Dr. Ayan Panja, who preferred not to wear a white coat on the wards, noted that the lack of standardized coat removed a signifier of professional identity that covered his skin color. "On occasion during my job in casualty the pharmacist had to apologise to patients when they approached her with the words 'Excuse me, doctor'; while I, in an open necked shirt, would be confused for a minicab driver." [89]

In a study of "occupational citizenship" amongst non-white male doctors, one physician of Asian-Indian descent revealed an instance of being stopped by the police in an affluent neighborhood in southern California for "driving while brown." The cop peered through the car windows.

> My white coat … the doctor's coat, was in the back of my car seat," the doctor said. "So he shined [his] light in my backseat and I had my stethoscope and … white coat, and he's like, 'what's up with all the doctor paraphernalia?' And I was like, 'I am a doctor,' and I had my ID hanging on my white coat … And he handed back all my stuff and he just started apologizing. [90]

Through this and other examples, the author of the study discusses how the white coat, whether symbolically (as a reference to professional status) or literally (as proof of occupation), helped mediate the "lived contradiction" of experiencing the stigma of one's *racial* identity to the prestige of one's *professional* identity.

However, the white coat as symbol of social status does not cover even more deeply-rooted and historical prejudices within the profession that exist as *structural* racism. As Drs. Octavia Amaechi and José Rodríguez wrote in 2020, "minority resident physicians are not protected by their white coats" against microaggressions, indignities, and academic isolation. [91] This exposes the double standards experienced by racial, ethnic, and gender minority groups upon entering a profession for which they competitively qualified.

One Black physician, who entered a highly specialized medical subspecialty, stated in a 2020 *New England Journal of Medicine* article, "my potential success was undermined by the implication that my race, not my ability, was my real qualification." [92] The social, cultural, and institutional challenges to a mixed identity – a professional doctor *and* person of color – motivate some people to adapt behaviors which the authors note is called 'code switching,' such as "adjusting one's style of speech, physical appearance, behavior, and facial expressions in ways that will optimize the comfort of the (non-minority) people …." [93] Yet these adaptations, and even putting

on a coat that looks exactly like all other coats worn by colleagues, do not overcome the historic structural racism that upholds inequities. [94]

Sociologists and feminist scholars have developed the concept of "controlling images" to investigate how gendered and racist stereotypes are perpetuated to validate a dominant group's interest in another's subordination. Examples can be found in Patricia Hill Collins's acclaimed *Black Feminist Thought* which discusses the image of the Southern "Mammy" which defeminizes women of color [95]; Wingfield [96] discusses the "angry Black man" distrusted in the workplace; and Vasquez-Tokos and Norton-Smith [97] look at the controlling images of Latinos as gang members and the blockade this presents to social mobility.

While controlling images are often analyzed for their negative connotations, they work equally perniciously when used to portray an image of a success when that success is exclusively white, whether the image is of a successful (white) doctor or an Academy Award winning actor.

Whatever success a minority group has in attaining professional status, it remains more challenging to deconstruct the cultural and historical perception that such privilege is already reserved for a certain type of person. The white coat emerged relatively recently as a symbol of professionalized medicine, but it draws on a long history that asserts that it was a garment meant for a white man. Through centuries of medical mythology, the carving of marble busts of bearded white men, hero-worshipping of ancient Greek authors, and over a century of popular media projections of the paternalistic "Marcus Welby" figure of the family doctor, people of color are not treated equally merely because a profession decides upon a uniform color for a coat. [98]

Fig. 53. The whiteness of cultural expectations. Screenshot of first page of Google search for "professional doctor image," July 8, 2021

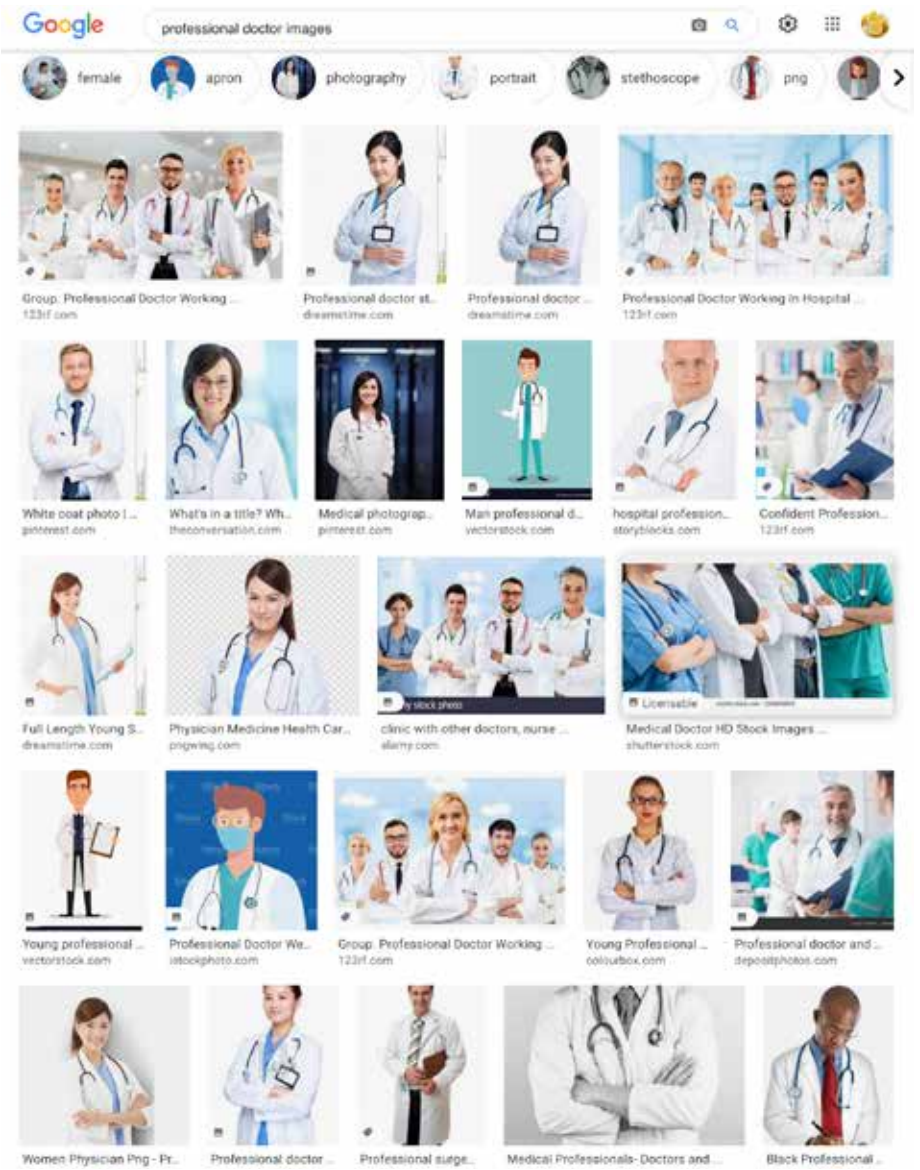



Fig. 54. American Board of Medical Specialties was established in 1934 to set standards for examination boards necessary to certification of a medical specialty

