NANZAN REVIEW OF AMERICAN STUDIES
Volume 19, Number 1 (Summer 1997): 41–58

Medicine at the Time of the American Revolution

HIGOMOTO Yoshio

I

THROUGHOUT THE FIRST HALF of the colonial period, the practice of medicine was closely connected with the religious ethos. In New England, where religion was the center of community life, ministers often played a particularly important role as healers in their communities.[1] They were expected to take responsibility for the medical care and comfort of the sick. No school for medical training existed in British America until the middle of the eighteenth century. The lack of trained practitioners in most rural areas and the expensive cost of professional health care in the American colonies also created conditions favorable to the close association between religion and healing.

In the eighteenth century, however, as the American economy grew and society became more stable, the colonies became more capable of supporting medical institutions. At the same time the so-called "scientific revolution" of the seventeenth century in the Old World gradually aroused keen interest in science among colonial gentlemen.[2] By the middle of the century American colonists who followed the example of English society began to conceive various schemes for useful social and medical institutions such as almshouses, public dispensaries, and medical schools, but the War of Independence temporarily disrupted this development of American medicine. Endurance of hardship and acquisition of invaluable medical experience during the Revolutionary War, however, helped physicians to begin to see themselves as part of an emerging profession in the new republic.

Three phases in medical development during the colonial period can be roughly charted, although regional diversity and ethnic components of commu-

The author is associate professor at Doshisha University, Kyoto. His recent publications include "Thomas Paine and the Early American Republic: Commerce, Independence and Republicanism," *Doshisha Studies in English* 65 (December 1995) and "Further Information Concerning Dr. Benjamin Waterhouse's Appointment as Harvard's First Professor of Medicine," *Journal of the History of Medicine* 49 (July 1994).

nities require commentators to exercise much caution in generalizing about colonial medicine. In the first phase, which occurred between the time of the first settlements and the first third of the eighteenth century, a tiny number of trained physicians and many lay healers such as "priest-physicians" dominated the American medical world.

The second phase, in the middle of the eighteenth century, witnessed the beginning of the professionalization of American medicine. More scientific medical theories, novel therapeutic techniques, and many English patent drugs were introduced into America. An increasing number of medical students from wealthy families went to England and Europe for advanced medical studies. Many doctors received practical medical training under the apprenticeship system. By mid-century American doctors began to seek to organize themselves, modeling their institutions on those of the English medical profession.

In the third phase the turmoil of war in the 1770s and early 1780s temporarily disrupted the growing trend of professionalization. The achievement of independence and the ideological forces unleashed by the Revolution, however, had a profound impact on the future course of American medicine.

Tracing these stages of early medical development, this article examines how new medical theories in the Old World were disseminated in the New and interacted with the development of colonial medicine and society. It also illustrates the importance of the Revolutionary experience, shared by leading American medical practitioners, in redirecting the development of American medicine.

Despite the increasing interest in American social history among Japanese scholars in the past twenty years, medical history has been largely a neglected field.[3] Medical history, however, goes beyond highly specialized studies of disease and medical science. Rather, it has the fascinating potential for revealing in depth the social and cultural transformations in America, and provides a rare perspective for exploring the social and cultural ramifications of changes in American society. This study is a first step in charting the development of medicine in the seventeenth and eighteenth centuries and assessing the impact of the Revolution on American medicine.

II

In the first half of the colonial period religion was a vital force which the colonists utilized to provide stability and cohesion to their various communities. In the seventeenth century medicine was still connected to religious spiritualism.[4] Deacon Samuel Fuller, who traveled in the *Mayflower* to Plymouth in 1620, had medical knowledge and established a busy medical practice between Plymouth and Salem. Reverend Thomas Thacher, the pastor of the Old South

Church in Boston, played a central role in taking care of the sick in the town. Cotton Mather, who was himself an outstanding Puritan preacher-physician, praised Thomas Thacher as the "angelical conjunction" between the offices of minister and physician.[5] Thacher even wrote a medical paper, entitled *A Brief Rule to Guide the Common People of New England how to Order Themselves and theirs in the Small Pocks or Measels* (Boston, 1677), one of the first medical treatises in colonial America. Many other examples of this type of "preacher-physician" can be found in and outside of New England in the early stage of medical development.

In the hierarchical, deferential colonial communities political and social leaders, along with ministers, often treated the sick. It is well known that Governor John Winthrop of Boston and his son, John Winthrop, Jr., of Connecticut, not only exerted excellent political leadership, but occasionally treated the sick and administered medicine.[6]

In the colonial South, plantations varied in size from the largest with more than 200 slaves to the smallest with none or few slaves. One must be careful, therefore, in generalizing about various aspects of plantation life. Evidence shows that on large plantations masters often called trained physicians to care for sick slaves and paid for the best medical attention to the health of their chattels.[7] They were able to do this partly because they were able to afford the high cost of treatment. More important, however, they paid special attention to the health of African slaves because slaves were very expensive throughout the colonial period and planters with large tracts of farmland depended on slave labor to cultivate tobacco and grain on their plantations.

Plantations of middle or small size, however, had to rely on lay medical treatment or the skills of plantation masters and their wives, a situation aggravated by the isolation of these plantations from towns. Paternalism in the closed and hierarchically organized plantation life also played an important part in encouraging plantation masters to minister to their own slaves.[8] To summarize, the lack of educated physicians prompted community leaders in both the North and South to play significant roles in medical care.

Although social disturbances occurred from Massachusetts to Carolina in the late seventeenth century, the American colonies gradually became more stable and grew steadily. The emerging social elites in the colonies began to show interest in scientific theories and discoveries from the Old World, reading reports of them in English periodicals such as *Philosophical Transactions* and the *Gentleman's Magazine*, where they learned, for example, of William Harvey's discoveries of the circulation of blood. Likewise, Thomas Sydenham, a famous seventeenth-century English physician, and Herman Boerhaave at the University of Leyden had a distinct influence on medical practice in the colonies as well as in Europe.[9]

The primitiveness of American environment often forced medical practitioners to depend upon personal experiences and practical observation in treating their patients; furthermore, their medical thinking was still largely based on traditional medical theories of Hippocratic-Galenic medicine.[10] Medical treatment was not yet specific to disease. In eighteenth-century Europe, however, this conventional simplistic medical thinking was gradually giving way to a new more elaborate one.

Hermann Boerhaave at Leyden believed that foul blood was the source of disease. William Cullen at Edinburgh, on the other hand, maintained that it was the malfunction of the nervous system that led to disease. Renowned English and European physicians were just beginning to explore specific causes of disease. Despite the growing scientific thinking, however, their proposed "systems" remained largely within the ancient Greek medical framework which stressed the importance of a balanced condition of substances called "humors" such as blood, phlegm, black bile, and yellow bile. An important role of physicians in the treatment was hence to observe carefully the symptoms of the patients and to restore the balances of these four essential substances.[11]

Thus physicians could not usually connect diseases with a specific trouble in a part of the body. They diagnosed the sick to determine which factor was unsettling the harmonious equilibrium of the whole system. Despite Boerhaave's and Cullen's efforts to understand some internal aspects of the physiological causes of disease, Boerhaave still thought it essential to remove foul blood so as to restore the natural circulation of normal blood, while Cullen thought it necessary to suppress excessive stimuli in the body by relaxing it somehow. Despite their progressive pathological observations, their theories were still systematized in line with the old medical tradition, and hence they tried to remove the cause of a disequilibrium of the entire system. Their general treatment thus often consisted of bleeding, purging, blistering, or sweating.[12]

Perhaps the most notable medical innovation in the first half of the eighteenth century was the introduction of a preventive treatment known as "variolation" or smallpox inoculation. Variolation was an effective but dangerous preventive against smallpox. By transplanting pus from the pustules of a smallpox patient into an incision in the skin of a healthy person, he or she might get a nonvirulent case of the disease and thus stimulate the body's immune system against it.

Until the discovery of Edward Jenner's cowpox vaccination in 1798—much safer than the actual smallpox inoculation—smallpox was by far the most fearful disease of the century. [13] The disease not only took a heavy toll on inhabitants everywhere, but also often considerably disfigured the victims' faces and bodies even if they survived. Smallpox was a nightmare, particularly to young ladies.

By the early eighteenth century, however, some empirically minded physicians began to pay attention to the old African method of smallpox inoculation

and the traditional practice of variolation in Turkey and Greece.[14] Long before the advent of modern scientific techniques such as immunology and microbiology, of course, physicians were not able to explain the essential mechanisms of smallpox inoculation, but they gradually acknowledged the efficacy of variolation against the dreadful disease. The bad side of variolation was that the smallpox inoculation sometimes spread the disease. In some communities—Boston for one—inoculation hospitals were set up in remote places. Patients were treated and then kept isolated until the disease had run its course. The introduction of this method, however, brought about acute controversies in communities in the first half of the eighteenth century, and was long resisted by lay people.

Nevertheless, the American colonists contributed much to the promotion of variolation. Around 1715 the Reverend Cotton Mather obtained information about African practice of inoculation from his African slave, and soon convinced himself of its effectiveness by reading an article on inoculation practice in the *Transactions of the Royal Society*.[15] When a severe smallpox epidemic attacked Boston in 1721 and 1722, Mather and Dr. Zabdiel Boylston, who was the only ardent supporter of the novel method among medical practitioners in Boston, did not hesitate to experiment on the inoculation method. Dr. William Douglass, who was a cautious and successful Boston physician with a medical degree from Utrecht, however, opposed their attempt. He wrote to Dr. Cadwallader Colden of New York on May 1, 1722:

> I oppose this novel and dubious practice not being sufficiently assured of its safety and consequences; in short I reckon it a sin to propagate infection by this means and bring on my neighbor a distemper which might prove fatal and which perhaps he might escape (as many have done) in the ordinary way, and which he might certainly secure himself by removal in this Country where it prevails seldom.[16]

Seeing the world from a Calvinistic Puritan viewpoint, most ordinary people in Boston were also very skeptical of this medical innovation. They were bitterly against inoculation and even threatened the lives of Mather, Boylston, and their supporters.[17]

This inoculation controversy was symptomatic of the acute tension between a growing interest in empirical science and the traditional religion-oriented modes of practice. By the time of the Revolution, however, the imminent danger of recurrent smallpox epidemics and the distinct effectiveness of variolation prompted both the elite and ordinary people in America to accept the inoculation method as a necessary preventive against smallpox.