# The Fragmentation of the Profession: Medical Specialization

Historians of medicine characterize the American medical profession as slow to branch itself off into specialized areas of practice, lagging well behind European professions, particularly in France and Germany. The creation of hospital medicine in Paris that was discussed earlier stressed hands-on clinical training which was a unique approach to studying patient care, but it was laboratory research in the sciences that drove medical specialization in Europe.

To our modern way of thinking, specialization is a natural consequence of an exponential increase in knowledge. Indeed, taking a historical perspective, it is reasonable to argue that a large scientific field is best managed when put into a classification system of smaller parts. Science itself created this concept with Linnean taxonomy and the ordering of the world. Precisely *how* kingdoms of knowledge get divided into special areas is another question. Historians of medicine have argued that specialization followed empirical developments that saw disease not as (an ancient) holistic imbalance but a localized pathology. New technologies of visualization and investigation suggested organ-specific diseases, which stimulated a growth of specialties concerned with specific parts of the body. [99]

In France and Germany, medical specialization occurred much earlier in the nineteenth century because governments there were bureaucratically minded and ordered hospitals and universities to be organized along a factory-like division of labor in scientific and clinical research. [100] [Fig. 54]

In America, the government (federal or state) has played a role in funding higher education but did not have a heavy hand in how universities were organized. [101] Medical faculties that developed within universities in the nineteenth century were more closely aligned to the ideals of a liberal, "rounded," education, in which theories of disease and holistic health were favored over a reductionist, scientific approach. This is what led Flexner to condemn the state of

medical education in the US in 1910 (see above). Furthermore, the mission of the AMA when it was founded in 1847 was to unify the profession and establish an identity of the doctor that was all-encompassing, the embodiment of the general practitioner. The idea of specialists asserting a distinct identity and forming their own professional societies was antithetical to this vision. To be sure, when discussions were raised within the organization about possible trends in America that might emulate European specialization, the AMA leadership considered this an ethical issue concerned with codes of conduct in business advertising and "disloyal competition." [102] This underscores the profession's obsession over the control of the sale of medical services at the expense of the rationale for scientific expertise—a mentality that would not significantly change until the early twentieth century.

Despite all this, there were some areas of focus that were historically defined as specialized based on the theory that certain diseases corresponded to biological uniqueness. Women and children had long been seen as biologically distinct from males, so special hospitals were founded for childbirth. Women's reproductive health was a concern for one of the oldest identified specialties to exist: midwifery, an area historically practiced by women and one of the few to be acknowledged by the AMA upon its foundation in 1847. (In the mid-nineteenth century, male physicians usurped the practice and developed a "science" of gynecology. See *Anatomy Through History*, in this series.)

Medical specialties are usually born from within pre-existing institutional structures. In other words, certain patients were considered so unique that distinct sorts of hospitals were established for them. Some early examples would include "lunatic asylums," lying-in hospitals for childbirth, and eye clinics. These places predated the creation of professional specialties called psychiatry, obstetrics and gynecology, or ophthalmology, but helped reinforce ideas that there are distinct differences in the identification and treatment of healthcare needs that require special attention. In the twentieth century, this framework for shaping specialties began to appear within medical schools as they grew larger, where departments asserted independence from more general areas.

In 1897, the physician F.C. Shattuck of Harvard Medical School related a story about a recent graduate that asked him if he knew a specialist in rheumatism. "We can afford to laugh at these things," Shattuck said, dismissing the idea of such a narrow field of expertise. He later added, sarcastically:


Fig. 55. A chart of typical medical school departments representing American medical specialties



"Why not a chair in medical schools for diseases of old age as well as for the diseases of children?" [103] Imagine what he would think of the current day where we not only have specialties in rheumatology, geriatrics, and pediatrics, but in some medical schools they are departments. [Fig. 55]

Departments are most often established when a claim can be made that a field of knowledge has become so voluminous, and skills related to its practice so particular, that a new organizational unit is necessary to oversee its performance in a university. [104] Often, the existence of a specialized professional society, which typically publishes its own journals and make recommendations for training standards, is invoked as justification for a distinct institutional identity. Departmental status affords the chair of the department, which in medical schools is not unlike a chief executive officer overseeing business operations, the autonomy to grow through faculty recruitment and fundraising.

However, medical schools vary in their criteria for establishing departments since budgets are tied to clinical service income, research grants, and perhaps philanthropy. The number of departments in medical schools increased rapidly in the 1950s to include an array of laboratory and biomedical sciences, fueled by funding from the National Institutes of Health (NIH).

Departments may also have different functions at the university relating to research and teaching, such as providing ACGME-certified fellowship training programs. However, divisions within a department also recognize areas of specialty, usually called subspecialties. Divisions may be created to focus a research agenda or to manage a particular clinical service. They can also be formed for financial reasons, such as to establish homogenous compensation for faculty in a specialty that, because of market forces, is different from another specialty or division. [105]

While universities have historically played an important role in reaffirming specialization in medicine through training programs, the professional identity that a specialist assumes is affirmed through societal organization, which is what concerned the AMA in the nineteenth century. [106]

However, by the early twentieth century it was clear that cooperation would be politically advantageous considering the formation of competing associations. One early specialized medical society was the American Academy of Ophthalmology and Otolaryngology (AAOO), formed in 1903 through consolidation of several regional associations. Four years later it had 434 members and was the largest specialty society in the United States. [107] In 1917, the AAOO cooperated with the Section on Ophthalmology of the AMA to form America's first board for the certification of medical specialists, the American Board of Ophthalmology. Academy leaders thus helped pave the way for the development of rigorous standards for the training for subsequent specialties.