By 1750 Newtonian rationalism and experimentalism were influencing the medical world. Some physicians tried to devise medical theories from firsthand observation of disease rather than evaluation of symptoms based on ancient doc-

trines. An important factor in bringing about such a change in medical thinking was the rise of interest in the study of anatomy in the early eighteenth century.[18] Autopsies to detect pathological changes had been slowly accepted in Europe in spite of deep-rooted religious opposition to them. Giovanni Battista Morgagni's influential treatise, *The Seats and Causes of Disease Investigated by Anatomy* (1761) opened up a new era of the understanding of disease through anatomy.[19] The emerging interest in examining the correlation between disease and pathological lesions gradually undermined the traditional framework of medical thinking. Medical theory thus became dependent more on biological observation than on a mechanical system. One medical historian has claimed that the middle of the eighteenth century was one of the crucial periods in the developments of medicine.[20]

By the mid-eighteenth century the center for medical studies was shifting from Leyden to Edinburgh and Paris. Having absorbed Boerhaave's systematic method for the analysis of disease, but rejecting his principles that "diseases are seated in the solids, not in the fluids,"[21] Dr. William Cullen at the University of Edinburgh maintained that spasm is the proximate cause of disorder. With the rise of the so-called "Scottish Enlightenment" in the mid-century, the University of Edinburgh attracted not only Scotsmen but many talented Englishmen who were excluded from Oxford and Cambridge because of their dissenting religious faiths. The medical school became so reputable that it also began to attract an international body of students from the Continent and the American colonies. Leading physicians in America such as John Morgan, William Shippen, Jr., and Benjamin Waterhouse all went to Edinburgh to attend the medical lectures. It was at Edinburgh that Benjamin Rush was attracted to Dr. John Brown's theory that all diseases could be reduced to two kinds, "sthenic" and "asthenic."[22] After returning to Philadelphia, Rush became the standard bearer of Brown's doctrine and encouraged his students to use heavy bleeding in treatment. As the Medical College of Philadelphia grew in the post-Revolutionary period, Benjamin Rush and the medical theories taught in Edinburgh left a lasting imprint on medicine in the early American Republic.[23]

Although developments in medicine varied from region to region in the colonies by the mid-eighteenth century, an increasing number of European educated doctors came to realize the need for raising the standards of the American medical profession.[24] Having been trained as physicians in England and Europe, they admired the elaborate hierarchy of the English medical profession—one that simply did not exist in the colonies. In their eyes American medicine was so crude and disorganized that physicians could neither attain the professional dignity that medical practice required nor, without learned societies and periodicals, could they contribute much to scientific progress.

As late as the outbreak of the American Revolution it is estimated that merely

5.7 percent of the medical practitioners had medical degrees.[25] They had no hierarchy of distinct professional ranks, such as physician, surgeon, dentist, midwife, and apothecary, that could be found in England. Whenever they were called to treat a sick person, they diagnosed their patients, sometimes operated on them if necessary, and administered drugs—things that would have been done by separate persons in Europe. Most immigrant doctors from England and Europe were provincial medical practitioners, not successful professionals. American doctors were, after all, general practitioners who combined the practice of medicine, surgery, and pharmacy and had to travel long distances on horseback to visit patients day and night.

Furthermore, the lack of medical institutions and hospitals in the first half of the eighteenth century contributed to the prevalence of quacks and dubious medical practitioners in the colonies.[26] In 1767 Dr. Peter Middleton, professor of the Theory of Physic in the newly established medical school of King's College in New York (Columbia), deplored the medical scene in colonial America:

> Yet many, too many, are the instances, even in this place, of men, otherwise valuable for their penetration and good sense, who have given up their own judgments to the belief of *nostrums*, or *secret cures*, have countenanced, and even employed the most obscure and superficial traders in physic.[27]

Distinguishing quackery from orthodox medicine in the eighteenth century, however, is not an easy matter.[28] Orthodox medical practitioners, on the one hand, can be considered to have been formally educated and trained doctors. Most of them might be called "rationalists" because they used traditional Galenic doctrines to treat their patients. Even though their treatments were not often effective against disease, they used rational methods to arrive at decisions on their therapy. On the other hand, it is even harder to define what quackery was in the eighteenth century since quacks sometimes included respectable "empiricists." At a time when medicine was not yet winning the battle against disease and medical science was just beginning, all empiricists who were not medically educated were considered by orthodox doctors to be charlatans.

Since the American colonies had no medical schools and virtually no effective regulatory legislation dealing with medical practice during most of the colonial period, American medicine lagged behind its European counterparts in institutional and professional developments. By the middle of the eighteenth century, however, the rapid growth of the economy and population provided favorable conditions for medical development. In 1751 Benjamin Franklin proudly reported on the maturing conditions of the colonies:

> Thus there are suppos'd to be now upwards of one Million English Souls in North-America, (tho' 'tis thought scarce 80,000 have been brought

> over Sea) and yet perhaps there is not one the fewer in Britain, but rather many more, on Account of the Employment the Colonies afford to Manufactures at Home. This Million doubling suppose but one in 25 years, will in another Century be more than the People of England, and the greatest Number of Englishmen will be on this Side [o]f the Water.[29]

As the colonial elite were able to afford to send their sons for clerical, legal, and medical education in the Old World, an increasing number of wealthy, ambitious young men crossed the Atlantic in order to obtain advanced professional training. After several years' study abroad, they returned to America and most of them settled in colonial cities of Boston, New York, Philadelphia, and Charleston.[30]

As American society became more anglicized in the eighteenth century, colonial elites began to imitate the elaborate hierarchical structure of English society by establishing various institutions with professional qualifications based upon the English model.[31] Physicians in the colonies likewise began to realize the need to enhance the dignity of the medical profession. Although they were always factious and competition was fierce among them for patients and for fees, conscious activities to establish medical societies and educational institutions originated in the mid-1760s.

The first medical school in the colonies was attempted in Philadelphia, then the commercial center of North America. Dr. John Fothergill, a London Quaker physician and benevolent friend of the American colonists, conceived the project to establish a medical school in the Quaker city. In a 1762 letter to James Pemberton, a successful merchant in Philadelphia, Fothergill recommended his two American students, William Shippen, Jr., and John Morgan, as professors of the new medical school, and assured Pemberton that both Shippen and Morgan would "not only be useful to the Province in their employments," but "if suitably countenanced by the legislature," they could establish "a school of Physick amongst you that may draw many students from various parts of America and the West Indies, and at least furnish them with a better idea of the rudiments of their profession than they have at present the means of acquiring on your side of the water."[32] In 1762 Shippen, started giving private medical lectures on anatomy and midwifery. When Morgan returned to his native Philadelphia with an Edinburgh medical degree in 1765 after five year spent in medical studies in London, Edinburgh, and Paris, he set out to implement Fothergill's scheme of establishing a medical school.[33]

At the commencement of the College of Philadelphia in May, 1765, Morgan delivered his famous address on medical education in America. In his speech he pointed out the flaws of the apprenticeship system and deplored the low standards of the American medical profession. Having emphasized the necessity of regulating medical practice, Morgan proposed to separate "physic" from surgery

and pharmacy, which he thought "incompatible with them, at least according to the plan of education" he had followed, "by the advice of some of the most eminent and skillful judges of medical science of any in Great Britain."[34] He maintained that "the practice of physic" required "deliberation, reasoning, judgement, and experience," while surgery called for "different powers and qualifications." He then asked the audience, "Are these all to be blended with the apothecary, the botanist, and chymist, which ought to be, and are each of them separate and distinct in their very nature?" "Each," Morgan asserted, should "cultivate his respective branch apart, the physician, surgeon, apothecary, &c. The knowledge of medicine will be then daily improved, and it may be practised with greater accuracy and skill as well as less expense."[35]

After giving a general picture of the relation of the branches of medicine, including anatomy, materia medica, botany, chemistry, the theory of medicine, and physiology, Morgan stressed the importance of taking such relations, "the links of a chain" in his words, into careful consideration in the study of medicine and called for systematic medical training. He proposed as follows:

> The order which I would recommend in the study of Medicine is to begin with Anatomy; then what I have called medical natural History, viz. The Materia Medica and Botany; Chymistry should follow; the Institutes come next; and the Study of Practice should compleat the work.[36]

Morgan also encouraged young doctors in the colonies to learn foreign languages, especially French, as well as Latin and Greek so as to obtain medical knowledge and information on new discoveries through European publications.[37] Lastly he proposed to establish a medical school with a medical library in Philadelphia to promote the development of American medicine.

In general Morgan's proposal was systematic and sound. It was distinctively modern and European.[38] His project aroused considerable excitement in Philadelphia. It was "the general Subject of Conversation" among the gentlemen for a month.[39] Morgan's scheme was too ideal and elitist, though, for the social and medical conditions of the colonies. Worse still, a personal feud between Morgan and Shippen, his colleague at the medical school, was detrimental to the attainment of Morgan's goals. In the mid-eighteenth century American medicine was so decentralized and utilitarian that Morgan's project was not fully realizable. Although the Medical School of Philadelphia, which was to be one of the leading medical institutions in America, was established as a branch of the College of Philadelphia in 1765, practical attitudes of both colonial doctors and patients towards medicine and the decentralized conditions of the medical practice long prevented the establishment of a hierarchical and specialized medical profession. Indeed, Morgan's scheme was so advanced that it took nearly a century and half to take root in American medicine.[40]

Changes in medical practice were also evident in Boston in the eighteenth century. Unlike cosmopolitan, thriving Quaker Philadelphia, Boston remained a relatively homogeneous and conservative Puritan town throughout the greater part of the century. Boston's demographic and economic growth was considerably disrupted by the French and Indian War. Economic depression in the late 1760s and the Revolutionary political and social upheavals in the 1770s halted the old Puritan town's growth for nearly three decades.[41]

Nonetheless the pattern of medical development largely corresponded to that of Philadelphia. A study of the medical practitioners in Massachusetts confirms the gradual trend of modernization of American society and medicine. By mid-century a growing number of apprentice-trained doctors and college-educated medical practitioners were replacing self-taught, empirical medical practitioners such as preacher-physicians. Between 1700 and 1790 the number of doctors in Massachusetts increased by 32.4 percent every ten years, which exceeded the 24.3 percent growth of the general population over the same period.[42] Most noticeable were changes in the doctors' quality. More and more of the well-educated and apprentice-trained young began to join the medical world after 1750. The number of apprentice-trained doctors during the eighteenth century had increased by 26 percent over the previous century.[43] Holders of important medical posts—military surgeons, supervisors in almshouses and inoculation hospitals, and quarantine inspectors—were medical practitioners trained by apprenticeship. The emerging professionalization of medicine and the secularization of American society was bringing the traditional role in medicine of preacher-physicians to an end.

By the 1760s doctors and gentlemen in Boston and Cambridge began to conceive of establishing a school that would give broader, more organized, instruction in medicine.[44] Lack of sufficient funds and a major fire at the Harvard College in 1764, however, sapped their enthusiasm and aborted the scheme. The coming of the Revolutionary War retarded the establishment of a medical school at Harvard for another two decades.