In 1933, American Board of Medical Specialties (ABMS) was formed by the "federation" of specialties. Its mission was to ensure the quality of medical care by overseeing a system of certification of individuals with special training. [108] For the ABMS to grant board certification to an emerging specialty is an assurance of competency to secure public trust. Since the medical profession has historically been unregulated by the government, such certifications were considered crucial for the credibility of their professional image. [109]

With more and more specialization, general practitioners worried that their practice would become too marginalized and an unattractive choice for residents. Ironically, this concern spawned the creation of a new kind of specialty in 1969—a generalist discipline which is now integrated into universities as a department with names such as Family and Community Medicine. [110]

# Conclusion

Before it was a profession, the practice of medicine – the ancient contemplative art of healing – was a vocation, a divine calling (*vocare*, to call) to service humanity. Stories of the origins of this craft are embedded in ancient mythology, tied to accounts of the healing powers of Gods and Goddesses whose names still permeate healthcare, such as panacea, hygiene, febrile, and so on. Such ancient associations have historically imbued those who cared for others with authority, trustworthiness, and erudition. The healing arts were not purely physical, not limited to cleaning wounds or bloodletting, but were philosophical, a meditation on the metaphysical causes of disease and the environmental or behavioral factors that affect illness.

However, as observations accumulated over time through interventional investigations, including anatomical dissection and the development of new drugs, the less speculative and the more scientific the practice of medicine became. Between the time of the Greek legend Hippocrates and the Persian polymath Muhammad ibn Zakariya al-Razi – from the ancient temples to medieval universities – the skills and tomes of knowledge necessary to practice medicine grew increasingly complex. Systems of education and institutional training in specialized hospitals became necessary to assume a professional status (from *profiteri*, to declare), meaning one who is publicly declared qualified or competent in an occupation. Such declarations came first in the form of a degree awarded by a faculty of scholars and then through a license or certificate issued by a governmental or social body. Thus, the history of the medical profession is in large part a history of the training and examination of practitioners as prerequisites for declarations of competency.

Historians and sociologists have defined *professionalization* as the process by which certain occupations develop a distinct identity based on standardized training, examinations, social organization, and peer-review of skill sets and knowledge. They note that the process also involves actively excluding people whose qualifications are either below a preestablished standard or deemed illegitimate to the dominate group's concept of professional practice.

Becoming a professional means attaining a status that offers an assurance of proficiency in whatever service the public is paying for. It carries with it proof of qualifications in the form of a degree and/or license, documentation that is provided by a peer community. For centuries, medical practitioners strove to define professional competency in reference to a mastery of approved literature and techniques that provided a particular conceptual framework for understanding disease and therapeutic regimes.

However, establishing such an "approved" canon of knowledge necessitated the disapproval of alternative theories and techniques. The most prominent line in medicine's professional boundary is between "allopathic" and "homeopathic" (historically referred to as "alternative") medicine. In nineteenth-century America, doctors who laid claim to professional status condemned as illegitimate homeopathic practitioners, most of whom were women. A coincidence?

The story of professionalization is also one of career building and the development of the medical marketplace in which one's service to humanity is compensated for by patients. As such, the business of medicine evolved within a competitive field, with professionals defining the qualifications

Fig. 56. Charles Aston's *Modern Medicine* (1936), mural at Harlem Hospital Center, New York. An advocate for racial inclusion, he said his goal was to "show the different races working together on the same basis with an absolute lack of discrimination, illustrating the sheer objectivity of science."

to provide care and determining what constituted the correct versus the incorrect way of helping to heal—decisions which replicated and reinforced their own interests.

Claiming unique insights or an ability to advance healthcare was a way of controlling the marketplace for personal gain. Proprietary medicine—from courses of instruction for a tuition-paying public to patented drugs—became the merchandise that was defined by professionals as good healthcare, so long as they approved the goods. Alternative approaches, such as homeopathic remedies, were marginalized or discredited, often for reasons related to who its proponents were rather than on any grounds that the practice was less effective. With the rise of scientific medicine by the beginning of the twentieth century, the demand for competency in laboratory experiments was leveraged against less well-equipped medical schools which adversely affected historically Black universities. In many ways, the history of the medical profession is a history of promoting self-interests, and of exclusionary practices that created the category of "underrepresented in medicine" (UIM).

Yet a shift is occurring as new chapters in the history of the profession are being written. The exponential growth in biomedical investigations over the past century, aided by the development of new technologies, has reshaped the terrain of professional competency into an array of specialized areas. Evidence-based medicine has allowed for more objective assessment of what counts as effective that do not necessarily treat proprietary high-cost interventions as the gold standard. Professional boundaries have become more permeable, and patients have been given a say in what sort of healthcare team they want to engage with in their health maintenance. Furthermore, the healthcare professions have begun to harness the privileges of their position to advocate for healthcare equity and social justice, working to breakdown exclusionary and discriminatory practices at the same time as eliminating disparities in access to care.

In these ways, the medical professions are beginning to return to their ancient roots and core values, centered less on professional self-interest and more oriented toward the founding principles that guide moral and ethical conduct in the calling to serve humanity.

# References


1. "Gold Foundation White Coat Ceremony," Gold Foundation, n.d., https://www.gold-foundation.org/programs/white-coat-ceremony/.
2. T. Charen, "The Etymology of Medicine," *Bulletin of the Medical Library Association* 39, no. 3 (1951): 216–21.
3. James Longrigg, "Presocratic Philosophy and Hippocratic Medicine," *History of Science* 27, no. 1 (1989): 1–39, https://doi.org/10.1177/007327538902700101.
4. C Lawrence, "The Healing Serpent--the Snake in Medical Iconography," *The Ulster Medical Journal* 47, no. 2 (1978): 134–40.
5. T O Coston, "The Proper Symbol of Medicine," *Transactions of the American Ophthalmological Society* 68 (1970): 359–63.
6. Alexandra C. Sacks and Robert Michels, "Caduceus and Asclepius: History of an Error," *American Journal of Psychiatry* 169, no. 5 (May 1, 2012): 464–464, https://doi.org/10.1176/appi.ajp.2012.11121800.
7. Claus Hamann and MaryKate Martelon, "Branding Asklepios and the Traditional and Variant Serpent Symbol Display Among Health Professional Schools in the United States, Puerto Rico, and Canada: A Cross-Sectional Survey," *JMIR Medical Education* 2, no. 1 (May 25, 2016): e6, https://doi.org/10.2196/mededu.5515.
8. Jill C. Thomas, "Re-Visioning Medicine," *Journal of Medical Humanities* 35, no. 4 (December 1, 2014): 405–22, https://doi.org/10.1007/s10912-014-9304-6.
9. Longrigg, "Presocratic Philosophy and Hippocratic Medicine."
10. John F. Fulton, "History of Medical Education," *British Medical Journal* 2, no. 4834 (1953): 457, https://doi.org/10.1136/bmj.2.4834.457.
11. Hakim Mohammad Said, *Medicine in China*, Rev. & enl., Book, Whole (Karachi: Hamdard Academy, Hamdard Foundation Pakistan, 1981), 234.
12. Kamran I. Karimullah, "Avicenna and Galen, Philosophy and Medicine: Contextualising Discussions of Medical Experience in Medieval Islamic Physicians and Philosophers," *Oriens* 45, no. 1/2 (2017): 105–49.
13. Darrel W. Amundsen, "Medieval Canon Law On Medical And Surgical Practice By The Clergy," *Bulletin of the History of Medicine* 52, no. 1 (1978): 22–44.
14. Jean-Pierre Poirier, *Ambroise Paré: Un Urgentiste Au XVIe Siècle* (Pygmalion, 2005).
15. Vern L Bullough, "The Development of the Medical University at Montpellier to the End of the Fourteenth Century," *Bulletin of the History of Medicine* 30 (1956): 508.
16. Matteo Della Monica et al., "The Salernitan School of Medicine: Women, Men, and Children. A Syndromological Review of the Oldest Medical School in the Western World," *American Journal of Medical Genetics* Part A 161A, no. 4 (2013): 809–16, https://doi.org/10.1002/ajmg.a.35742.
17. Maaike Van Der Lugt, "The Learned Physician as a Charismatic Healer," *Bulletin of the History of Medicine* 87, no. 3 (2013): 307–46.
18. *ibid*.
19. Elma Brenner, "The Transmission of Medical Culture in the Norman Worlds, c.1050–c.1250," in *People, Texts and Artefacts*, ed. David Bates, Edoardo D'Angelo, and Elisabeth van Houts, *Cultural Transmission in the Medieval Norman Worlds* (University of London Press, 2017), 47–64, http://www.jstor.org.ucsf.idm.oclc.org/stable/j.ctv512xnf.9.
20. Paul Oskar Kristeller, "The School of Salerno," *Bulletin of the History of Medicine* 17 (1945): 138.

21. Henry E. Sigerist, "The History Of Medical Licensure," *Journal of the American Medical Association* 104, no. 13 (1935): 1057–60, https://doi.org/10.1001/jama.1935.02760130007002.
22. Alexandra Mavrodi and George Paraskevas, "Mondino de Luzzi: A Luminous Figure in the Darkness of the Middle Ages," *Croatian Medical Journal* 55, no. 1 (February 2014): 50–53, https://doi.org/10.3325/cmj.2014.55.50.
23. Enrico Crivellato and Domenico Ribatti, "Mondino de' Liuzzi and His Anothomia: A Milestone in the Development of Modern Anatomy," *Clinical Anatomy* (New York, N.Y.) 19, no. 7 (2006): 581–87, https://doi.org/10.1002/ca.20308.
24. Bullough, "The Development of the Medical University at Montpellier to the End of the Fourteenth Century," 522.
25. Andrea Porzionato et al., "The Anatomical School of Padua," *The Anatomical Record* 295, no. 6 (June 1, 2012): 902–16, https://doi.org/10.1002/ar.22460.
26. Gary Steiner, "The Cultural Significance of Rembrandt's 'Anatomy Lesson of Dr. Nicolaas Tulp,'" *History of European Ideas* 36, no. 3 (September 1, 2010): 273–79, https://doi.org/10.1016/j.histeuroideas.2010.02.004.
27. J.H. Warner and J.M. Edmonson, *Dissection: Photographs of a Rite of Passage in American Medicine, 1880-1930* (Blast Books, 2009), https://books.google.com/books?id=7gkpAQAAMAAJ.
28. Michael Stolberg, "Learning Anatomy in Late Sixteenth-Century Padua," *History of Science* 56, no. 4 (September 30, 2018): 381–402, https://doi.org/10.1177/0073275318794581.
29. Giovanna Ferrari, "Public Anatomy Lessons And The Carnival: The Anatomy Theatre Of Bologna," *Past & Present* 117, no. 1 (November 1, 1987): 50–106, https://doi.org/10.1093/past/117.1.50.
30. A. Guerrini, "Anatomists and Entrepreneurs in Early Eighteenth-Century London," *Journal of the History of Medicine and Allied Sciences* 59, no. 2 (2004): 219–39, https://doi.org/10.1093/jhmas/jrh067.
31. Lawrence, "The Healing Serpent--the Snake in Medical Iconography."
32. Hastings Rashdall 1858-1924, F. M. 1879-1963 Powicke, and Alfred Brotherston Emden 1888, *The Universities of Europe in the Middle Ages* (London: Oxford University Press, 1958), 75–85.
33. Younes Cherradi, "About the First Available and Documented MD Certificate in the World: 'Ijazah,'" *Journal of Medical and Surgical Research* 6, no. 3 (2020): 80 I contacted the authors to ask where this document is physically archived but received no reply, so this needs further research.
34. Iona McCleery, *Medical Licensing in Late Medieval Portugal* (Leiden, The Netherlands: Brill, 2014), 196–219, https://doi.org/10.1163/9789004269118_010.
35. W. D. Sharpe, "Thomas Linacre, 1460-1524: An English Physician Scholar of the Renaissance," *Bulletin of the History of Medicine* 34, no. Journal Article (1960): 233.
36. Justin Colson and Robert Ralley, "Medical Practice, Urban Politics and Patronage: The London 'Commonalty' of Physicians and Surgeons of the 1420s," *The English Historical Review* 130, no. 546 (2015): 1102–31.
37. G. N. Sir Clark 1890, A. M. Cooke, and Asa Briggs 1921, *A History of the Royal College of Physicians of London* (Oxford: Clarendon Press for the Royal College of Physicians, 1964).
38. R.H. Shryock, *Medicine and Society in America, 1660-1860*, Anson G. Phelps Lectureship on Early American History (Cornell University Press, 1960), 9, https://books.google.com/books?id=ZCfkUzfKHWMC.
39. Roy Porter, "Medical Lecturing in Georgian London," *The British Journal for the History of Science* 28, no. 1 (1995): 97.
40. Erwin H. Ackerknecht, *Medicine at the Paris Hospital, 1794-1848* (Baltimore: Johns Hopkins Press, 1967).
41. Patrice PINELL and Amy Jacobs, "The Genesis of the Medical Field: France, 1795-1870," *Revue Française de Sociologie* 52 (2011): 117–51.
42. John Harley Warner, "Remembering Paris: Memory And The American Disciples Of French Medicine In The Nineteenth Century," *Bulletin of the History of Medicine* 65, no. 3 (1991): 301–25.
43. George Weisz, "The Politics of Medical Professionalization in France, 1845-1848," *Journal of Social History* 12, no. 1 (1978): 3.