As has been discussed above, the second phase of medical development in the American colonies was characterized by the beginning of professionalization and the slow but steady penetration of science into medicine, all of which promoted the separation of trained medical men from lay healers. It is important to note, however, that the development of American medicine in the colonial period was much more complex than this simple formula would suggest. There were many regional differences and much ethno-cultural diversity in medical treatment and developments.[45] Medical conditions in urban areas also differed from those in rural areas. Since better-educated doctors tended to settle down in the cities to recoup the funds they had spent on their medical training, it was

difficult for inhabitants in the countryside to recruit a well-trained doctor to their communities.

Despite such regional diversity in medical development, the general trend is clear. By the mid-eighteenth century the American elite had tried to establish medical institutions and raise the standards of the profession by imitating the hierarchical and sophisticated structure of the English medical world. They soon became aware, though, that American medicine was much too decentralized demographically and politically to follow a British model. It was the Revolutionary War that led the leading medical men to reconsider the disordered conditions of American medical development. The surge of republican ideals and cultural nationalism brought colonial medicine to a new phase of development.

III

The Revolutionary movement and the War of Independence in the 1770s and early 1780s temporarily halted the development of American medicine. In Boston the military confrontation between colonial militia and British soldiers forced the colonists to put the plan for a medical school out of their minds. Like other colonists, a number of able, influential doctors in Massachusetts, including Drs. Joseph Warren, his brother John Warren, James Lloyd, Isaac Rand, Jr., Samuel Danforth, Thomas Kast, and James Pecker, found themselves involved in the Revolutionary turmoil and divided between the British and the American camps. In New York the Medical School of King's College (founded in 1768), the second oldest medical school in North America, was disrupted by factious politics among the medical men for many years. Worse still, the British occupation of New York City during the Revolutionary War and the burning of a hospital prevented the development of this medical institution.[46] Unlike New York, the Philadelphia Medical School witnessed a growth in number of students, but the Revolutionary War likewise forced the institution to close temporarily. The three renowned professors—Dr. John Morgan, Dr. William Shippen, Jr., and Dr. Benjamin Rush—were all mobilized for the revolutionary cause as military surgeons. Morgan and Shippen both served as Director-General of the Army Medical Department.

Although the Revolutionary War slowed the development of American medicine, it provided valuable lessons and experience for medical men in America. Analyzing the broad effect of the Revolutionary War on society, one military historian has maintained that the war can be seen as "a political education for the masses."[47] This holds true for not only the masses but also for American leaders. The Revolutionary War caused medical men to reconsider adverse conditions in American medicine. When the war broke out in 1775, American leaders soon

recognized the fact that America had no useful medical organization which could establish war-time medical departments.

From the beginning of the Revolutionary War the American army suffered chronic shortages of medical essentials such as bandages, surgical equipment, and medicines. Some doctors had to use their own supplies. Medical provisions were so short in Massachusetts that a committee of the Provincial Congress urged medical men to economize on medical supplies as much as possible.[48] As the war continued, medicines, in particular, became very hard to obtain. Since most of the best drugs were imported from England, the blockade of ports cut down considerably on the new supply of medicines. In December 1775, almost all regimental surgeons in Massachusetts reported that they had "but few medicines" left in their supplies.[49] Under these conditions, Dr. John Warren, a patriotic Boston physician, called on Congress to establish a medical branch dedicated to searching for native cures that could supplant English drugs.[50]

The American colonists also had to begin the war with no nationwide war administration. When the Continental Congress created the local and national army administrative departments, American leaders soon realized that provincial and Continental armies were not organized systematically. The Army Medical Department, established in May 1775, was also beset with both organizational and economic difficulties. Ambiguous lines of authority for health care in the army camps caused continuous friction between the regimental surgeons and the Director-General of the General Hospital.[51]

Dr. Benjamin Church, who was appointed the first Director General by Congress on July 1775, tried to set up an effective Hospital Department with definition of the duties of the respective surgeons and apothecaries and clear lines of authority. Church's program was, however, soon best with serious organizational difficulties. Among the formidable obstacles to establishing well-organized medical departments were uncooperative regimental surgeons. Worse still, the startling discovery of Church's treasonable correspondence with the enemy in late September 1775 discredited the authority of the Army Medical Department and hindered the efficient organization of regimental surgeons.[52] Lamenting the disordered and deplorable conditions of regimental practitioners, Dr. John Morgan, Church's successor, remarked that

> many of the Surgeons have paid no attention to the General orders by neglecting to bring in their Returns; that, in general, they are but miserably supplied with Instruments, Bandages, Lint, Rags, &c., and much worse with Medicines; some having none at all or next to none."[53]

The difficulties of Congress and the Continental Army in forcing state troops to follow their orders derived from the peculiarities of colonial life. To begin with, Americans inherited the English radical Whigs' fear of a standing army.

The lack of an effective center of political power in the American colonies not only strengthened the colonists' provincialism, but also helped sharpen their awareness of the danger of concentrating power and control over supplies in a few people. They were so fearful about the danger of uncontrolled military power that they hesitated to establish a powerful military department even when it became indispensable to waging the Revolutionary War.[54]

Second, Congress had no power of purse and coercion over the states and their citizens. Continental and state troops were enlisted and paid differently, and strong localism of Americans always favored the state troops.[55] The insular mindsets and prejudices of each state's troops thus prevented the smooth and efficient working of the central and local military administrations. Their lack of nationwide military campaign experience only added to their difficulties.