44. William Shainline Middleton, "John Morgan, Father of Medical Education in North America," *Annals of Medical History* 9, no. 1 (March 1927): 13–26.
45. University of Pennsylvania, "Penn in the 18th Century: School of Medicine," Penn University Archives and Records Center, 2004, https://archives.upenn.edu/exhibits/penn-history/18th-century/medical-school.
46. W.J. Bell and W.J. Bell, *John Morgan: Continental Doctor, Anniversary Collection* (University of Pennsylvania Press, Incorporated, 2016), 117, https://books.google.com/books?id=3VQrEAAAQBAJ.
47. S.J. Peitzman, *A New and Untried Course: Woman's Medical College and Medical College of Pennsylvania, 1850-1998* (Rutgers University Press, 2000), https://books.google.com/books?id=f_-SVxIluc0C.
48. Kenneth M. Ludmerer, *Learning to Heal: The Development of American Medical Education* (New York: Basic Books, 1985).
49. MJ, "Centenary Of The American Medical Association," The British Medical Journal 1, no. 4509 (1947): 811–13.
50. Lester S. King, "IV. The Founding of the American Medical Association," JAMA 248, no. 14 (October 8, 1982): 1749–52, https://doi.org/10.1001/jama.1982.03330140059036.
51. Lester S. King, "III. Medical Sects and Their Influence," JAMA 248, no. 10 (September 10, 1982): 1221–24, https://doi.org/10.1001/jama.1982.03330100057035.
52. Douglas M. Haynes, "Policing the Social Boundaries of the American Medical Association, 1847–70," Journal of the History of Medicine and Allied Sciences 60, no. 2 (April 1, 2005): 176, https://doi.org/10.1093/jhmas/jri022.
53. Herbert W. Nickens, "A Case of Professional Exclusion in 1870: The Formation of the First Black Medical Society," JAMA : The Journal of the American Medical Association 253, no. 17 (1985): 2549–52, https://doi.org/10.1001/jama.1985.03350410115029.
54. Robert Baker, "The American Medical Association and Race," AMA Journal of Ethics 16, no. 6 (June 1, 2014): 479–88, https://doi.org/10.1001/virtualmentor.2014.16.6.mhst1-1406.
55. Clinton Sandvick, "Enforcing Medical Licensing in Illinois: 1877-1890," The Yale Journal of Biology and Medicine 82, no. 2 (June 2009): 67–74.
56. D. F. Smiley, "History of the Association of American Medical Colleges; 1876-1956," *Journal of Medical Education* 32, no. 7 (1957): 518.
57. *ibid*, 519.
58. Andrew H. Beck, "The Flexner Report and the Standardization of American Medical Education," *JAMA* 291, no. 17 (May 5, 2004): 2139–40, https://doi.org/10.1001/jama.291.17.2139.
59. Martin Kaufman, "The Admission of Women to 19th-Century American Medical Societies," *Bulletin of the History of Medicine* 50, no. 2 (1976): 251.
60. Lynn E. Miller and Richard M. Weiss, "Revisiting Black Medical School Extinctions in the Flexner Era," *Journal of the History of Medicine and Allied Sciences* 67, no. 2 (2012): 232, https://doi.org/10.1093/jhmas/jrq084.
61. Elizabeth Blackwell, *Pioneer Work in Opening the Medical Profession to Women* (London and New York: Longmans, Green, and Co, 1895).
62. Margaret Vigil-Fowler, "'Two Strikes – a Lady and Colored:' Gender, Race, and the Making of the Modern Medical Profession, 1864-1941" (PhD Dissertation, University of California, San Francisco, 2018), 126, https://escholarship.org/uc/item/3jx8n0ck#article_abstract.
63. Robert Baker, "The American Medical Association and Race," *AMA Journal of Ethics* 16, no. 6 (June 1, 2014): 479–88, https://doi.org/10.1001/virtualmentor.2014.16.6.mhst1-1406.
64. *ibid*.
65. Vanessa Northington Gamble, *Making a Place for Ourselves: The Black Hospital Movement, 1920-1945* (Oxford University Press on Demand, 1995).
66. Earl H Harley, "The Forgotten History of Defunct Black Medical Schools in the 19th and 20th Centuries and the Impact of the