The awkward relationship between the Hospital Department and the regimental hospitals reflected the narrow-minded and unruly character of the medical men. The regimental surgeons would not obey instructions from the Medical Department and often ignored orders from the Director-General. They went outside proper channels to secure independently surgical instruments, medicines and other necessary equipment such as bandages, linens, blankets, and tents. The result was severe competition for these supplies among the surgeons. In regimental hospitals, moreover, the administration was often confused, and the management was very wasteful and corrupt. Resisting every encroachment on their authority from outside, the regimental surgeons and their hospitals were a continuous source of frustration and anger to many leaders of the Continental Army as well as the director of the General Hospital Department.[56] By late September in 1776, conflict over authority and medical logistics was getting out of hand. Having become very weary of the medical men's uncooperative attitudes as well as his own militia's unreliability and lack of discipline, General Washington demanded that Congress should affirm that "all regimental surgeons and mates, as well as those of the hospitals, be subject to the directions and control of the directors in the several departments."[57] Unfortunately, however, the independent, unruly regimental surgeons clung so tenaciously to their old habits that Congress's order was never fully carried out.

IV

How did these experiences during the war influence the development of American medicine? Perhaps most crucial was the fact that during the Revolutionary War American medical leaders became keenly aware that they must establish well-organized medical care in America. To be sure, even before the Revolution aristocratic Dr. John Morgan had tried to launch reforms of med-

ical education in the colonies. His proposals were too drastic, however, to be seriously accepted by ordinary medical men. But as the Revolutionary War went on, they saw at first hand the effects of a much too decentralized medical authority and were forced to acknowledge the existence of the many unskilled, disorderly medical men in the colonies. The leading physicians were shocked by these miserable conditions.[58]

At the close of the Revolutionary War physicians set out to reform medical education and organize hospitals and state medical societies. Republicanism, which had surged out of the revolutionary movement, was combined with fervent patriotism to help promote the reform movement in the new Republic.[59] The firsthand experiences of physicians themselves, though, especially the hardship and difficulties they had encountered in attempting to establish organized medical care in the army camps and the resulting high death rate, led to the medical reforms of the post-Revolutionary period.

From a clinical point of view, the Revolutionary War also gave military surgeons invaluable opportunities to improve their clinical and surgical skills. The seven-year war provided American physicians with opportunities to observe and treat a variety of pathological cases. More important, their close contact with well-trained French army surgeons and even with their British counterparts during the war brought American doctors the opportunity not only of observing at first hand advanced surgical techniques and treatment, but of broadening their knowledge of French clinical medicine.[60]

After the Revolution American physicians who had experienced the war came to appreciate more than ever before the importance of knowledge of pathological anatomy and clinical observation in treating their patients. When a severe yellow fever epidemic hit Boston in 1798, Dr. John Warren tried to examine by means of dissection the cause of death for which yellow fever was responsible, and remarked:

> The great advantages to be derived to mankind from an Inspection of the bodies of such as have died of so formidable an epidemic as the yellow fever must be obvious to all—. The following case of disection [sic] may throw some light on the nature of the disease as it exists in this place and may we hope be of some use in investigating the treatment best adopted to the purpose of checking or suppressing it.[61]

In the dissection Warren found that "the lungs were remarkably affected—they contained an uncommon quantity of dark blood in their vessels." After examining carefully the heart, the liver, the stomach, and the gallbladder, Warren came to the conclusion that "the state of the lungs in this instance was probably the consequence, chiefly, of a disease independent of that which proved fatal."

When he further explained the cause of the yellow body of the dead, Warren sharply observed "a deficiency of secretion in the bile [of] any organs."[62]

This example illustrates the beginnings of modern medical thinking, that is, the specialization of disease and the localized cause of disorder. Since John Warren and other many able doctors in colonial America did not receive formal medical education beyond their apprenticeships, changing therapeutic techniques in the Old World seem to have had little influence on American doctors. Rather, it was their practical experience, especially during the Revolutionary War, that contributed most to acceptance of clinical, practical attitudes towards disease in the New World. The impact of the Revolution on American medicine, however, was much deeper and broader. The ideals of independence, egalitarianism, and especially anti-intellectualism, which had grown out of the Revolutionary movement, were so deeply built into the minds of the American people that they had a profound influence on the development of American medicine, including doctor-patient relationships in the early Republic.

The author wishes to thank Dr. Thomas Allen and Professors Philip Cash and Gordon S. Wood for their thoughtful comments.

Notes

[1] See Patricia A. Watson, *The Angelical Conjunction: The Preacher-Physicians of Colonial New England* (Knoxville, Tenn.: University of Tennessee Press, 1991): 36–73; Henry R. Viets, *A Brief History of Medicine in Massachusetts* (Boston and New York, 1930): 8–52.

[2] Brooke Hindle, *The Pursuit of Science in Revolutionary America* (New York: Norton, 1974, c1956).

[3] Some exceptions are Ichimi Masatoshi's works on medicine and society in modern English history. See Ichimi Masatoshi, *"Cholera" no sekaishi* (Tokyo: Shobunsha, 1994); Ichimi, Kawagoe, et al., *Aoi kyoufu, shiroi machi* (Tokyo: Heibonsha, 1990). However, I could not locate any monographs or papers on medicine and society written by Japanese scholars of American history. This may be an indication of lack of serious interest in this topic among Japanese historians who specialize in American history.

[4] See Keith Thomas, *Religion and the Decline of Magic* (New York, 1971): chap. 7.

[5] Viets, *A Brief History of Medicine in Massachusetts*: 28.

[6] Daniel J. Boorstin, *The Americans: The Colonial Experience* (New York, 1958): 221–225; Viets, *A Brief History of Medicine in Massachusetts*: 19–26.

[7] Wyndham B. Blanton, *Medicine in Virginia in the Eighteenth Century* (Richmond, Va., 1931): chap. 8; Boorstin, *The Americans: The Colonial Experience*: 216–219.