Flexner Report," *Journal of the National Medical Association* 98, no. 9 (September 2006): 1425–29.
67. Todd Lee Savitt, "Four African-American Proprietary Medical Colleges: 1888–1923," *Journal of the History of Medicine and Allied Sciences* 55, no. 3 (2000): 203–55, https://doi.org/10.1093/jhmas/55.3.203.
68. Gerald E. Markowitz and David Karl Rosner, "Doctors in Crisis: A Study of the Use of Medical Education Reform to Establish Modern Professional Elitism in Medicine," *American Quarterly* 25, no. 1 (1973): 86, https://doi.org/10.2307/2711558.
69. Elton Rayack. *Professional Power and American Medicine: The Economics of the American Medical Association* (Cleveland: World Pub. Co, 1967).
70. Markowitz and Rosner, "Doctors in Crisis: A Study of the Use of Medical Education Reform to Establish Modern Professional Elitism in Medicine."
71. E. Richard Brown, *Rockefeller Medicine Men: Medicine and Capitalism in America* (Berkeley: University of California Press, 1979).
72. Todd Savitt, "Abraham Flexner and the Black Medical Schools," *Journal of the National Medical Association* 98, no. 9 (2006): 1415.
73. AAMC quoted in Samuel W. Bloom, "Structure and Ideology in Medical Education: An Analysis of Resistance to Change," *Journal of Health and Social Behavior* 29, no. 4 (1988): 295, https://doi.org/10.2307/2136864.
74. S R Cruess and R L Cruess, "Professionalism Must Be Taught," *BMJ* (Clinical Research Ed.) 315, no. 7123 (December 20, 1997): 1676, https://doi.org/10.1136/bmj.315.7123.1674.
75. Kenneth M. Ludmerer, *Time to Heal: American Medical Education from the Turn of the Century to the Era of Managed Care* (New York;Oxford; Oxford University Press, 1999).
76. Bloom, "Structure and Ideology in Medical Education: An Analysis of Resistance to Change," 298.
77. Brian Castellani and Delese Wear, "Physician Views on Practicing Professionalism in the Corporate Age," *Qualitative Health Research* 10, no. 4 (July 1, 2000): 490–506, https://doi.org/10.1177/104973200129118598.
78. A. S. Relman, "Education to Defend Professional Values in the New Corporate Age," *Academic Medicine* 73, no. 12 (1998): 1230, https://doi.org/10.1097/00001888-199812000-00010.
79. M. Angell, "The Doctor as Double Agent," *Kennedy Institute of Ethics Journal* 3, no. 3 (1993): 279.
80. Helen O'Sullivan et al., "Integrating Professionalism into the Curriculum: AMEE Guide No. 61," *Medical Teacher* 34, no. 2 (February 1, 2012): e64–77, https://doi.org/10.3109/0142159X.2012.655610.
81. American Medical Association, "Declaration of Professional Responsibility," 2001, https://www.ama-assn.org/delivering-care/public-health/ama-declaration-professional-responsibility.
82. Mark A. Earnest, Shale L. Wong, and Steven G. Federico, "Perspective: Physician Advocacy: What Is It and How Do We Do It?," *Academic Medicine* 85, no. 1 (2010): 63–67, https://doi.org/10.1097/ACM.0b013e3181c40d40.
83. D. W. Blumhagen, "The Doctor's White Coat. The Image of the Physician in Modern America," *Annals of Internal Medicine* 91, no. 1 (1979): 111–16, https://doi.org/10.7326/0003-4819-91-1-111.
84. John Allan Hornsby, *The Modern Hospital* (WB Saunders Company, 1913).
85. Michael G. Kavan and Roger A. Brumback, "The White Coat Ceremony: A Tribute to the Humanism of Arnold P. Gold," *Journal of Child Neurology* 24, no. 8 (2009): 1051–52, https://doi.org/10.1177/0883073809336133.
86. W. Loh, V. V. Ng, and J. Holton, "Bacterial Flora on the White Coats of Medical Students," *The Journal of Hospital Infection* 45, no. 1 (2000): 65–68, https://doi.org/10.1053/jhin.1999.0702.
87. Giuseppe Mancia et al., *White Coat Hypertension: An Unresolved Diagnostic and Therapeutic Problem* (Cham: Springer, 2014).
88. Philip C. Philip C., "The White Coat Ceremony: Turning Trust Into Entitlement," *Teaching and Learning in Medicine* 14, no. 1 (January 1, 2002): 56–59, https://doi.org/10.1207/S15328015TLM1401_13.
89. Ayan Panja, "The Death of the White Coat?," *BMJ : British Medical Journal* 328, no. 7430 (January 3, 2004): 57–57.
90. Lata Murti, "Who Benefits from the White Coat? Gender Differences in Occupational Citizenship among Asian-Indian Doctors,"

*Ethnic and Racial Studies* 35, no. 12 (December 1, 2012): 2035–53, https://doi.org/10.1080/01419870.2011.631555.