[8] On distinctive medical practices in the South, see particularly Ronald L. Numbers and Todd L. Savitt (eds.), *Science and Medicine in the Old South* (Baton Rouge: Louisiana State University Press, 1989).

[9] Richard H. Shryock, *The Development of Modern Medicine: An Interpretation of the Social and Scientific Factors Involved* (New York: Knopf, 1947): 1–37; Lester S. King, *The Medical World of the Eighteenth Century* (Chicago: University of Chicago Press, 1958).

[10] In this respect Daniel Boorstin emphasizes practical aspects of colonial medicine and its loose professional organization in *The Americans: The Colonial Experience.* Although he has made a point, it is not denied that American physicians, especially well-trained doctors, diagnosed and treated their patients within the framework of the traditional medical culture inherited from the Old World. See J. Worth Estes, "The Practice of Medicine in 18th-Century Massachusetts," *New England Journal of Medicine* 305 (1981): 1040–47.

[11] Stanley J. Reiser, *Medicine and The Reign of Technology* (Cambridge: Cambridge University Press, 1978): chap. 1.

[12] King, *The Medical World of the Eighteenth Century*: 59–122; Estes, "The Practice of Medicine in 18th-Century Massachusetts": 1041; Charles E. Rosenberg, "The Therapeutic Revolution: Medicine, Meaning, and Social Change in 19th Century America," in Judith W. Leavitt and Ronald L. Numbers (eds.), *Sickness and Health in America* (Madison: University of Wisconsin Press, 1985): 39–52.

[13] See Donald R. Hopkins, *Princes and Peasants: Smallpox in History* (Chicago and London, 1983).

[14] Genevieve Miller, *The Adoption of Inoculation for Smallpox in England and France* (Philadelphia, 1957): chap. 3; John Duffy, *Epidemics in Colonial America* (Louisiana State University Press, 1953): 25; Hopkins, *Princes and Peasants*: 47.

[15] John Duffy, *Epidemics in Colonial America*: 28.

[16] William Douglass to Cadwallader Colden, Boston, 1 May 1722, quoted in "Letters from Dr. William Douglas(s) to Dr. Cadwallader Colden of New York," Collections of the Massachusetts Historical Society, ser. 4, II (1854): 170.

[17] Duffy, *Epidemics in Colonial America*: 29–30.

[18] Owei Temkin, "The Role of Surgery in the Rise of Modern Medical Thought," *Bulletin of the History of Medicine* 25, 3 (1951): 248–59.

[19] Reiser, *Medicine and the Reign of Technology*: 16–20; on the progress of surgery in America see Courtney R. Hall, "The Rise of Professional Surgery in the United States: 1800–1865," *Bulletin of the History of Medicine* 26, 3 (1952): 231–62; Whitfield J. Bell, Jr., *John Morgan: Continental Doctor* (Philadelphia: University of Pennsylvania Press, 1965): 89.

[20] Lester S. King, "Rationalism in Early Eighteenth Century Medicine," *Journal of the History of Medicine and Allied Science* 18 (July 1963): 257–71.

[21] David Ramsay, *A Review of the Improvements, Progress, and State of Medicine in the XIXth Century* (Charleston, 1801): 7.

[22] Shryock, *The Development of Modern Medicine*: 28–30; Ramsay, *A Review of the Improvements, Progress, and State of Medicine in the XIXth Century*: 7–8.

[23] See Richard H. Shryock, *Medicine and Society in America 1660–1860* (Ithaca, 1962); Paul Starr, *The Social Transformation of American Medicine* (New York: Basic Books, 1982): 42.

[24] Michael Kraus, "American and European Medicine in the Eighteenth Century," *Bulletin of the History of Medicine* 8, 5 (May 1940), 680–82.

[25] Henry B. Shafer, *The American Medical Profession 1783 to 1850* (New York: Columbia University Press, 1936): 20.

[26] Helen Brock, "North America, a Western Outpost of European Medicine," in Andrew Cunningham and Roger French (eds.), *The Medical Enlightenment of the Eighteenth Century* (Cambridge, 1990): 202–03; Boorstin, *The Americans: The Colonial Experience*: 230–32.

[27] Quoted in John B. Beck, *Medicine in the American Colonies: A Historical Sketch of the State of Medicine in the American Colonies, From Their First Settlement to the Period of the Revolution* (New York, 1850): 36–37.

[28] For the definition of quackery see Norman Gevitz, "Three Perspectives on Unorthodox Medicine," in Norman Gevitz (ed.), *Other Healers: Unorthodox Medicine in America* (Baltimore and London, 1988): 1–28.

[29] Benjamin Franklin, *Observations Concerning the Increase of Mankind, Peopling of Countries, &c.*, in Leonard W Labaree (ed.), *The Papers of Benjamin Franklin* (New Haven: Yale University Press, 1961), IV: 233.

[30] James H. Cassedy, "Medicine and the Learned Society," in Alexandra Oleson and Sanborn C. Brown (eds.), *The Pursuit of Knowledge in the Early American People* (Baltimore: Johns Hopkins University Press, 1976), 263–64.

[31] For a description of this phenomenon, see particularly John M. Murrin, "The Legal Transformation: The Bench and Bar of Eighteenth-Century Massachusetts," in Stanley N. Katz and John M. Murrin (eds.), *Colonial America* (New York, 1983): 540–71; Murrin, "Political Development," in Jack P. Green and J. R. Pole (eds.), *Colonial British America: Essays in the New History of the Early Modern Era* (Baltimore: Johns Hopkins University Press, 1984): 408–56; and T. H. Breen, "An Empire of Goods: The Anglicization of Colonial America," *Journal of British Studies* 25 (1986): 467–99.