91. Octavia Amaechi and José E. Rodríguez, "Minority Physicians Are Not Protected by Their White Coats," *Family Medicine* 52, no. 8 (2020): 603, https://doi.org/10.22454/FamMed.2020.737963.
92. Kemi M. Doll and Charles R. Thomas, "Structural Solutions for the Rarest of the Rare — Underrepresented-Minority Faculty in Medical Subspecialties," *New England Journal of Medicine* 383, no. 3 (July 16, 2020): 283–85, https://doi.org/10.1056/NEJMms2003544.
93. *ibid*, 283.
94. Ruth S. Shim, "Dismantling Structural Racism in Academic Medicine: A Skeptical Optimism," *Academic Medicine* 95, no. 12 (2020): 1793–95, https://doi.org/10.1097/ACM.0000000000003726.
95. Patrica Hill Collins, *Black Feminist Thought: Knowledge, Consciousness, and the Politics of Empowerment* (Routledge, 2000).
96. Adia Wingfield, "The Modern Mammy and the Angry Black Man: African American Professionals' Experiences with Gendered Racism in the Workplace," *Race, Gender & Class* (Towson, Md.) 14, no. 1/2 (2007): 196–212.
97. Jessica Vasquez-Tokos and Kathryn Norton-Smith, "Talking Back to Controlling Images: Latinos' Changing Responses to Racism over the Life Course," *Ethnic and Racial Studies* 40, no. 6 (2017): 912–30, https://doi.org/10.1080/01419870.2016.1201583.
98. K.A. Foss, "From Welby to McDreamy: What TV Teaches Us About Doctors, Patients, and the Health Care System," in *How Television Shapes Our Worldview: Media Representations of Social Trends and Change*, ed. D.A. Macey and K.M. Ryan (Lexington Books, 2014), 227–47, https://books.google.com/books?id=1mmYAwAAQBAJ.
99. George Rosen, *The Specialization of Medicine: With Particular Reference to Ophthalmology* (Froben, 1944).
100. George Weisz, "The Emergence of Medical Specialization in the Nineteenth Century," *Bulletin of the History of Medicine* 77, no. 3 (2003): 536–75, https://doi.org/10.1353/bhm.2003.0150.
101. P.G. Altbach, P.J. Gumport, and R.O. Berdahl, *American Higher Education in the Twenty-First Century: Social, Political, and Economic Challenges, American Higher Education in the Twenty-First Century* (Johns Hopkins University Press, 2011), https://books.google.com/books?id=gnUDc5SfJ6QC.
102. G. Weisz, P.H.M.G. Weisz, and Ralph Erskine Conrad Memorial Fund, *Divide and Conquer: A Comparative History of Medical Specialization* (Oxford University Press, 2006), 78, https://books.google.com/books?id=bqvmCwAAQBAJ.
103. Lester S. King, "III. Medical Sects and Their Influence," *JAMA* 248, no. 10 (September 10, 1982): 1221–24, https://doi.org/10.1001/jama.1982.03330100057035.
104. Eugene Braunwald, "Departments, Divisions and Centers in the Evolution of Medical Schools," *The American Journal of Medicine* 119, no. 6 (June 1, 2006): 457–62, https://doi.org/10.1016/j.amjmed.2005.11.025.
105. C Seth Landefeld, "The Structure And Function Of Departments Of Medicine," *Transactions of the American Clinical and Climatological Association* 127 (2016): 196–211.
106. Rosemary Stevens. *American Medicine and the Public Interest* (New Haven: Yale University Press, 1971).
107. David W. Parke, "The American Academy of Ophthalmology and the Formation of the American Board of Ophthalmology," *The Past, Present, and Future of Board Certification* 123, no. 9, Supplement (September 1, 2016): S12–14, https://doi.org/10.1016/j.ophtha.2016.06.009.
108. Westby G Fisher and Edward J Schloss, "Medical Specialty Certification in the United States-a False Idol?," *Journal of Interventional Cardiac Electrophysiology : An International Journal of Arrhythmias and Pacing* 47, no. 1 (October 2016): 37–43, https://doi.org/10.1007/s10840-016-0119-4.
109. Rebecca S. Lipner, Brian J. Hess, and Robert L. Phillips, "Specialty Board Certification in the United States: Issues and Evidence," *The Journal of Continuing Education in the Health Professions* 33, no. S1 (2013): S20–35, https://doi.org/10.1002/chp.21203.
110. Christine K. Cassel and David B. Reuben, "Specialization, Subspecialization, and Subsubspecialization in Internal Medicine," *New England Journal of Medicine* 364, no. 12 (March 23, 2011): 1169–73, https://doi.org/10.1056/NEJMsb1012647.

# Picture Credits

1. White Coat Ceremony at Icahn School of Medicine, Mount Sinai. From AAMC.org
2. Class of Medical Students at Tulane University, circa 1900. © *Tulane News*. August 8, 2013
3. Medical Students in the Dissecting Room at Women's Medical College of Pennsylvania, 1892. From Drexel University Legacy Center
4. Chryses persuading Apollo to send the Plague upon the Greeks. Attributed to Jacopo Alessandro Calvi (1740 - 1815). National Trust U.K.
5. Asclepius with his serpent-entwined staff. Archaeological Museum of Epidaurus
6. Asclepieion at Epidaurus, ancient healing sanctuary featuring the Temple of Asclepius in the center. Getty Images
7. Rod of Asclapius, the single snake wrapped around the staff, associated with healing and medicine. Wikimedia
8. Caduceus, a staff entwined by two serpents, and surmounted by wings, representing Hermes, the messenger of the Olympian Gods. Wikimedia
9. Hygiea, Greek goddess of health. Wikimedia
10. Panacea, Greek goddess of remedies. Wikimedia
11. Marble status of Hippocrates at UCSF Parnassus campus. Attributed to Costos Gaorgacas, it was made between 1967-1979 and is one of a number of versions that appear on university campuses across America. UCSF Art and Architecture
12. Monument to Charaka at the University of Patanjali, India. Charaka was an editor of Charaka Samhita, a foundational text on Ayurveda. © Balajijagadesh Alokprasad through CC BY-SA 3.0
13. A title page with woodcut illustration from a Latin translation of Avicenna's Canon of Medicine (completed 1025 CE), published in Venice in 1520. Wellcome Collection
14. Persian manuscript copy of Avicenna's Canon of Medicine in the Museum at BuAli Sina (Avicenna) Mausoleum, Hamedan, Iran
15. De Materia Medica, A painting of Dioscorides' book of herbs, Arabic manuscript copy of the Greek text, ca. 1229. Wikimedia
16. Christ Among the Doctors in the Temple (ca. 1560), Paolo Veronese (1528-1588). Museo Nacional del Prado = Both paintings depict a 12-year-old Christ in Jerusalem demonstrating his theological superiority when arguing with learned physicians and scribes
17. Christ Among the Scribes (1630), from the studio of Jusepe de Ribera (1591-1652). Kunsthistorisches Museum in Vienna, Austria
18. Schola Medica Salernitana, the first medical school in the West, in Salerno, Italy. Miniature painting from the *Canon of Medicine* of Avicenna. © Biblioteca Universitaria di Bologna
19. Bloodletting at Scuola Medica Salernitana. Miniature painting from the *Canon of Medicine* of Avicenna. © Biblioteca Universitaria di Bologna
20. Constantinus Africanus, eleventh-century physician and traveler, who translated into Latin numerous books of Arabic medicine which were used as textbooks in universities from the middle ages until the seventeenth century. Image from the fourteenth century (artist unknown) depicts him making a diagnosis by examining urine. Bodleian Libraries, University of Oxford