[32] John Fothergill to James Pemberton, 7 April 1762, in Betsy C. Corner and Christopher C. Booth (eds.), *Chain of Friendship: Selected Letters of Dr. John Fothergill of London, 1735–1780* (Cambridge: Harvard University Press, 1971): 225.

[33] For a a well-rounded monograph of Morgan's life, see Whitfield J. Bell, Jr., *John Morgan: Continental Physician* (Philadelphia, 1965).

[34] John Morgan, *A Discourse upon the Institution of Medical Schools in America* (Philadelphia, 1765): x-xi.

[35] Ibid.: xvi.

[36] Ibid.: 16.

[37] Ibid.: 17.

[38] Toby Gelfand has interpreted Morgan's *Discourse* as "a specimen of a general mentality" of the elite European-trained physician of the second half of the eighteenth century. See Toby Gelfand, "The Origins of a Modern Concept of Medical Specialization: John Morgan's *Discourse* of 1765," *Bulletin of the History of Medicine* 50, 4 (1976): 511–35.

[39] Bell, *John Morgan*: 120.

[40] It was not until the beginning of the twentieth century that reform-minded physicians rediscovered the significance of John Morgan's *Discourse*. For the extensive reforms of the medical profession in the early twentieth century, see Abraham Flexner, *Medical Education in the United States and Canada* (New York, 1910). Toby Gelfand, however, has questioned the modernity of Morgan's *Discourse*. See Gelfand, "The Origins of A Modern Concept of Medical Specialization: John Morgan's *Discourse* of 1765."

[41] Gary B. Nash, *The Urban Crucible: Social Change, Political Consciousness, and the Origins of the American Revolution* (Cambridge: Harvard University Press, 1979), 246–47.

[42] Eric H. Christianson, "The Medical Practitioners of Massachusetts, 1630–1800: Patterns of Change and Continuity," in Philip Cash, Eric H. Christianson, and J. Worth

Estes (eds.), *Colonial Massachusetts, 1620–1820* (Boston: Colonial Society of Massachusetts, 1980): 54.

[43] Christianson, "The Medical Practitioners of Massachusetts," in *Medicine in Colonial Massachusetts*: 57.

[44] Philip Cash, "The Professionalization of Boston Medicine, 1760–1803," in *Medicine in Colonial Massachusetts*: 78.

[45] See, for example, J. Worth Estes, "Therapeutic Practice in Colonial New England," in *Medicine in Colonial Massachusetts*: 289–383; Blanton, *Medicine in Virginia in the Eighteenth Century* (Richmond, 1931).

[46] Shafer, *The American Medical Profession*: 18.

[47] John Shy, "The American Revolution: The Military Conflict Considered as a Revolutionary War," in Stephen G. Kurtz and James H. Hutson (eds.), *Essays on the American Revolution* (Chapel Hill: University of North Carolina, 1973): 154.

[48] Philip Cash, *Medical Men at the Siege of Boston* (Philadelphia: American Philosophical Society, 1973): 41–42.

[49] George B. Griffenhagen, "Drug Supplies in the American Revolution," *Contributions from the Museum of History and Technology* 225 (1961): 113.

[50] Bell, *John Morgan*: 183.

[51] E. Wayne Carp, *To Starve the Army at Pleasure: Continental Army Administration and American Political Culture 1775–1783* (Chapel Hill and London, 1984): 25–29: Bell, *John Morgan*: 178–205.

[52] Louis C. Duncan, *Medical Men in the American Revolution, 1775–1783* (Carlisle Barracks, Penn., 1931; reprint, New York: Augustus M. Kelley, 1970): 63–64.

[53] Quoted in Bell, *John Morgan*: 184.

[54] Merrill Jensen, *The New Nation: A History of the United States during the Confederation 1781–1789* (Boston, 1981, c.1950): 29.

[55] Jensen, *The New Nation*: 30.

[56] Blanton, *Medicine in Virginia in the Eighteenth Century*: 252; Bell, *John Morgan*: 185; Cash, *Medical Men at the Siege of Boston*: 142.

[57] Carp, *To Starve the Army at Pleasure*: 27–28.

[58] The great hardships American medical men suffered during the Revolutionary War are revealed in the letters and diaries of prominent physicians. See, for instance, Genevieve Miller, "Dr. John Morgan's Report to General Washington, 3 March 1776," *Bulletin of the History of Medicine* 19 (1946): 450–454; L. H. Butterfield (ed.), Benjamin Rush, *Letters of Benjamin Rush*, 2 vols. (Princeton, 1951).

[59] For a detailed analysis of the role of republicanism in the American Revolution, see Gordon S. Wood, *The Creation of the American Republic 1776–1787* (Chapel Hill, 1969), esp. chap. 2; Wood, *The Radicalism of the American Revolution* (New York: Knopf, 1992): 95–225. Daniel T. Rodgers has presented an insightful historiographical essay on republican thought. See Rodgers, "Republicanism: The Career of a Concept," *Journal of American History* 79 (1992): 11–38.

[60] Brock, "North America, a Western Outpost of European Medicine": 205; Blanton, *Medicine in Virginia in the Eighteenth Century*: 268.

[61] "Account of Certain Cases of Dissection Following Death from Yellow Fever," Warren Papers II, 1798, Massachusetts Historical Society.

[62] Ibid.