21. William Cheselden giving an anatomical demonstration to six spectators in the anatomy-theatre of the Barber-Surgeons' Company, London. Oil painting, ca. 1730/1740. Wellcome Images
22. Depiction of Mondino de Luzzi instructing the dissection of a cadaver, adapted from the frontispiece of his Anathomia Corporis Humani (ca. 1316). From the Fasciculus Medicinae, 1493, Collezione Putti, Istituto Rizzoli, Bologna
23. Image from Harvey's De Moto Cordis (1628), showing that the blood circulated. When a vein was blocked with a tourniquet, it swelled up, the blood unable to escape back towards the heart. Wellcome Images
24. Rembrandt's *Anatomy Lesson of Dr. Nicolaes Tulp* (1632). Wikimedia
25. Frontispiece to Vesalius' De humani corporis fabrica (1543), showing the anatomist dissecting a female corpse in a crowded amphitheater. Wellcome Images
26. An anatomical dissection by Pieter Pauw in the Leiden anatomy theatre. Engraving by Andries Stock after a drawing by Jacques de Gheyn II, 1615. Wellcome Images
27. An ijazah given to Abdellah Ben Saleh Al Kouta at the University of al-Qarawiyyin in Fez in 1207 and said to be one of the oldest licenses known to exist for the practice of medicine. (Cherradi 2020, though no attribution for the document is given.)
28. Thomas Linacre (1460-1524), English physician who studied medicine at Padua. Namesake of Linacre College, Oxford, and first president of the Royal College of Physicians. Wellcome Images
29. Meeting at the Royal College of Physicians in the early 1800s, by Augustus Charles Pugin and Thomas Rowlandson. Wellcome Images
30. Families of settlers resting as they migrate across the plains of the American Frontier. Credit: Archive Photos/Getty Images
31. Illustration from Mary Ashton Livermore, "My story of the war: a woman's narrative of four years personal experience as nurse in the Union army, and in relief work at home, in hospitals, camps, and at the front, during the war of the rebellion" Wellcome Images
32. The Middlesex Hospital: the interior of one of the female wards. Colored aquatint by J. C. Stadler, 1808, after A. C. Pugin and T. Rowlandson. Wellcome Images
33. Une Clinique, The Clinic, showing a doctor discussing a patient in a Paris hospital ward, 1830s. Etching by Alexandre Lacauchie. National Library of Medicine
34. Hôtel-Dieu, Paris, the oldest existing hospital in the world. It was largely rebuilt after a fire in 1772. As part of a hospital reform movement, its winged wards were designed to increase air flow, providing better conditions for the large volume of patients in the teaching hospital. Wikimedia
35. College of Physicians of Philadelphia, the oldest private medical society in the United States (f. 1787). National Library of Medicine
36. Surgeon's Hall, University of Pennsylvania, 1799, the site of medical lectures from 1765 to 1801. National Library of Medicine
37. Women's Medical College of Philadelphia (f. 1850), the first medical school exclusively for women. National Library of Medicine
38. "Flexner Report," Abraham Flexner's Assessment of the State of Medical Education, 1910. Scan by Virtuoso Press
39. Dr. Elizabeth Blackwell, first woman to receive a medical degree in the United States (1849). National Library of Medicine
40. Dr. Rebecca Lee Crumpler, first Black woman to receive a medical degree in the United States (1864). National Library of Medicine
41. The Medical Committee for Civil Rights (MCCR) was founded in 1963 by Dr. Walter Lear to address racism in the American Medical Association (AMA). National Library of Medicine
42. Dr. Ernest Mae McCarroll: first Black physician to be appointed to the staff at Newark City Hospital (1946); became Deputy Health Officer of Newark (1953); in 1963 she became the first woman to be pictured on the cover of the *Journal of the National Medical Association*, the professional organization established by African American physicians as an alternative to the AMA.

Scan by Virtuoso Press

43. Howard Univ., Washington, D.C., ca. 1900 - class in bacteriology laboratory. W.E.B. Du Bois photographic collection. Library of Congress
44. Charles Drew sitting with medical residents at Freedmen's Hospital, Howard University, ca. 1945. National Library of Medicine
45. American Medical Women's Association (f. 1915). National Library of Medicine
46. Laboratory Medicine Creates Forensic Science; Dr. Alfred Swaine Taylor and George Own Rees in a Laboratory Performing Forensic Analyses in the Nineteenth Century. National Library of Medicine
47. French neurosurgeon Guillaime-Benjamin-Amand Duchenne (on the left) demonstrates how an electrical current "stimulates" facial expressions with a new medical apparatus in the 1860s. Getty Images
48. Front page of *New York Times* article by Jean Heller exposing the Tuskegee study by the US Public Health Service between 1932 and 1972. Scan from Newspapers.com
49. White Coats for Black Lives, a national student organization that aims to dismantle racism in medicine and fight for the health of Black people and other people of color. Pictured are Yale students preparing for a "die-in" demonstration. © *Yale News*, December 10, 2014
50. The emergence of the glowing white coat is famously represented in artist Thomas Eakins' painting *The Agnew Clinic* (1889), which depicts the surgeon Dr. D. Hayes Agnew presiding over an operation in an amphitheater at the University of Pennsylvania School of Medicine. Wikimedia
51. The stylistic shift to white contrasts with an earlier portrait by Eakins, *The Gross Clinic* (1875), Fig. 51 (right), where the surgeon Samuel Gross and his assistants are dressed in conventional black-suit attire. Wikimedia
52. The white lab coat became standardized attire in hospitals in the late nineteenth century, referencing the role of scientific investigation in making medical knowledge. Stock photo
53. Screenshot of first page of Google search for "professional doctor image," July 8, 2021, Brian Dolan
54. American Board of Medical Specialties was established in 1934 to set standards for examination boards necessary to certification of a medical specialty. From ABMS.org
55. A chart of typical medical school departments representing American medical specialties. Vector stock
56. Charles Aston's *Modern Medicine* (1936), mural at Harlem Hospital Center, New York. An advocate for racial inclusion, he said his goal was to "show the different races working together on the same basis with an absolute lack of discrimination, illustrating the sheer objectivity of science." From Columbia University, Institute for Research in African-American Studies

**University of California Medical Humanities Press**
Department of Humanities & Social Sciences, UCSF
490 Illinois Street, Floor 7
San Francisco, CA 94143-0850

General Editor: Dr. Brian Dolan

University of California Medical Humanities Consortium Supplemental Publications

*Perspectives in Medical Humanities*
Titles in this series:

Supplement 1: The Medical Profession Through History
Supplement 2: Hospitals Through History
Supplement 3: Anatomy Through History
Supplement 4: Therapeutic Drugs Through History